A Survey of Products Used in Rainwater Catchment Systems :

Products that Contact Water Intended for Human Consumption and Their Suitability for Such Usage in the United States Virgin Islands

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A and A Quality Construction
Apex Construction - Joe Hodge
AZTee Construction
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Best Construction
Cash and Splash - Elroy Allen
Dawson Construction
Dynamic Construction
East End Lumber - Rupert Foster/ Wingrove Fenton
Elkyn Lloyd Construction
H and M Systems - Richard Washburn
Halvor Francis Construction
Hammer-Cock Construction
HF Construction - Hercules Fraser
Island Block - Frank Stapleton
Jean Draggin Enterprises - Jean Draggin
Joseph Construction
K-Mart Corporation - Clement Warner/ Anthony Sutherland
Mike's Paint Store - Charles Bonanno
MSI Building Supply - Yanick Bayard
Paint Depot - Mike Perron
Q and A Services
Real Construction
Roses Construction
Sea Chest - Craig Kirchoff
Vernon Quiland Construction
V.I. True Value Hardware - Jami Pfister
Woods Construction

ST. JOHN

Barry Duncan Enterprises - Barry Duncan

ST. CROIX

A to Z Paint Supply
Caribbean Coatings
Paint Locker - James Rosado
Paint N' Things - Lyle Munson
Rooftops - William Foust
St. Croix Trading - James Bell
Superior Block Inc. - Lily Lawaetz
Technical Coatings - Chuck Henry

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Introduction

Rainwater catchment is the principal source of water for the majority of residences in the United States Virgin Islands. Virgin Islands law mandates that residences be constructed in a manner that provides for the harvesting and storage of rain water for use in the residences. The most commonly used harvesting installation consists of a catchment surface, a conveyance and a cistern or other storage facility. Direct runoffs from the roofs are conveyed through gutters and downspouts to the cisterns for storage.

A wide range of substances is applied to roof surfaces for aesthetic reasons, to protect the surfaces from rapid deterioration and/or to prevent or to stop leaks. Similarly, cisterns are coated to prevent leaks. These substances are often applied to roofs and cisterns without consideration being given to their suitability for use in water catchment systems intended for harvesting water for human consumption.

Many home owners may not be aware of potential health hazards and may rely on the expertise and goodwill of manufacturers and distributors to provide them with products that are safe and appropriate for use in the catchment systems intended for human consumption. For the purpose of this study these substances (coatings, paints, roof tiles, sealants, gutters, etc) will be referred to as coatings.

Since these coatings are not currently regulated in the United States Virgin Islands, there is genuine concern that there may be threats to human health associated with coatings that come in contact with the water derived from the rainwater catchment systems. For instance, the health hazards associated with asbestos tiles and lead-based paints have been well documented. Studies have also linked exposure to high levels of volatile organic compounds (VOC) in drinking water to adverse health effects including increased risk of cancer.

As a result of the potential health hazard, efforts are now underway to regulate the coatings used in rainwater catchment systems. To that end, the Water Resources Research Institute (WRRI) of the University of the Virgin Islands (UVI) was given the responsibility of conducting a survey of the water catchment system coatings used in the U.S. Virgin Islands to obtain toxicity information from manufacturers. Eventually, a protocol will be developed for rainwater catchment systems. This will be incorporated into NSF (National Sanitation Foundation) Standard 61, which focuses on contaminants and impurities that are directly imparted to drinking water from materials or products in contact with the drinking water.

Objectives of Survey

The purpose of this investigation was to compile information to facilitate establishment of standards to which materials used in rainwater catchment systems (RWCSs) in the U.S. Virgin Islands must conform. Survey staff gathered information from manufacturers, material suppliers, home builders and contractors, and government regulatory agencies. The investigation consisted of:

1) Determining the type of coatings marketed or used in components (roofs, drainage, storage facilities) of rainwater catchment systems in the U.S. Virgin Islands.

2) Determining if these coatings had been previously tested by the manufacturer under any existing regulation or private protocol, and found suitable for use in situations where the water contacted will be consumed by humans.

3) Obtaining available toxicity information and recommended uses from the coating manufacturer.

4) Determining the market distributions of the various coatings used.

Investigative Procedure

The survey conducted by the Water Resources Research Institute was initiated by first determining all possible local distributors who sold products for rainwater catchment systems. This information was obtained from advertisements, telephone books, etc. After potential distributors were identified, a list was compiled with the name of the distributor, a contact person, phone and fax number, address, and similar data. The resulting list is shown in Figure 1.

At that point, the distributors were contacted and informed of the project being undertaken. They were asked to provide answers to a survey. They were offered the option of answering by telephone conversation, or in person at their business site. They further could choose to fill out the form themselves, or provide verbal responses to be written down by WRRI representatives visiting their site by appointment. The survey consisted of information such as the distributor's name, address, telephone/fax, the company's objective (the service performed by the company), and information regarding materials used in cisterns, roofs, downspouts, and gutters. An example of the survey is shown in Figure 2.

Using surveys completed for each of the three islands - St. Thomas, St. John, St. Croix - a list of all products found to be sold in the region was compiled, including all collected information. This list is shown in Tables 1, 2, and 3 in the section entitled Discussion of Findings.

Manufacturers were then contacted by telephone or by facsimile, to collect information on the toxicity potential and recommended uses for the products which are found in material safety data sheets (MSDSs). These sheets contain information on hazardous ingredients, reactivity data, health hazards, and permissible exposure limits. MSDS information provided by manufacturers is shown in Appendix A.

The market distribution of products used in the rainwater catchment systems was determined by interviewing contractors. Using a list of licensed contractors provided by the Department of Licensing and Consumer Affairs, WRRI representatives contacted them by telephone as well as on-site visits. An example of the questionnaire used is shown in Figure 3, and the list of contractors is shown in Figure 4.

After the information was gathered, it was sorted into categories (responses, MSDS information, questionnaires, certification letters, etc.), and responses were compiled and analyzed. This report summarizes the information gained through this survey.

Figure 1. Distributor List

DATE	CONTACT PERSON	COMPANY NAME	ADDRESS	CITY/ STATE	ZIP	PHONE	FAX
July 21, 1996	Mrs. Lily Lawaetz	Superior Block Inc.	P.O. Box 1130, Christiansted,	St. Croix, USVI	00821-1130	778-5772	692-5454
July 21, 1996	Mr. Jim Dye	V.I. Cement & Building Products	P.O. Box 7368	St. Thomas, USVI	00801	775-2926	
July 21, 1996		R.R. Caribbean & Benton Construction	P.O. Box 300, OrangeGrove, Christiansted,	St. Croix, USVI	00820-4353	777-9644	
July 21, 1996	Mr. Sam Graci	CCI-Gaudet	P.O. Box 1350, Kings Hill,	St. Croix, USVI	00851	772-2442	772-3346
July 21, 1996	Mr. Stephen Bishop	Circle Construction	P.O. Box 306498	St. Thomas, USVI	00802	779-7302	774-7277
July 21, 1996	Mr. Elmore Charles	Circle Construction	P.O. Box 306498	St. Thomas USVI	00802	774-7277	
July 21, 1996	Mr. Dave Stabbert	Dave Stabbert Master Builder	P.O. Box 6501, Suite 201, Red Hook Plaza	St. Thomas, USVI	00802	774-4694	
July 21, 1996		Gateway Development Corp.	P.O. Box 37	St. Thomas, USVI	00802		
July 21, 1996	Ms. Jean Draggin	Jean Draggin Enterprise	P.O. Box 6539	St. Thomas, USVI	00802-1338	775-2005	
July 21, 1996	Mr. Robert Inda	Pan American Investment Inc.	P.O. Box 24096, Gallows Bay,	St. Croix USVI	00824	772-4771	
July 21, 1996	Mr. Rex Schuster	Reflex Construction	P.O. Box 8385, Sunny Isle,	St. Croix, USVI	00823		
July 21, 1996	Mr. Joe Hollins	Tip Top Construction	P.O. Box 24933, Gallows Bay	St. Croix, USVI	00824	773-5252	
July 21, 1996	Mr. Bob Beal	Caribbean Steel Building Inc.	P.O. Box 305730	St. Thomas, USVI	00803		
July 21, 1996	Mr. Jim W. McCurry	The Amalia Company	P.O. Box 302487	St. Thomas, USVI	00803-2487	775-1272	
July 21, 1996	Mr. Glen Lindenmann	Tropical Painters Inc.	P.O. Box 673, Kings Hill,	St. Croix, USVI	00851	772-0938	
July 21, 1996	Ms. Debbie Chipman	A to Z Paint Supply Inc.	P.O. Box 4065, Kings Hill,	St. Croix, USVI	00851	773-7075	

DATE	CONTACT PERSON	COMPANY NAME	ADDRESS	CITY/ STATE	ZIP	PHONE	FAX
July 21, 1996	Mr. Barry Duncan	Barry's Paint Store	P.O. Box 426, Cruz Bay,	St. John, USVI	00830	779-4060	
July 21, 1996	Mr. Jose Saldana	Colorama Auto Body	P.O. Box 5992, Sunny Isle,	St. Croix, USVI	00823	778-6290	
July 21, 1996	Mr. Phil Crosier	Gannet Hard-ware & More	P.O. Box 24188, Christiansted	St. Croix, USVI	00824	773-1034	
July 21, 1996	Mr. Pedro Cruz	Glidden Paints	P.O. Box 5978, Sunny Isle	St. Croix, USVI	00823	773-3124	
July 21, 1996	Mr. Harry Bowman	Pittsburgh Paints -Island Block	P.O. Box 10	St. Thomas, USVI	00804	774-0158	
July 21, 1996	Mr. Chuck Henry	Technical Coatings	P.O. Box 7350	St. Croix, USVI	00823		
July 21, 1996	Mr. Charles Bonanno	Mike's Paint Store	P.O. Box 8870	St. Thomas, USVI	00801	775-0429	
July 21, 1996	Mr. James Rosado	Paint Locker	P.O. Box 157, Christiansted	St. Croix, USVI	00820		
July 21, 1996	Mr. Lyle Munson	Paint N' Things	P.O. Box 24037, Gallows Bay	St. Croix, USVI	00824	773-3812	
July 21, 1996	Mr. Craig Kirchoff	The Sea Chest	P.O. Box 3806, Crown Bay	St. Thomas, USVI	00802	774-0495	
July 21, 1996		Caribbean Coatings	P.O. Box 946	St. Croix, USVI	00821	773-3812	
July 21, 1996	Mr. Mike Perron	Tropical Painters Inc.	Al Cohens Plaza,	St. Thomas, USVI	00802	772-0938	
July 21, 1996	Mr. Bill Foust	Rooftops Basin Triangle	P.O. Box 3025, Estate Frieden-stahl, Christiansted	St. Croix, USVI	00820-4707	778-8550	
July 21, 1996	Mr. Stephen Schuler	SSS Roofing & Sheetmetal	P.O. Box 9692,	St. Thomas, USVI	00802		
		V.I. True Value Hardware	Time Center, Tutu,	St. Thomas, USVI		775-4279	
		VI True Value Hardware	Red Hook Plaza	St. Thomas, USVI	00801	775-2210	
		Ali Hardware	952 Williams Delight, Frederiksted	St. Croix, USVI		692-5300	

DATE	CONTACT PERSON	COMPANY NAME	ADDRESS	CITY/ STATE	ZIP	PHONE	FAX
		K-mart Corporation	Tutu Mall	St. Thomas, USVI	00802	777-3853	
		MSI Building Supply	8 Crown Bay	St. Thomas, USVI	00801	776-8800	774-3170
		East End Lumber and Hardware	395 Annas Retreat	St. Thomas. USVI	00801	775-3993	776-9034
		St.Croix Trading Company	Gallows Bay	St. Croix, USVI		773-1836	
		Steel Plus Supplies	Subbase	St. Thomas, USVI	00801	777-5855	
		U and W Industrial Supply	Bethlehem, Christiansted	St. Croix, USVI		778-0012	
		Woodworth Wholesale Corp.	119-121 Gallows Bay	St.Croix, USVI		778-8000	
		Discount Building Supplies, Inc.	26 Mars Hill, Frederiksted	St. Croix, USVI		772-4575	
	Mr. Richard Washburn	H and M systems	P.O. Box 304601	St. Thomas, USVI	00803-4601	774-6660	
	Mr. Patrick Bayard	B and B Manufacturing Inc.	P.O.Box 4937	St. Thomas, USVI	00803	775-1500	

Figure 2. Survey Form

SURVEY OF ROOF CATCHMENT SYSTEMS MATERIALS UTILIZED IN THE U.S. VIRGIN ISLANDS

Company Name: _____
Contact Person: _____
Address: _____
_____
Phone: _____
Fax: _____

Company Objective: (Circle the item(s) which most describe your company's service)

A. Cistern Construction
B. Cistern Repair
C. Roof Construction
D. Roof Repair
E. Gutter Construction
F. Gutter Repair
G. Downspout Construction
H. Downspout Repair
I. Material Supplier
J. Material Manufacturer
K. Paint Contractor
L. Blocks/Concrete Manufacturer
M. Blocks/Concrete Supplier
N. Other _____

Please complete the form to provide information regarding materials used in the construction and repair of cisterns, roofs, downspouts, and gutters. Feel free to add additional materials not listed which are related to water catchment. (Product Field of Use: Roof, Cistern, Gutter, &/or Downspout)

GUTTERING

1. Material Name: _____
   Material Type/Description: _____
   Product Field of Use: _____
   Manufacturer Name: _____
   Manufacturer Address: _____
   _____
   _____
   Manufacturer Phone No: _____
   Manufacturer Fax No: _____

2. Material Name: _____
   Material Type/Description: _____
   Product Field of Use: _____
   Manufacturer Name: _____
   Manufacturer Address: _____
   _____

Manufacturer Phone No: _____
Manufacturer Fax No: _____

3. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

GALVANIZE

4 Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

5. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

LINER

6. Material Name: _____
Material Type/Description: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

7. Material Name: _____
Material Type/Description: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____

Manufacturer Fax No: _____

ADHESIVE

8. Material Name: _____
Material Type/Description: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
manufacturer Phone No: _____
Manufacturer Fax No: _____

9. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

SEALANT

10. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

11. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

COATING

12. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____

Manufacturer Fax No: _____

13. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

PAINT

14. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

15. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

CONCRETE BLOCKS

16. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

17. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____

Manufacturer Fax No: _____

THINNERS

18. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

19. Material Name: _____
Material Type/Description: _____
Product Field of Use: _____
Manufacturer Name: _____
Manufacturer Address: _____
_____
_____
Manufacturer Phone No: _____
Manufacturer Fax No: _____

Your company name along with the services/products which you provide may be included in the Water Resources Research Institute's publication of roof catchment systems materials utilized in the U.S. Virgin Islands. Please sign the appropriate section below. Thank for your cooperation.

_____ I do not wish to have my company and services listed in a Water Resources Research Institute Publication.

_____ I wish to have my company and services listed in a Water Resources Research Institute Publication.

Figure 3. Contractors Questionnaire

Name of Company _____

We are currently conducting a survey which deals with rainwater catchment systems, which entails roofing materials, gutters and downspouts materials, cistern materials.

What type of work does your company specialize in?

(Repairs, Building homes from scratch, other.....)

What type of Roofing materials does your company prefer to use?

Sheeting (galvanize, galvalume, etc.)_____

Coatings (Top Coat, Tropicoat, etc.) _____

Other _____

and is it purchased locally or from away?

What type of Gutter/Downspout materials does your company use and where do you purchase them from?

What type of Cistern materials does your company use, and where do you purchase them from?

DEPARTMENT OF LICENSING AND CONSUMER AFFAIRS
DIVISION OF LICENSING

SPECIAL REPPORT PAGE 1

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	A & N CONSTRUCTION INC P.O. BOX 9111 ST THOMAS V.I. 00801	41701	15110	12/31	A & N CONSTRUCTION INC EST FORTUNA 4-1-13 ST THOMAS VI	809-77 -
1	ADAMS, WINSTON P.O.BOX 4417 ST THOMAS	4642	15110	12/31	ADAMS DRAFTING ANNA'S FANCY 45 ST THOMAS	809-774-3807
1	ADDISON STEEL, INC. 7351 OVERLAND RD LOCKHART FL. 32810	41416	15110	12/31	ADDISON STEEL, INC. C. E. KING AIRPORT STT. V.I.	809-77 -
1	AGURKIS,MATTHEW M. P.O. BOX 3335 STT. V.I. 00801	36405	15110	12/31	MATHEW CONCRETE & CONST CO. #8-A HONDURAS STT. V.I. 00801	
1	ALEXANDER, GEORGE P.O. BOX 10843 STT. V.I. 00801	22981	15110	12/31	ALEXANDER CONSTRUCTION SERV EST.THOMAS#2&4 9 ST. STT. V.I.	809-775-4150
1	ALLSTATE FACILITIES MANAGEMENT,INC. P.O.BOX 9589 STT.V.I.00801	85972	15110	12/31	ALLSTATE FACILITIES MGMT.,INC. 12D BJERGE GADE STT.V.I.	
1	AMBROSE, KEITH A P.O.BOX 4561 STT. V.I. 00801	13368	15110	12/31	AMBROSE CONSTRUCTION 94 UPPER CONTANT STT. V.I.	809-000-0000
1	ANGELO, VINCENT R. 6501 RED HK PLZA STE 201 ST THOMAS	40936	15110	12/31	VINCENT R ANGELO 19-2-2 EST SMITH BAY RED HK QTR ST THOMAS	809-775-3438
1	ANTHONY, STEDMAN NISKY MAIL BOX 162 STT V.I. 00802	86563	15110	12/31	BALYCE CONSTRUCTION EST THOMAS # 4A STT V .I.	809-776-2213
1	ANTILLEAN CONTRACTOR & DEV. INC. P O BOX 4906 STT V.I 00801	37523	15110	12/31	ANTILLEAN CONTRCT.& DEV.,INC. 6-1 EST.THOMAS STT V.I	
1	APEX CONSTRUCTION CO INC P.O. BOX 5048 STT. V.I.00801	1993	15110	12/31	APEX CONSTRUCTION CO INC 11-31 FRENCHMAN BAY STT. V.I.	809-000-0000
1	ARHOUR CONSTRUCTION INC. P.O. BOX 5080 STT.V.I. 00801	34439	15110	12/31	ARMOUR CONSTRUCTION INC ROYAL DANE MALL STT.V.I.	809-774-5203
1	ARMSTRONG III, EDWARD J. P.O. BOX 9190 STT. V.I. 00801	60969	15110	12/31	EDWARD J. ARMSTRONG III AGNES FANCY 3B-1 STT. V.I.	809-774-3112
3	B.C CONSTRUCTION GROUP,INC. P.O. BOX 68 STJ V.I 00831	83078	15110	12/31	B.C CONSTRUCTION GROUP 18-23 EST.ENIGHED STJ.V.I.	809-776-6540
1	BAILEY IV, ALFRED M. P.O. BOX 1313 STT. V.I. 00801	33815	15110	12/31	BLAZING BUILDERS 25 DRONNINGENS GADE STT. V.I.	809-776-0665
1	BALBO CORPORATION P.O. BOX 9435 STT V.I 00801	41774	15110	12/31	BALBO CORPORATION 12BA-2 FRYDENHOJ STT V.I	
1	BALFOUR BEATTY,INC. 10 EST. CHARLOTTE AMALIE STT V.I 00802	82088	15110	12/31	BALFOUR BEATTY,INC. RACE TRACK & TUTU PARK STT.V.I.	809-777-1600

Figure 4. List of Licensed Contractors

LICENSEE IS	NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	BALY, VICTOR E. P.O. BOX 8702 STT V.I 00801	60119	15110	12/31	VICTOR E. BALY CONSTRUCTION CO 260-35 ANNAS RETREAT STT V.I	
1	BALY, VICTOR E. P.O. BOX 8702 STT. V.I. 00801	60171	15110	12/31	VICTOR E. BALY ANNAS RETREAT 260-35 STT. V.I.	809-775-7401
3	BARLAS, ANDREW P.O. BOX 115 CRUZ BAY STJ V.I 00831	60163	15119	12/31	ANDREW BARLAS CRUZ BAY ST. JOHN STJ	809-77 -
1	BASHARA, CORPORATION 251 CHILE STREET 2ND FL HATO REY PR	42271	15110	12/31	BASHARA CORPORATION 25-A MAIN ST. STT V.I	
1	BASTIEN, GEORGE W. DOMINI GADE # 8B ST.T V.I. 00801	29831	15110	12/31	GEORGE W. BASTIEN DOMINI GADE #8B ST. THOMAS	809-771-6688
3	BERTOLINO DESIGN & CONST. LTD 4 E GLUCKSBERG STJ V.I 00830	38153	15110	12/31	BERTOLINO DESIGN & CONST. LTD 4 E GLUCKSBERG STJ V.I	
3	BERTRAND, LAWRENCE A P.O. BOX 8316 STJ V.I 00831	42317	15110	12/31	LAWRENCE A. BERTRAND ROCK RIDGE RD, EST. CHOCOLATE STJ V.I	809-776-1550
1	BETTERROADS ASPHALT CORP. P.O. BOX 1946 STT V.I 00803	22297	15110	12/31	BETTERROADS ASPHALT CORP. #70 LINDBERG BAY STT. V.I.	809-774-1098
1	BLAK CORP PO BOX 182 STT V.I.00801	61868	15110	12/31	BLAK CORP HAVENSIGHT BLDG III STT V.I	809-776-5030
1	BLYDEN, JOSEPH E. P.O. BOX 11676 STT V.I 00802	2913	15110	12/31	JOSEPH E. BLYDEN EST.NADIR 5 STT. V.I.	809-775-6852
1	BOSCHULTE, ANTHONY E. P.O. BOX 3767 STT V.I 00801	36571	15110	12/31	ANTHONY E. BOSCHULTE SOLBERG #100-1 STT V.I	
1	BOSCHULTE, JAMES	61631	15110	12/31	JAMES T. BOSCHULTE	

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	BRYAN, TEDDY S. P.O. BOX 3351 STT V.I 00801	19892	15110	12/31	TEDDY S. BRYAN 5-1 EST. LERKENLUND STT V.I	809-774-4329
1	BRYAN, MARC 7925 EST.DOROTHEA 3A STT.V.I.00802	88563	15110	12/31	BRYANS DRAFTING & CONTR.SERV. 7925 EST.DOROTHEA 3A STT.V.I.	809-777-9853
1	BUILDER'S EMPORIUM, INC. P.O.BOX 10391 STT V.I.00801	30375	15110	12/31	BUILDERS EMPORIUM, INC. WEST INDIAN CO.DOCK STT V.I.	809-776-7400
1	BUILDERS EMPORIUM, INC. P O BOX 10391 STT V.I 00801	22975	15110	12/31	BUILDERS EMPORIUM, INC. 52E-1 & 52E-A STT V.I	809-776-7400
1	BURROUGHS, ADOLPHUS P.O. BOX 9400 ST THOMAS VI 00801	60221	15110	12/31	HAMMAR COCK BUILDERS ESTATE PEARL 37-17	809-776-9079
1	BUSHFIELD, CHARLES W. 2E-42 CARET BAY STT V.I.00802	87602	15110	12/31	CHARLES W BUSHFIELD #13 EST.THOMAS STT V.I.	809-774-0579
1	C S B I, INC. P.O.BOX 5730 ST THOMAS VI 00803	88718	15110	01/31	C S B I CROWN BAY #15 ST THOMAS VI	
1	C-E INTERNATIONAL INC P.O. BOX 690 ST THOMAS VI 00804	86918	15110	01/31	C-E INTERNATIONAL, INC. 37A DRONNINGENS GADE ST THOMAS VI	809-776-4060
	C. T. CONSTRUCTION P O BOX 5097 VET DR STATION ST THOMAS VI	61538	15110	01/31	C. T. CONSTRUCTION SMITH BAY #66 STT. V.I.	809-775-7695
	CALLWOOD, COURTNEY P.O. BOX 4624 ST. THOMAS	6388	15110	01/31	COURTNEY CALLWOOD SOLBERG #79-43 ST. THOMAS	809-000-0000
	CALLWOOD, WAYNE D P.O. BOX 1126 ST THOMAS VI 00803	12201	15110	01/31	WAYNE D CALLWOOD & ASSOCIATES 391-198 HIDDEN VALLEY ST THOMAS VI	809-776-1520
	CAMPBELL, JOHN P O BOX 68 ST JOHN VI 00831	82144	15110	01/31	JOHN CAMPBELL 18-22 ENIGHED CRUZ BAY ST JOHN VI	809-776-6540

DEPARTMENT OF LICENSING AND CONSUMER AFFAIRS
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IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
2	CENTEX ROONEY CONSTRUCTION CO, INC70010 7 KING ST C'STED ST THOMAS VI 00820		15110	01/31	CENTEX ROONEY CONST. CO. INC. CRUZ BAY ST JOHN VI	809-778-7885
1	CENTEX/ROONEY CONSTRUCTION CO INC.61745 TRAM 11-HAVENSIGHT ST THOMAS VI 00802		15110	01/31	CENTEX-ROONEY CONSTRUCTION CO TRAM 11-HAVENSIGHT ST THOMAS VI	809-778-7885
3	CERRUTI, DAVID P.O. BOX 98 CRUZ BAY BAY STJ 00830	11292	15110	01/31	DAVID CERRUTI 10-21 CAROLINA CORAL BAY STJ.V.I.	
1	CHARLES, ELMORE P.O. BOX 3203 STT, VI 00801	11898	15110	01/31	CIRCLE CONSTRUCTION EST. FRYDENHOY #14-5 -5 STT, VI	809-774-7277
1	CHARLEY'S TRUCKING INC. P.O.BOX 2534 STT, VI 00801	38391	15110	01/31	CHARLEY'S TRUCKING INC. SUB BASE 21, STT VI	809-774-4539
1	CHICK, BRYAN G. P.O.BOX 867 STT V.I. 00804	80433	15110	01/31	BRYAN G. CHICK RAPHUNE #5 STT	809-779-6641
1	CHINNERY, JOSEPH CONTANT #31A ST THOMAS VI 00802	85315	15110	01/31	CHINNERY'S CONSTRUCTION,CO. CONTANT #31A ST THOMAS VI	809-774-7436
1	COASTAL GEN. CONST/ CAL-COASTAL CONST JV8649 P.O.BOX 2837 STT.V.I.00803		15110	01/31	COASTAL GEN. CONST/CAL-COALTAL #149 CROWN BAY STT.V.I.	809-777-5808
	COASTAL GENERAL CONSTRUCTION SVC INC38762 P.O. BOX 2837 STT V.I 00801		15110	01/31	COASTAL GENERAL CONST. SVC INC 119 CROWN BAY HILL STT V.I	809-774-4620
1	COFFELT, GORDON L P.O. BOX 4130 STT V.I 00801	15225	15110	01/31	GORDON L COFFELT 210-3A ALTONA STT V.I	809-774-7777
2	COMPASS CONSTRUCTION CO., INC. 80091 P.O. BOX 10912 ST THOMAS VI 00801		15110	01/31	COMPASS CONSTRUCTION CO., INC. EST. BARRETT #13 STT. V.I.	809-774-8009
1	CONBOY & MANNION CONTACTER	86869	15110	01/31	CONBOY & MANNION CONTRACTING, ST THOMAS VI	518-583-4038

LICENSEE IS	NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	DANIEL'S CONSTRUCTION CO, INC P.O. BOX 9496 STT V.I 00801	37080	15110	01/31	DANIEL'S CONSTRUCTION CO INC. #5 EST. RAPHUNE STT V.I	809-775-4979
1	DAVE STABBERT, MASTER BUILDERS, 202 RED HOOK PLAZA STT V.I. 00802	INC66086	15110	01/31	DAVE STABBERT, MASTER BUILDERS 202 RED HOOK PLAZA STT V.I.	809-774-8098
1	DELTA CONTRACTORS, CORP. NISKY MAIL BOX 656 ST THOMAS VI 00802	83043	15110	01/31	DELTA CONTRACTORS, CORP. LINDBERG BAY 70 ST THOMAS VI	809-777-8201
3	DEMAR, DENNIS J. P.O.BOX 272 STJ.V.I.00831	85552	15110	01/31	DENNIS J. DEMAR #6C-71 CRUZ BAY STJ.V.I.	809-776-6094
1	DEMETREE, WILLIAM J. P.O. BOX 3157 STT VI 00801	62826	15110	01/31	WILLIAM J. DEMETREE 129 SUB BASE STT VI	809-774-4575
1	DESIRE, INC. P.O. BOX 4798 STT. V.I. 00801	61727	15110	01/31	DESIRE, INC. SUBBASE #105 STT. V.I.	809-779-2577
1	DEVCON INTL. CORPORATION P.O.BOX 7368 STT V.I 00801	35898	15110	01/31	DEVCON INTL. CORPORATION #11 EST.MARDIENDAHL STT V.I	809-775-0100
1	DIGIACOMO CONSTRUCTION CO INC NISKY MAIL BOX 296 ST THOMAS VI 00802	80232	15110	01/31	DIGIACOMO CONSTRUCTION CO INC SUITE 211 NISKY CENTER ST THOMAS VI	809-774-9448
	DIVERSIFIED DESIGN & CONST OF THE VI INC P.O.BOX 11103 STT.V.I.00801	8107215110		01/31	DIVERSIFIED DESIGN &CONST.V.I. SUBBASE #32 STT.V.I.	809-775-7502
1	DRISCOLL, RICHARD P.O. BOX 6528 ST THOMAS VI 00804	22258	15110	01/31	RICHARD DRISCOLL 10-14 EST. PETERBORG ST THOMAS VI	809-774-3314
	DY[illegible] CONSTRUCTION CORP FLUTE FLAGSHIP YACHT HAVEN STT V.I 00802	63201	15110	01/31	DYNAMIC CONSTRUCTION CORP. COMPASS POINT MARINA STT.V.I.	809-775-0331
	ECKSTEIN, MATTHIAS P.H.	62761	15110	02/28	IRIE ASSOCIATES	809-779-4454

DEPARTMENT OF LICENSING AND CONSUMER AFFAIRS
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IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	FLEMING, DAVID 6691 TABOR & HARMONY STT V.I 00802	12323	15110	02/28	CARIBBEAN CARPENTERS 2A TABOR & HARMONY ST THOMAS VI	809-775-0186
1	FORTNER, WILLIAM T. 57-V-6 SMITH BAY STT	60691	15110	02/28	AMALIA BUILDING CONTRACTORS #57-V-6 SMITH BAY STT	809-775-1272
1	FRANCIS, HALVOR D. P.O. BOX 4020 STT V.I 00801	7205	15110	02/28	HALVOR FRANCIS 9A KONGENS GADE STT V.I	809-77 -
1	FRANCIS, J HENRY P.O. BOX 7272 STT V.I 00801	15621	15110	02/28	J HENRY FRANCIS & ASSOCITES EST. THOMAS 6-9 ST STT V.I	809-774-3914
1	FRANCIS, LEO H. P.O.BOX 10002 STT.V.I.00801	33125	15110	02/28	FRANCIS & ASSOCIATES BANCO POPULAR BLDG. STE,STT.V.I.	809-774-4571
1	FRASER, HERCULES #76B DONOE STT V.I 00801	20721	15110	02/28	H F CONSTRUCTION 178-21 ALTONA STT V.I	
3	FREDSELL, H. PAUL SPRING GARDEN CORAL BAY,STJ.V.I.00830	85919	15110	02/28	H. PAUL FREDSELL #4C ENIGHED STJ.V.I.	809-776-6368
1	FREEMAN, DAVID WALTER P.O. BOX 3216 STT V.I 00801	5778	15110	02/28	DAVID WALTER FREEMAN EST. THOMAS 14-11 STT V.I	[redacted]
1	FREEMAN, SIDNEY E. P.O.BOX 11343 STT V.I.00801	21092	15110	02/28	SYDNEY E. FREEMAN ANNAS RETREAT 112-1 12 STT V.I	809-775-2839
3	FRETT, JERRY P.O. BOX 11584 STT V.I.00801	37559	15110	02/28	JERRY FRETT #3A ENIGHED CRUZ BAY STJ.	809-776-7661
1	G. F. CONSTRUCTION CO., INC. P.O. BOX 1011 STT. V.I. 00801	60099	15110	02/28	G.F. CONSTRUCTION CO., INC. EST FRYDENHOJ 1-7 ST THOMAS VI	809-775-6131
1	GENESIS BUILDING, CORP. P.O.BOX 305249 STT.V.I.00802	86408	15110	02/28	GENESIS BUILDING, CORP. KONGENS GADE #1828 STT.V.I.	809-777-9243

LS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
3	GRAND DEVELOPMENT, INC. P.O.BOX 8322 CRUZ BAY ST JOHN VI 00831	83351	15110	02/28	GRAND DEVELOPMENT,INC. PARCEL #220 A EST CHOCOLATE HOLE ST	809-776-7228
1	GREAVES, FLEAVIOEUS P.O. BOX 4798 ST THOMAS VI 00803	40365	15110	02/28	CHEYNNE'S TRUCKING SUBBASE 105 ST THOMAS VI	- -
1	GREBLICK, JAY P.O. BOX 7128 STT V.I. 00801	22759	15110	02/28	JAY GREBLICK CO 10-3-2 PETERBORG ST THOMAS VI	809-775-6090
1	GUMBS, LINCOLN O P.O. BOX 4574, STT. V.I. 00801	2907	15110	02/28	LINCOLN O GUMBS PRINDSENDS GADE 62 STT.V.I.	809-776-4656
1	GUMBS, ALFRED W #-1 FABOR & HARMONY STT.V.I. 00802	19021	15110	02/28	ALFRED W GUMBS CONST CO 392 ANNA'S RETREAT STT V.I	809-775-0531
1	GUMBS, CLIVE MC KENNA P.O. BOX 303599 ST THOMAS 00805	80817	15110	02/28	MC.KENNA CONSTRUCTION COMPANY BLDG 16B SUBBASE ST THOMAS VI	809-777-4824
1	H & M SYSTEMS INC P.O. BOX 4601 STT V.I 00801	18980	15110	03/31	H & M SYSTEMS INC 13F LINDBERG BAY STT.V.I.	809-774-6660
1	H. C. B.CONSTRUCTION MGMT. INC. WATER ISLAND STT. V.I. 00802	41541	15110	03/31	H. C. B.CONSTRUCTION MGMT INC. 30 DRONN GADE STT. V.I.	809-774-5913
1	HANLEY SR., WINGROVE P.O. BOX 10356 STT V.I. 00801	86193	15110	03/31	WINGROVE HANLEY SR. WINTBERG 219 STT V.I.	809-775-5868
1	HENDERINGTON, CLINTON P.O.BOX 305024 STT.V.I.00803	91052	15110	03/31	ONE STOP HOME OWNING #25 SUBBASE STT.V.I.	809-775-2149
1	HENNIS, JOSEPH P.O. BOX 4836 STT.V.I. 00801	21087	15110	03/31	JOSEPH HENNIS ALTONA # 102 STT.V.I.	
1	HESSLER PETER 200 GREAT POND DR. WINDSOR, CT 06095	86919	15110	03/31	PETER G. HESSLER #37A DRONN. GADE STT VI	809-776-4060
1	HILL, MICHAEL P.O. BOX 693 ST THOMAS VI 00801	60177	15110	03/31	M.H. CON DONOE BLDG A #10 ST THOMAS VI	809-774-0001
1	HODGE SR, LAWRENCE P.O. BOX 4511 STT V.I 00801	7835	15110	03/31	LAWRENCE HODGE SR 63 UPPER JOHN DUNKOE STT V.I	809-774-9351
1	HODGE, BENNETT [illegible] STT V.I 00831	29199	15110	03/31	BENNETT CONSTRUCTION CO [illegible] 200 3G STT V.I	809-774-7600

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	HOMEWOOD CORP GPO BOX 3853 SAN JUAN PR 00936	22366	15110	03/31	HOMEWOOD CORP GUARDIAN INSURANCE BLDG STT V.I	809-759-3737
3	HYLTON, JOSEPH P.O. BOX 1474 STT V.I 00801	87054	15110	03/31	JOSEPH HYLTON 4A CRUZ BAY STJ V.I	
1	IMPERIAL VENTURES CORP. P.O. BOX 4123 STT. V.I. 00801	10391	15110	03/31	IMPERIAL VENTURES CORP. EST CONTANT 4D STT. V.I.	809-771-3932
1	IRIE ASSOCIATES, INC. P.O. BOX 1196 ST JOHN 00831-1196	88662	15110	03/31	IRIE ASSOCIATES, INC. 21-17A SUBBASE ST THOMAS VI	809-779-4730
[illegible]	ISLAND CONSTR.INC./ CONTR.SERV.VENT.INC.3305215110 P.O.BOX 306917 STA ST THOMAS 00803			03/31	ISLAND CONSTR./CONTR.SERV.VENT 15B NORRE GADE ST THOMAS VI	809-771-7996
1	ISLAND CONSTRUCT INC /CONTRACTING SVC INC8797515110 P.O.BOX 306197 ST THOMAS VI 00803			03/31	ISLAND CONSTRUCTORS,INC. #15-B NORRE GADE ST THOMAS VI	809-774-7996
1	ISLAND CONSTRUCTORS, INC. P.O.BOX 306197 THOMAS VI 00803	15211	15110	03/31	ISLAND CONSTRUCTORS INC 11A EST. MARIENDAHL, STT.V.I.	809-775-1575
1	ISLAND DEVELOP & ASSOC INC P.O. BOX 4906 STT V.I 00801	22785	15110	03/31	ISLAND DEVELOPERS & ASSOC INC RAADETS GADE 33 STT V.I	809-776-2649
1	ISLAND ROADS CORPORATION 6501 RED HK PLZA SUTE 201 ST THOMAS	6246[illegible]	15110	03/[illegible]	ISLAND ROADS CORORATION [illegible] EST BOV FRENCHMANS BAY QTR	809-775-2523
3	J & G CONSTRUCTION, INC. P.O. BOX 455 CRUZ BAY STJ V.I 00831	85795	15110	04/30	J & G CONSTRUCTION,INC. #18-38 EST.ENIGHED STJ.V.I.	809-776-6518
1	J.L.R.CONST.& MAINT. R.P.P.CONTRACTOR INC8507815110 #15A LINDBERG BAY STT V.I 00802			04/30	J.L.R.CONST.& MAINT.R.P.P.INC #15A LINDBERG BAY STT V.I	809-779-2979
1	JAMES, GEORGE P.O. BOX 3203 STT.V.I. 00801	354	15110	04/30	GEORGE JAMES CONSTRUCTION EST. FRUDENHOJ 41 STT.V.I.	809-775-6313
1	JIM NORTON, INC. 6501 RED HOOK PLAZA STE 201 STT V.I	86362	15110	04/30	JIM NORTON, INC. 6501 RED HOOK PLAZA STE 201 STT V.I	
3	JOHANNSON, JOHN P.O. BOX 239 CRUZ BAY STJ V.I 00830	14176	15110	04/30	JOHN JOHANSSON CONTRACTORS 3 ENIGHED CRUZ BAY STJ V.I	809-776-6516
3	JOHNSON, ROBERT K. P.O. BOX 616 CRUZ BAY ST JOHN VI 00830	90043	15110	04/30	JOHNSON CONTRUCTION & REMODEL 13-30 ENIGHED ST JOHN VI	809-775-0068
1	JOHNSTON, THOMAS M. 15 TRACY WAY COWPET BAY STT V.I. 00801	62862	15110	04/30	S & T CONTRUCTION 10 SUB BASE ST THOMAS V I 00801	809-779-2752
1	JOSEPH, HILROY P.O. BOX 9551 ST.THOMAS [illegible]	37599	15110	04/30	[illegible] CONSTRUCTION CO. [illegible]	809-775-1527

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LICENSEE IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	JOWERS JR, JAMES P.O. BOX 304990 STT V.I 00803	11503	15110	01/30	JAMES JOWERS JR. FORTUNA BAY 1V4 STT V.I	
1	KERN CONSTRUCTION CO INC P.O. BOX 11355 STT-VI-00801	34043	15110	01/30	KERN CONSTRUCTION, CO., INC. CURACAO GADE ST THOMAS VI 00801	809-776-4600
1	KIEWIT CONSTRUCTION COMPANY 352 TURNPIKE ROAD SOUTHBOROUGH,MA	31069	15110	01/30	KIEWIT CONSTRUCTION COMPANY #15 CROWN BAY SAND FILL ST THOMAS VI	508-485-1761
1	KING, JULIO U.B. P.O. BOX 3483 STT V.I 00801	38065	15110	04/30	JULIO U.B. KING EST.ANNAS RETREAT 20B STT V.I.	809-775-9493
1	KLINE ELECTRICAL CO INC P.O. BOX 2872 STT. V.I. 00801	9712	15110	01/30	KLINE ELECTRICAL CO INC 23C SUBBASE STT. V.I.	809-776-3100
1	L.O.G. ENTERPRISES, INC. P.O. BOX 304574 STT.V.I.00803	87878	15110	04/30	L.O.G. ENTERPRISES,INC. #26A CONTANT STT.V.I.00802	809-774-2699
1	L.T.CONSTRUCTION INC. FLAGSHIP ACCHOR WAY STT.V.I.00802	85971	15110	01/30	CEMENTATION 102B HAVENSIGHT EXECUTIVETOWER,STT.	809-771-0841
3	LABRENZ, JAMES A. P.O.BOX 66 STJ V.I 00830	22750	15110	04/30	JAMES A LABRENZ 15-A 7-27 CRUZ BAY STJ V.I.	809-776-6598
3	LAMBERT, ERIC E. P.O.BOX 377 ST.J. V.I. 00830	22142	15110	01/30	BLUE HORIZONS CONSTRUCTION 18-38 ENIGHED CRUZ BAY STJ V.I	
3	LAWRENCE, VERNON W. P.O.BOX 202 STJ.V.I.00830	23352	15110	04/30	VERNON W. LAWRENCE EST. BETHANY 29 STJ V.I.	
1	LAWSON, THOMAS P.O. BOX 503203 ST THOMAS VI 00805	30755	15110	01/30	ROCK ISLAND COMPANY 23-9 EST. MANDAHL ST THOMAS VI	809-775-1999
1	LEBLANCE, ERIC P.O. BOX 2534 STT V.I 00801	35937	15110	04/30	ERIC'S CONSTRUCTION CLEARVIEW A-106 CONTANT STT V.I	809-774-4539
1	LETTSOME, SAMUEL A. P O BOX 4663 STT.V.I. 00801	36612	15110	04/30	SAMUEL A. LETTSOME 53-28 FRYDENHOJ STT.V.I.	809-775-0423
1	LEWIS, ALBERT P.O. BOX 752 STT V.I 00801	24000	15110	04/30	ALBERT LEWIS JR CONST. CO BONNE ESPERANCE 9C STT V.I	809-776-2054
1	LLOYD ELKIN P.O. BOX 7996 STT V.I.	20001	15110	04/30	ELKIN LLOYD BOVONI 30 STT V.I.	809-775-4561
3	LONG, BRUCE P.O. BOX 382 STJ V.I.00830	90127	15110	04/30	CARIBBEAN POST AND BEAMS 3GA CRUZ BAY STJ V.I.	809-776-6632
1	LUBIN ROBERTS CONST.CO. P.O BOX 11762 STT V.I 00801	17108	15110	01/30	LUBIN ROBERTS CONSTRUCTION [illegible] GADE STT V.I	809-771-5670

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	LUSK, RONALD L. P.O. BOX 1517 STT V.I 00803	95173	15110	01/39	LUSK ENTERPRISES #12 DRONN GADE STT V.I	
3	MAC ALLISTER, RICK BOX 480 CRUZ BAY STJ. V.I. 00830	40578	15110	05/31	RICK MAC ALLISTER CONST. CHOCOLATE HOLE STJ. V.I.	809-776-6799
1	MAITLAND, JOHN E. 6501 REDHK PLZA STE 63 ST THOMAS 00802	17357	15110	05/31	MAITLAND BROS., CO. SUITE 63 REDHK PLZA ST THOMAS VI	809-775-1502
3	MAIZE JOHN P.O.BOX 547 ST. JOHN,V.I.00830	20280	15110	05/31	J MAIZE DESIGNER/BUILDER CRUZ BAY, ST. JOHN V.I.00830	
1	MAJESTIC CONSTRUCTION P.O. BOX 5257 STT V.I. 00801	201	15110	05/31	MAJESTIC CONSTRUCTION INC 92 NISKY ST. THOMAS VI	
3	MAJESTIC CONSTRUCTION INC P.O. BOX 5257 ST THOMAS VI 00801	42180	15110	05/31	MAJESTIC CONSTRUCTION INC 78 SUSSANABURG ST JOHN V.I.	809-774-5793
1	MALONE, WALTER P.O. BOX 273 ST THOMAS VI 00801	17819	15110	05/31	MALONE CONSTRUCTION CO. EST SMITH BAY 57-11 ST THOMAS VI	
1	MARSHALL, BRUCE G. P.O. BOX 7280 ST THOMAS VI 00801	61552	15110	05/31	BRUCE G. MARSHALL EST NAZARETH 8-5 ST THOMAS	809-775-5930
1	MC CLEAN, LEROY P.O. BOX 7819 ST THOMAS VI 00801	5610	15110	05/31	MC CLEAN & ASSOCIATES 53C DRONNINGENS GADE ST THOMAS VI	
1	MC'CLEVERTY JR, JOHN P.O.BOX 726 STT V.I.00801	36654	15110	05/31	MACK CONSTRUCTION ENTERPRISES 117 CONTANT STT V.I.	809-776-0871
1	MCALLISTER AND ASSOCIATES INC O BOX 6675 ST THOMAS 00804	80837	15110	05/31	MCALLISTER AND ASSOCIATES #6 EST RAPHUNE ST THOMAS VI	809-776-2731
1	MCLEAN CONSTRUCTION, CO.INC. 28 CHARRON AVE,STE15 NASHUA,NH 03063	87657	15110	05/31	MCLEAN CONSTRUCTION CO,INC. #18 SMITHBAY,REDHOOK PLAZA,STT.V.I.	603-883-2060
1	MERCHANT, CARLTON P.O.BOX 2014 ST THOMAS VI 00803	83347	15110	05/31	MERCHIE BUILDERS #21 DRONN.GADE ST THOMAS VI	809-775-0680
1	MIMIKOS, JAMES 40 BOLONGO ROAD ST. THOMAS, VI 00802	42437	15110	05/31	JAMES, MIMIKOS 40 BOLONGO ROAD	809-776-9127
1	MISENER MARINE CONSTRUCTION INC. 5410 W. TYSON AVE, TAMPA FL 33611	60517	15110	05/31	MISENER MARINE CONST. INC. WEST INDIAN CO DOCK STT V.I	813-839-8441
1	MOLDENHAUER, RON P.O. BOX 9997 ST THOMAS VI 00801	41853	15110	05/31	RON MOLDENHAUER #6 LONG BAY ST THOMAS VI	809-776-5300
1	MONSANTO CONSTRUCTION INC P.O.BOX 273 ST THOMAS VI 00801	83130	15110	05/31	MONSANTO CONSTRUCTION INC. [illegible] #36 ST THOMAS VI	809-774-0070

LS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	MORGAN CONSTRUCTION INC. P.O. BOX 11981 STT VI 00801	38656	15110	05/31	MORGAN CONSTRUCTION INC. #25 SUB BASE STT VI	809-775-0725
1	MORRISON KNUDSEN CORPORATION P.O. BOX 73, BOISE, ID 83729	70067	15110	05/31	MORRISON KNUDSEN CORPORATION 21-25 KONGENS GADE STT VI	208-368-5000
1	MORTON, LOFTON P.O BOX 3933 ST. THOMAS VI 00803	60487	15110	05/31	LOFTON CONSTRUCTION HOSPITAL GROUND # 37 STT	809-771-3183
1	MSI BUILDING SUPPLIES INC P O BOX 1800 ST. THOMAS VI 00803	5127	15110	05/31	MODULAR SYSTEMS 8 CROWN BAY ST. THOMAS VI	- -
1	NADAL, FRANCISO P.O. BOX 6026 STT V.I. 00803	62931	15110	05/31	ELEPHANT CONSULTANT CONST.CON. #10 SUBBASE STT V.I. 00801	809-776-5511
1	NATTA, JOHN-JAMES P.O. BOX 6122 STT V.I 00801	41707	15110	05/31	J M CARPENTRY SERVICES HOSPITAL GROUND 337 STT V.I	809-77 -
1	NERSINGER, JACK 168 CROWN BAY #30 ST.THOMAS V.I.00802	61811	15110	05/31	JACK NERSINGER 81-12 CONTANT STT V.I.	809-776-4539
1	O'NEAL, EDUARDO P.O. BOX 10358 STT. V.I. 00801	60109	15110	05/31	EDUARDO O'NEAL EST. CONTANT #45 STT. V.I.	809-776-2951
1	OBRIEN PLUMBING CO INC P.O. BOX 502037 STT V.I 00805-2037	16959	15110	05/31	OBRIEN CONSTRUCTION CO 1-D CONTANT ST. THOMAS VI	- -
1	OVERSEAS STEEL FABRICATORS, INC. 6501 RED HOOK PLAZA ST THOMAS VI 00802-	10698	15110	05/31	OVERSEAS STEEL FABRICATORS,INC 149 CROWN BAY ST THOMAS VI	809-77 -
1	PALM GARDENS DEVELOPMENT CORP. 168 CROWN BAY STE 310,STT.V.I.00802	85328	15110	06/30	PALM GARDENS DEVELOPMENT INC. PARCEL 900B EST. WINTBERG,STT.V.I.	809-775-1697
1	PARKER CONSTRUCTION INC. 4002 RAPHUNE HILL RD B-3 STT V.I 008004	88166	15110	06/30	PARKER CONSTRUCTION, INC. #6 RAPHUNE HILL STT V.I	809-775-3089
1	PAUL, VANTY 7789 EST. ST.PETER STT V.I 00802	42145	15110	06/30	VANTY PAUL CONSTRUCTION 3H6 ESTATE ST. PETER STT V.I.	809-774-4827
1	PETTY, JOHN DAVID 6501 RED HOOK PL.STE #201 STT VI 00802	91497	15110	06/30	JOHN DAVID PETTY 6501 RED HOOK PL STE #201 STT VI	809-777-4104
1	PILIER, FRANCISO J. P.O. BOX 306853 STT V.I.00803	68048	15110	06/30	FRANCISO J. PILIER BACK STREET 4 STT VI	809-776-5003
1	PINNEY, CALVIN EST. THOMAS 8H APT 2 STT.V.I. 00801	24156	15110	06/30	PINNEY CONSTRUCTION EST. THOMAS 8H APT 2 STT.V.I.	
1	PINNEY, VANCE EVERSON P.O. BOX 7210 STT V.I. 00801	65095	15110	06/30	V.E. PINNEY BUILDERS EST CONTANT 75 STT V.I.	809-775-9075

LS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	PROCTOR, HUBERT P.O. BOX 1312 STT V.I 00801	21397	15110	06/30	HUBERT PROCTOR 173A-31 ANNA'S RETRE STT V.I	809-775-1352
1	QUADE, PAUL D. P[.O. BOX 11643 STT. V.I. 00801	61574	15110	06/30	PAUL D. QUADE WATER ISLAND #64 STT. V.I.	809-774-9289
1	R G WALKER CONSTRUCTION INC P.O. BOX 3383 STT V.I 00803	60631	15110	06/30	R G WALKER CONSTRUCTION INC SPINAKER EST. BAKKERO 1-57 STT VI	809-774-9551
1	RABSATT, ECEDRO P.O. BOX 1212 STT V.I 00804	85057	15110	06/30	ECEDRO RABSATT #100-2 SOLBERG STT V.I	809-775-5170
1	RAFFA, JOSEPH W. 1336 NE 5 AVE. FT LAUDERDALE, FL 33334	86038	15110	06/30	RAIDER CONSTRUCTION #1 SUBBASE STT V.I.	
1	RELIABLE CONSTRUCTION INC. P.O. BOX 1863 STT V.I 00801	13572	15110	06/30	RELIABLE CONSTRUCTION INC. 58 SCOTT FREE EST. STT V.I	809-774-9407
1	RETAIL CONSTRUCTION SERVICES,INC. 7582 CURRELL BLVD. STE.#114 ST.PAUL,MN	85311	15110	06/30	RETAIL CONSTRUCTION SERV.IN #21-25 KONGENS GADE STT.V.I.	612-738-7971
1	REY, VICTOR P. O. BOX 3798 STT. V.I. 00803	1815	15110	06/30	REY CONSTRUCTION EST-FRYDENHOJ STT. V.I.	809-775-0854
1	REY, THOMAS P. O. BOX 8576 STT.V.I. 00801	17565	15110	06/30	THOMAS REY FRYDENHOJ 1-25 STT. V.I.	
1	RICE, JAMES C.C. NISKY CENTER #71 ST THOMAS VI 00802	91529	15110	06/30	JAMES C.C. RICE 1A-9-28 DOROTHEA ST THOMAS VI	809-777-9388
1	RICHARDSON & SONS CONSTR. CORP. #88 HONDURAS ST THOMAS VI 00802	36268	15110	06/30	RICHARDSON & SONS CONSTR. CORP EST CONTANT #53 ST THOMAS VI	809-774-4293
1	RICHARDSON, CALVIN 22-5 EST MANDAHL STT V.I 00802	19118	15110	06/30	QUALITY CONSTRUCTION 22-5 EST MANDAHL STT V.I	809-775-3595
1	RIVERA, JORGE P.O. BOX 307166 STT V.I 00802	83316	15110	06/30	JORGE RIVERA #56 FRYDENHOJ STT V.I	
1	RNH CONSTRUCTION, INC. 3A-23 MOUNTAIN TOP STT VI 00802	63042	15110	06/30	RNH CONSTRUCTION, INC. CROWN BAY 168 STT VI	809-776-0022
1	RODRIQUEZ, JOSE L. 15A LINDBERG BAY STT V.I 00802	80735	15110	06/30	J.L.R. CONSTRUCTION & MAINT 15A LINDBERG BAY STT V.I	
1	ROGERS SR, MILLENER F P.O. BOX 10183 STT V.I 00801	24466	15110	06/30	OWNERN'S PRIDE CONSTRUCTION 1-18 FRYDENHOJ STT V.I	
1	ROPES & GRAY, INC. P.O.BOX 306552 STT.V.I.00803	87858	15110	06/30	ROPES & GRAY #1 SUBBASE STT.V.I.	809-775-3932

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IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	ROSENBERG, CHRISTIAN F. P.O. BOX 8579 STT V.I 00801	86101	15110	06/30	CHRISTIAN F. ROSENBERG #18 SMITH BAY STJ V.I	809-775-7007
1	ROTATING EQUIPMENT, CORP. P.O.BOX 755 K\HILL STX.V.I.00851	87577	15110	06/30	ROTATING EQUIPMENT CORP. 15-3 EST.FRYDENDAL STT.V.I.	809-778-5559
1	RR CARIBBEAN. INC. P.O. BOX 307078 STT V.I 0803	87691	15110	06/30	RR CARIBBEAN, INC. 100 BLACKBEARDS HILL STT V.I.	809-777-9641
1	RUAN JR., AUBREY L. P.O. BOX 5102 C'STED ST. CROIX	61234	15110	06/30	AUBREY RUAN JR. ANNAS RETREAT E-11 STT VI	809-77 -
1	RUPERT FOSTER CONST.CO.INC. P.O. BOX 4092 STT.V.I. 00801	22773	15110	06/30	FOSTER PLAZA 56 SCOTT FREE STT. V.I.	809-771-3991
1	RUPERT GEORGE CONST. INC. P. O. BOX 2441-STT V.I.00801	2218	15110	06/30	RUPERT GEORGE CONSTRUCTION,INC EST. CONTANT 6-13 STT.V.I.	809-774-5312
1	S & M INC. P.O.BOX 3661, STT.V.I.00801	37603	15110	07/31	S & M INC. COKI POINT C #1C, STT.V.I.	809-775-1160
1	S & S SERVICES CORPORATION P.O. BOX 10237 STT V.I 00801	29171	15110	07/31	S & S SERVICES CORPORATION 66 SMITH BAY ST. THOMAS VI	809-775-9991
3	SAMUEL, IRVIN P.O.BOX 31 CRUZ BAY ST JOHN VI 00830	1299	15110	07/31	IRVIN SAMUEL 111 ENIGHED CRUZ BAY ST JOHN VI	809-776-6211
3	SCATLIFFE ISHMEL P.O.BOX 234 STJ VI 00830	11392	15110	07/31	ISHMEL SCATLIFFE 16 ENIGHED STJ VI	809-776-6684
1	SEA BUILDERS LTD P.O. BOX 3620 ST. THOMAS VI	38208	15110	07/31	SEA BUILDERS LTD 5-15 NAZARETH ST THOMAS VI	809-775-6010
1	SENECA CONSTR. INC. P.O.BOX 5467 STT V.I. 00801	36390	15110	07/31	SENECA CONSTRUCTION INC. #92 MISKY STT V.I.	809-774-1803
1	SERENITY BUILDERS, INC P.O. BOX 306988 ST THOMAS VI 00803	83257	15110	07/31	SERENITY BUILDERS INC 9B.B. CONTANT ST THOMAS VI	809-771-5937
1	SERRANO, JOSE M.P. P.O. BOX 8201 ST THOMAS VI 00801	35131	15110	07/31	JOSE M.P. SERRANO 26 REGJERRINGS GADE STT VI	- -
1	SHEA, WILLIAM P. P.O. BOX 6833 STT V.I 00803	23807	15110	07/31	WILLIAM P. SHEA 21 WATER ISLAND STT V.I	809-77
1	SHEARMAN & ASSOCIATES INC SUITE 201 6501 RED HOOK PLAZA STT V.I	41880	15110	07/31	SHERMAN & ASSOCIATES INC SUITE 201 6501 RED HOOK PLAZA STT	809-775-7399
1	SMITH, MOLETO P.O. BOX 7093 STT V.I 00801	1081	15110	07/31	MOLETO SMITH ST. NAZARETH 25-16 STT V.I	

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LICENSEE IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	TORRES, MANUEL P.O. BOX 8363 STT V.I 00801	12261	15110	09/31	MANUEL TORRES AA BJERGE GADE STT V.I	
1	TOTAL CONSTRUCTION, INC. 4-36 EST. HARMONY STT V.I 00802	86929	15110	08/31	TOTAL CONSTRUCTION, INC. #14 SMITH BAY STT V.I	809-775-1740
1	TRACI CONSTRUCTION, COMPANY EST. FRYDENHOJ STE 19 STT V.I 00802	83016	15110	08/31	TRACI CONSTRUCTION CO. INCORP. 63000 FRYDENHOJ STT V.I	
1	TRADEWINDS CONSTRUCTION INC P.O. BOX 8467 STT V.I 00801	34446	15110	08/31	TRADEWINDS CONSTRUCTION INC 20A EST. FRYDENHOJ STT V.I	809-775-0001
1	TRIPLE-O-NINE CONTRACTORS INC P.O. BOX 10407 ST THOMAS VI 00801	35506	15110	08/31	TRIPLE-O-NINE CONTRACTORS INC COMMANDANT GADE 16-B ST THOMAS VI	809-771-7651
1	TURNBULL, MOLETO P.O. BOX 12064 STT V.I 00801	99	15110	08/31	MOLETO TURNBULL EST. THOMAS NEW QRTS STT V.I	
1	TURNBULL, LUDENCE P.O. BOX 1932 STT V.I 00803	6823	15110	08/31	LUDENCE TURNBULL CONSTRUCTION 16-7 FRYDENHOJ STT V.I	
1	TURNBULL, WILFRED P.O. BOX 4283 STT V.I 00801	34362	15110	08/31	TURNBULL & SONS WATER DELIVERY CONTANT 7B STT V.I	
1	TXL, INC P.O. BOX 1216 STT V.I. 00801	65089	15110	08/31	TXL, INC. 30 BRONNEGENS GADE STT V.I. 00803	809-776-1551
1	TYRRELL, RICHARD G. HOMEPORT ST. THOMAS V.I 00802	37725	15110	08/31	RICHARD G.TYRRELL CONSTRUCTION 16-19 FRENCHMAN BAY STT.VI. 00802	809-776-7815
1	UNIVERSAL STEEL INC P.O.BOX 797 LITHON IA GA.30058	82169	15110	08/31	UNIVERSAL STEEL INC. TUTU PLAZA STT.V.I.	101-482-5601
3	UZZELL, NELSON T. P.O. BOX 37 ST JOHN USVI 00801	42007	15110	08/31	NELSON T. UZZELL 15-A-3 RENDEVOUS ST JOHN VI	809-776-7285
1	V.I. CEMENT & BUILD. PRODUCTS, INC. P.O. BOX 7368 STT V.I. 00801	83211	15110	08/31	V.I. CEMENT & BUILDING PRODUCT PARCEL #6 & 7 EST. MARIENDHAL STT V.I.	809-775-0100
1	V.I. EQUIPMENT RENTAL & CONST. P.O. BOX 9560 ST THOMAS VI 00801	87111	15110	08/31	V.I.EQUIP.CONST.INC. EST. MANDALH #14 ST THOMAS VI	809-775-4833
1	VAN PUTTEN, ALLEN V. P.O. BOX 1912 STT V.I 00803	1879	15110	08/31	ALLEN V. VAN PUTTEN 263 EST CONTANT STT V.I	
1	VAN RENSSELAER JR., HENDRIK B. FLUTE-FLAGSHIP YACHT HAVEN STT V.I 00802	83213	15110	08/31	HENDRIK B.VAN RENSSELAER,JR. COMPASS POINT STT.V.I.	809-775-0331
1	VANTERPOOL, [illegible] [illegible] STT. V.I. 00801	61327	15110	08/31	VANTERPOOL ENTERPRISES 52E-1 & 52E-A STT. V.I.	809-776-7400

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
3	SPEER, GLEN E P.O. BOX 8303 CRUZ BAY STJ V.I 00830	6047	15110	07/31	GLEN E SPEER CRUZ BAY ST JOHN VI	- -
1	SPEIGHTS, JERRY B 81-30 ESTATE PEARL ST THOMAS VI 00802	61397	15110	07/31	J B CONSTRUCTION 13 ESTATE THOMAS ST THOMAS VI	809-77 -
1	ST JOHN CONSTRUCTION LTD P.O. BOX 178 ST JOHN VI 00830	85999	15110	07/31	ST JOHN CONSTRUCTION LTD 12 NORRE GADE ST THOMAS V I	809-77 -
1	ST. PETER'S ASSOCIATAES, INC. P.O. BOX 5116 STT V.I 00801	61031	15110	07/31	ST. PETER'S ASSOCIATES, INC. 10-11 SUB BASE STT V.I	809-774-8699
1	STEEL FABRICATORS INC 1128 ANNAS RETREAT ST THOMAS VI 00802	62349	15110	07/31	STEEL FABRICATORS INC 37A DRON.GADE STT	305-931-5715
1	STEFFERSON, RAYMOND E. P.O. BOX 301704 THOMAS VI 00803	38724	15110	07/31	STEFFERSON MARINE AND CONST. AMER.YACHT HARBOR RED HOOK,STT VI	809-777-9866
1	STEVENS, WILLIAM J. P.O.BOX 8213 ST THOMAS VI 00801	91295	15110	07/31	WILLIAM J.STEVEN #6 ALCOHEN PLAZA ST.THOMAS V.I.	809-774-9546
1	STURGESS, JAMES H. P O BOX 3706 STT., V.I.	35845	15110	07/31	JAMES H. STURGESS #92 NISKY STT., V.I.	
1	STURGESS, CHERYL A. P.O.BOX 3706 STT V.I. 00801	42015	15110	07/31	CHERYL A. STURGESS #92 NISKY STT V.I.	809-771-6286
1	SUIDE III, PETER 3600 CONTANT E-21 ST THOMAS VI 00802	62967	15110	07/31	PETER SUIDE III 3600 CONTANT E-21 STT V.I	809-774-8973
1	SUPERSTRUCTURES INC P.O. BOX 10003 ST THOMAS VI 00801	15457	15110	07/31	SUPERSTRUCTURES INC 5A COMM GADE ST THOMAS VI	- -
1	THE DOUGLAS CONST., COMPANY V.I INC. P.O. BOX 6201 STT V.I. 00801	66016	15110	01/31	THE DOUGLAS CONST., COMPANY 15B NORRE GADE STT V.I.	809-774-6422
1	THE Q''CLUB, INC. 23 DRONN.GADE STE. #153 STT.V.I.00802	87513	15110	08/31	THE Q'' CLUB,INC. SUBBASE #109 STT.V.I.00802	809-774-9110
1	THOMAS, KENRICK P.O.BOX 7533 STT V.I 00801	11030	15110	08/31	KENRICK THOMAS 1-143 -37 WINTBERG STT V.I	809-775-7417
1	THOMAS, WILLY P.O. BOX 9037 STT VI 00801	61081	15110	08/31	WILLY THOMAS BULD. 10 SUB BASE STT VI	809-77 -
1	THOMAS, CECIL VALENTINE P.O. BOX 7533 STT V.I. 00803	64052	15110	08/31	SMALL AXE CONSTRUCTION & ASSOC 4 KRONPRINDSENS GADE STT V.I. 00802	809
1	THOMPSON, KEITHROY P.O. BOX 11598 STT V.I 00801	60762	15110	08/31	KEITHROY THOMPSON CONST. CO. CECELIA GADE #9 STT V.I	809-775-8513

IS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	WALDUM CONSTRUCTION CO INC 7457 FRENCHMAN'S BAY ST THOMAS VI 00802	84005	15110	09/30	WALDUM CONSTRUCTION CO,INC. EST.CONTANT E & F CLAREMORE BLDG STT	809-775-1231
1	WALLEN, JAMES S. 4-46 EST. HARMONY ST THOMAS VI 00802	61818	15110	09/30	JAMES S. WALLEN 4-46 EST. HARMONY ST THOMAS VI	809-775-2378
1	WALTER FEDDERSEN CONSTRUCTION INC P.O. BOX 3298 STT V.I 00803	13713	15110	09/30	WALTER FEDDERSEN CONST. INC 7-P EST. NAZARETH STT V.I	309-775-1680
1	WARNER, KEITH H. 3C-3 MANDAHL ST THOMAS VI 00802	85060	15110	09/30	KEITH H.WARNER #30 DRONN.GADE ST THOMAS VI	809-779-2030
1	WASHBURN, RICHARD R. P.O. BOX 1601 STT V.I. 00801	4876	15110	09/30	WASHBURN ENTERPRISES 2-A AGNES FANCY STT V.I.	
1	WATER WIZARDS INC. A-9 FISHMARKET WAY COMP.PT STT VI 00802	29476	15110	09/30	WATER WIZARDS INC. A-9 FISHMARKET WAY COMPASS PT STT V.I.	
1	WAYNE MARINE INC P.O. BOX 8782 PONCE P.R. 00732	36987	15110	09/30	WAYNE MARINE INC CYRIL E KING AIRPORT STT V.I.	809-810-7350
1	WEBSTER CONST. CO., INC. P.O. BOX 7986 STT. V.I. 00801	40389	15110	09/30	WEBSTER CONST. CO., INC. 1-113-5 EST WINTBERG STT. V.I.	809-775-5353
1	WEBSTER, DUDLEY V P.O. BOX 1043 STT V.I. 00801	995	15110	09/30	DUDLEY V WEBSTER CONSTRUCTION LINDBERGH BAY 25 STT V.I. 00801	
1	WEBSTER, EDMOND P O BOX 7986 ST. THOMAS VI	959	15110	09/30	EDMOND WEBSTER WINTBERG #5 ST. THOMAS VI	
1	WEBSTER, THOMAS H P.O. BOX 1346 STT V.I. 00801	1891	15110	09/30	THOMAS H. WEBSTER 11-33 FRENCHMAN BAY STT V.I. 00801	809-776-0680
1	WEBSTER, ERIC ERVINE P.O. BOX 11496 STT V.I 00801	38962	15110	09/30	ERVINE CONSTRUCTION ANNAS RETREAT #11 STT VI	809-775-2794
1	WES GORDON BUILDERS INC. P.O.BOX 1504 STT V.I.00801	38826	15110	09/30	WES GORDON BUILDERS 5-21 SORGENFRI STT V.I.	809-776-2067
1	WEST INDIAN CO LTD P.O. BOX 7660 ST THOMAS VI 00801	1069	15110	09/30	WEST INDIAN CO LTD LONG BAY ST THOMAS VI	809-774-1780
1	WHITE, P WATSON P.O BOX 7313 STT V.I 00801	18652	15110	09/30	P WATSON WHITE 11-3B EST CONTANT STT V.I	
1	WILLIAMS, LOUIS P.O. BOX 2854 ST THOMAS VI 00801	1655	15110	09/30	WILLIAMS & SONS JODE GADE 1 ST THOMAS VI	
1	WOODCOCK,RONALD L. P.O.BOX 9591 ST THOMAS VI 00801	2377	15110	09/30	R. LEON WOODCOCK EST. WINTBERG 1-131 ST THOMAS VI	809-775-7739

DEPARTMENT OF LICENSING AND CONSUMER AFFAIRS
DIVISION OF LICENSING

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LS	LICENSEE NAME AND ADDRESS	BUS NUM	BUS CODE	RENWAL DATE	BUSINESS NAME AND ADDRESS	LICENSE PHONE NUM
LICENSE DESCRIPTION: CONSTRUCTION CONTRACTOR.						
1	ZARCO CONSTRUCTION CO. INC. P.O.BOX 6338 STT V.I 00801	29661	15110	09/30	ZARCO CONSTRUCTION CO, INC. 5 & 6 KONGENS GADE STT V.I	809-774-6453
1	ZENITH DEVELOPMENT, CORP. P.O. BOX 4567 STT. V.I.	42269	15110	09/30	ZENITH DEVELOPMENT, CORP. KONGENS GADE #5-6 STT.	809-776-3213
1	ZUCKER, JEFFREY P.O.BOX 3980 STT V.I 00801	22901	15110	09/30	JEFFREY ZUCKER COMPASS POINT ST THOMAS VI	

Number of CONSTRUCTION CONTRACTOR records found: 275

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Discussion of Findings

The rainwater catchment system materials found in the U.S. Virgin Islands are shown in Tables 1, 2 and 3 where each table represents a different section of the catchment system. Table 1 consists of 126 different products used on the catchment surface, the roof. These products are produced by 53 manufacturers and distributed by 17 local distributors. Similarly, Table 2 shows materials used to convey runoff from the roof into storage tanks or cisterns. This table also shows sealants and adhesives used in rainwater catchment systems. A total of 34 different products are listed, which are manufactured by 11 manufacturers and distributed locally by eight distributors. Table 3 consists of 11 coatings and other products used in storage tanks or cisterns; these are produced by six manufacturers and distributed locally by seven distributors. Overall 167 products, 64 manufacturers, and 17 distributors are listed.

Table 4, on the other hand, is a compilation of all the hazardous chemicals found in the products listed in Tables 1, 2, and 3. This table shows the maximum contaminant levels (MCLs) of the chemicals as suggested by the Occupational Safety and Hazard Administration (OSHA) and the American Conference of Government Industrial Hygienists (ACGIH). The remarks column expresses the possible health hazard of the chemical based on what is known of that particular chemical, and not necessarily the product of which it is a constituent. Some of the hazardous chemicals listed are known to have serious health effects. Some are known carcinogens.

Tables 1, 2 and 3 also show products with readily available Material Safety Data Sheets (MSDSs) and/or letters certifying that they are safe for use in rainwater catchment systems intended for human consumption. These documents were obtained from distributors and manufacturers. The majority of the distributors had no available MSDSs or letters of certification to affirm the safe usage of their products in rainwater catchment systems. In fact, only nine products had the necessary laboratory certification and/or approval by the NSF and the U.S. Food and Drug Administration (FDA).

The MSDSs found in Appendix A list, among other data, the hazardous ingredients of each product along with OSHA's permissible exposure limit (PEL), ACGIH's threshold limit value (TLV) and in some cases the short term exposure limit (STEL). Health hazard data are also provided. The toxic chemicals that are reported on the MSDSs are subject to the reporting requirements of Section 313 of the Emergency Right-to-Know Act of 1986 and 40 CFR 372. Many ingredients are not listed on the MSDSs and are, instead, replaced by quotations such as:

> "Ingredients not precisely identified are proprietary or non-hazardous."

and

> "Remaining ingredients are not regulated by OSHA and are considered trade secrets."

It must be borne in mind that the limits set by OSHA and ACGIH were not specifically set for RWCSs and do not take into account the effects of weathering on the surface coatings. The effects of environmental variables such as repeated wetting and drying and acid rain need to be investigated further. Such inadequacy was highlighted by this quote from MSDSs for Waterplug, Thoroseal and Acryl 60:

> "No toxicity information is available on this specific preparation; thus health hazard assessment is based on information that is available on its components."
>
> and
>
> "Values (MCLs) are not product specifications."

For a hazardous chemical to be listed as a health hazard on an MSDS, it must comprise 1% or greater of the composition of the product. If the chemical is a carcinogen, however, it is listed if it comprises 0.1% or greater of the product's composition. Chemicals that are likely to be released from the mixture in concentrations that would exceed an established OSHA permissible exposure limit or ACGIH threshold limit value are also listed, even if they comprise less than 1% (0.1% for carcinogens) of the mixture.

For an assessment of the market distribution of the coatings, a sample of 20 contractors were interviewed. Most contractors use more than one roof coating. The most

For an assessment of the market distribution of the coatings, a sample of 20 contractors were interviewed. Most contractors use more than one roof coating. The most widely used catchment surface is galvanize, with 39% of contractors endorsing its usage. Topcoat followed second with 29%. Tropicoat was favored by 11%, and 7% favored galvalume. Metal panels, Acrylic Barrier Coating, Snow Roof Elastoseal and Master Craft were equally favored by 4% of contractors.

For the conveyance part of the catchment system, 62% favored metallic (aluminum or galvanize) gutters while 31% favored plastic piping. Wooden gutters with a layer of topcoat was favored by 6% of the contractors. Eighty percent of contractors favored plastic downspouts while the other 20% favored metallic downspouts.

Thoroseal is the most widely used cistern coating with 79% of contractors endorsing its usage. White cement, Vandex, and hydraulic cement were equally favored by the remaining contractors.

Letters certifying that the product has been laboratory tested and/or approved for use in rainwater catchment systems are found in Appendix D. All specification data are in Appendix B while Appendix C is a listing of manufacturers' addresses.

Table 1. Product List of Roof Coatings
* Approved for potable water tank lining by NSF, FDA, Clayton Labs, Environmental Consultants Ltd., and Bermuda Department of Health.

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Acryl 60	Cement Sealant	Island Block	Thoro System Products Inc	Yes
Acrylic Barrier Coating	Acrylic coat for plywood	Rooftops/Tech. Coating	Rooftops/Tech. Coating	No
Acrylic Gloss Finish	Polyurethane Coat for metal	A-Z Paint Supply	Finnaren/Haley Paint	No
Acrylic Primer	Polyurethane Primer for metal	A-Z Paint Supply	Finnaren/Haley Paint	No
Acrylic Supercoat	Acrylic Emulsion coating	Rooftops	Scotts Paint Corp.	No
AF-103 Neoprene Fluid	Waterproofing Coating	Sea Chest	Chemical Coatings	No *
Anvil Acrylic Latex	wood/ metal primer	Barry Duncan Ent.	Anvil Paints/ Coating	No
Anvil Seam Seal	Latex caulk seam seal for flashing	Barry Duncan Ent.	Anvil Paints/ Coating	No
Anvil Ultra Seal 1	Elastomeric Roof coat	Barry Duncan Ent.	Anvil Paints/ Coating	No
Anvil Ultra Seal 2	Acrylic water proofing	Barry Duncan Ent.	Anvil Paints/Coating	No
Asphalt Felts	Underlying for shingles	MSI	Manuf. American Standard Felt	
Asphalt Glass Fabric	Roof Cement	East End Lumber	Gardner Asphalt Corp.	Yes
Asphalt Roof Cement	Sealant/Cement	Island Block	Servistar Corp.	No
Asphalt/Organic Felt	Felt	Island Block	Atlas Roofing Corp.	No
Benzene/Naphthalen	Thinner	Island Block	Parks Corp.	No
Black Jack Roof Cement	Roof Cement	East End Lumber	Gibson-Homans Co.	
Carib Coat	Elastomeric Coating	Sea Chest	Technical Coatings	No
Caribbean Custom Elastomeric	Roof Coat		Mobile Paint Caribbean Inc.	
Contouring Seam Tape	Seam tape	Island Block	Oregon Research and Development Corp.	
Contouring Seam Tape	Tape	Island Block	Oregon Research and Development Corp.	
Contouring Seam Tape	Seam Tape	East End Lumber	Oregon Research and Development Corp.	Yes
Cool Coat	Latex Roof Paint	Sea Chest	Mobile Paints	No
Crown Tropic Latex	Latex Paint	K-Mart Corp.	Harris Paints	Yes
DAP Black-Tite Roof Sealant	Sealant	Q & A Supplies	DAP Inc.	
DAP Black-Tite Roof Sealant	Sealant	East End Lumber	DAP Inc.	
DAP Black-Tite Roof Sealant	Sealant	V.I. True Value Hardware	DAP Inc.	
DAP Black-Tite Roof Sealant	Sealant	Island Block	DAP Inc.	
DAP Black-Tite Roof Sealant	Sealant	MSI	DAP Inc.	
DAP Sealant	Sealant/Asphalt Based	K-Mart Corp.	DAP Inc.	No
Denusto-Rust Enzymes	Anti-Rust Coating/Paint	Mikes Paint	DAP Inc.	No
Derusto	Rust Prevent Enamel	East End Lumber	DAP Inc.	
Dow Corning Silicone	Sealant	Rooftops	Dow Corning	No

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Duratone	Paint	K-Mart Corp.	Harris Paints	No
Elastomeric Roof Coat	Rubber coat	V.I. True Value Hardeware	Gardener Asphalt	No
Elasto-Seal Primer	Sealant	Island Block	Snow Roof Systems	No
Enamel Spray	Paint	K-Mart Corp.	Harris Paints	
Enco Weather Shield	House/trim enamel	East End Lumber	Enco Manufac. Corp.	
EPDM/C-EPDM	Membrane Material coating	Rooftops	2001 Company	No
Ever-Grip	Paint Primer	K-Mart Corp.	Harris Paints	No
E-Z Mineral Spirits	Thinner	Island Block	E.E. Zimmerman Co.	No
Fibered Roof Cement	Coating	Island Block	Gardener Asphalt Corp.	No
Fibered Roof Coat	Coating	East End Lumber	Gibson-Homans	
Fibered Roof Coating	Coating	Island Block	Servistar Corp.	No
Fix-All Enamel Primer	Coating	East End Lumber	Kurfees Coatings, Inc.	
Flashing	Rubber	East End Lumber	Oatey	No
Futura-Thane 5000	Urethane Elastomeric coating	Rooftops	Futra Coatings	No
Galvalume	Sheeting	B and B Manufacturers	Olympia International	No
Galvalume Coating	Coating	B and B Manufacturers	AKZO Coatings	No
Galvalume Sheets	Sheeting (res./com)	Rooftops	Bethlehem Steel	No
Galvalume (Coated)	Sheeting	B and B Manufacturers	Olympia International	No
Galvanize	For standing roofs	Carlislie Engineering	Carlisle Engineering	No
DOD-P-21035A Galvanizing Repa	Paint		Mobile Paint Caribbean Inc.	
Geocel 2300 Tripolymer Sealant	Elastomeric Sealant	Rooftops	Geocel Corp.	No
Glass Fabric	Asphalt Coat	Island Block	Gardener Asphalt Corp.	No
Gum Spirit of Turpentine	Thinner	Island Block	E.E. Zimmerman Co.	No
G.E. Silicone II	Sealant	V.I. True Value Hardeware	GE company	No
Interior Sealer/Primer	Coating	Island Block	Pittsburgh Paints	
Iron-Clad Retando	Anti-Rust Paint	Mikes Paint	Benjamin Moore Co.	No
Kils Total Zone	Stain Primer	East End Lumber	Masterchem Industries	
Klean-Strip	Pre-Paint Surfacing	East End Lumber	Klean-Strip	Yes
Kool Patch	Sealant	Island Block	Kool Seal	No
Kool Patch Cement	Cement Sealant	Island Block	Kool Seal	No
Kool Seal #63-300	Latex elastomeric	Paint N Things	Kool Seal	*
Lacquer Thinner	Thinner	K-Mart Corp.	Harris Paints	Yes
Lacquer/Coatings	Sanding Sealant	K-Mart Corp.	Lanco	No
Lanco Protecto-Coat	Acrylic latex	East End Lumber	Lanco	
Lanco Seal Coat	Acrylic latex wall paint	East End Lumber	Lanco	

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Lanco Stain Killer	Rust Coat	East End Lumber	Lanco	
Lanco Well Glass	Latex enamel	East End Lumber	Lanco	
Lead Flashing	Flashing	East End Lumber		Yes
Mameco Vulkem 450/451	Roof coating	Paint Depot	Mameco International	
Masonry Conditioner	Latex Pigmented Coat	Island Block	Bruning	No
Master Choice Reroof	Rubber Compound	MSI	Stan's Leap	
Metal Reroof	Aqueous urethane	MSI	Master Choice	Yes
Metal Roofing	Galvanize	MSI	Carlisle Engineering	
Mineral Roll Roofing	Felt	Island Block	Atlas Roofing Corp.	No
Mineral Spirits	Paint thinner	V.I. True Value Hardeware	Sunnyside Corp.	No
Mineral Spirits	Thinner	K-Mart Corp.	Harris Paints	No
Mobile Coat	Coating	East End Lumber	Oregon Research and Development Corp.	
Mobile Coat	Coating	Island Block	Oregon Research and Development Corp.	
No Caulk Roof Flashing	Flashing	Island Block	Oatey	No
Nordpoly 5B/4B	Asphalt/Water Proofing coating	Rooftops	Nordi Bitumi	No
OSI RS 225/255/600	Elastic Colymore Sealant	Rooftops	Ohio Sealents	Yes
Oxido Rojo Coat	Wood/Metal Primer	East End Lumber	Enco Manufac. Corp.	
Painted Alum. Coiled Sheets	Alloy	MSI	Nichols Aluminum	Yes
Patch Works	Flashing sealant	Mikes Paint	Masters Choice	
Patchworks	Aqueous urethane	MSI	Master Choice	Yes
Plastic Roof Cement	Cement	East End Lumber	Gibson-Homans	
Plastiflex 5100/5200	Acrylic/Elast. Caulk	Rooftops	Scotts Paint Corp.	No
Plastilex	For taping joints	Carib. Coating/Rooftops	Scott	No
Premier Hi-Hiding Coat	Coating	Island Block	Bruning	No
Primer/Seal	Aqueous urethane	MSI	Master Choice	Yes
Professional Rubber Reroof	Aqueous urethane	MSI	Master Choice	Yes
Quality Guard	Paint	K-Mart Corp.	Harris Paints	No
Rain Guard	Corrugated galvalume sheets	St. Croix Trading	B and B Manufacturing	
Rainguard Galvanize	Galvanize	MSI	B and B Manufacturing	
Red-Oxide	Paint Primer	K-Mart Corp.	Harris Paints	No
Regency Paint	Paint	K-Mart Corp.	Harris Paints	No
Rel-Pro	Acrylic latex	East End Lumber	Reliance Caribbean	
Rely-On	Latex/Vinyl Caulk Sealant	K-Mart Corp.	DAP Inc.	No
Roof Guardian	Coating	East End Lumber	Oregon Research and Development Corp.	
Roof Guardian	Coating	Island Block	Oregon Research and Development Corp.	

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Roof Material	Metals	B and B Manufacturers	Southeastern Metals	No
Rooftop Coating	Acrylic, Elastomeric coating	Rooftops	Tech. Coatings	No
Rubber Reroof	Flat finish	Mikes Paint	Masters Choice	Yes
Rust Free Enamel	Wood, Metal Coating	East End Lumber	Enco Manufac. Corp.	
Rust Inhibiting Primer	Aqueous urethane	MSI	Master Choice	Yes
Rust-Chem	Enamel Coating	K-Mart Corp.	Harris Paints	Yes
Rust-Oleum	Paint	Island Block	Rust-Oleum Corp.	Yes
Semigloss Enamel	Coating	East End Lumber	Reliance Caribbean	
Shellac (3LB White)	House/Trim Paint	Island Block	William Zinsser and Co	No
Silathane Gloss Enamel	Coating	Island Block	Bruning	No
Snow Roof Finish	Coating	Island Block	Snow Roof Systems	No
Spirits of Turpentine	Thinner	East End Lumber	USA	Yes
Stain Killer	Primer Coating	Island Block	Bruning	No
Stretch and Seal	Roof Coating	K-Mart	Harris Paints	
Sun Proof	House/Trim Paint	Island Block	Pittsburgh Paints	No
Super Acryl-Gloss	Paint	K-Mart Corp.	Manufacturing Corp	No
SureSeal	Sealant	K-Mart Corp.	Harris Paints	Yes
ThoroFlex RC	Acrylic coating	Mikes Paint	Thoro System Products Inc	No
Topcoat	Elastomeric Coating	Sea Chest	The Major Group	Yes *
Tropicoat	Coating	Paint Depot/Mike Paint	Tech. Coatings	No
Tuff-Kote	Repair patch	Island Block	Tuff-Kote Co.	No
Vinyl-X	Latex/Acrylic Enamel Coating	K-Mart Corp.	Harris Paints	Yes
Vulkem 450/451 System	Coating	Paint Depot	Mameco International, Inc.	No
Wall And Trim Enamel	Latex Paint	Island Block	Bruning	No
Water Sealer	Water Proofing sealer	K-Mart	Harris Paints	
Weather Barrier 1530	Base Coat for priming plywood	A-Z Paint Supply	Finnaren/Haley Paint	No
Weather Barrier 1650	Finish Coats for wood/metal	A-Z Paint Supply	Finnaren/Haley Paint	No
Weather Barrier 1750	Seam seal, Taping	A-Z Paint Supply	Finnaren/Haley Paint	No
Weather Barrier 1850	Lock Seal for porous/chauky surface	A-Z Paint Supply	Finnaren/Haley Paint	No
Weather Barrier 2010	Wall/ Roof finish	A-Z Paint Supply	Finnaren/Haley Paint	No
Wet/Dry Roof Cement	Cement Sealant	Island Block	Servistar Corp.	No
X-O Rust Enamel	Enamel coating	V.I. True Value Hardeware	True Value	No

Table 2. Product List of Conveyance Coatings and Sealants
* Approved for potable water tank lining by NSF, FDA, Clayton Labs, Environmental Consultants Ltd., and Bermuda Department of Health.

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
2x3 Alum. Corr. Pipe	Aluminum pipe	East End Lumber		No
3" Downpipe	PVC guttering	East End Lumber		No
5x10 Alum. Guttering	Aluminum guttering	East End Lumber		Yes
5" Guttering	PVC guttering	East End Lumber		No
5"/6" Gutters	Aluminum guttering (residential)	Rooftops	Rooftops	No
5"/6" Gutters	Aluminum guttering (commercial)	Rooftops	Rooftops	No
Aluminum Guttering	Guttering	B and B Manufacturers	Englert Metals	Yes
Aluminum Guttering	Guttering	B and B Manufacturers	Southeastern Metals	No
Bird Vinyl Gutter :	Guttering	MSI	Bird Inc.	
Butyl-Flux	Butyl-rubber sealant	East End Lumber	DAP Inc.	Yes
DAP 100% Silicone	Chalking sealant	Mikes Paint	DAP Inc.	No
DAP Dow Corning Brand	100% silicone sealant	Island Block	1994 DAP Inc.	
DAP Gutter & Lap	Cement	Island Block	1994 DAP Inc.	
Englert Alum Gutter	Guttering	MSI	Englert Metals	
Gupwaskio Gutter	Aluminum gutter	East End Lumber		No
Gutter and Lap Sealant	Butyl rubber sealant	East End Lumber	DAP Inc.	Yes
Gutters	Metals	B and B Manufacturers	Southeastern Metals	No
Joint Compound	Joint cement sealant	Island Block	DAP Inc.	Yes
K-Snap 2.5" downpipe	PVC pipe	East End Lumber		No
K-Snap Guttering	PVC guttering	East End Lumber		No
Plastmo K-Snap	Vinyl rain gutter cement	Island Block	Plastmo Inc.	
Plastmo Rain Gutter System	Vinyl (brown/white)	Island Block	Plastmo Inc.	
Plastmo Vinyl Gutter	Guttering	MSI	Plastmo Inc.	
PVC Cement	Heavy duty clear cement # 31008	Island Block	Oatey	
Rain-R-Shine	Medium PVC cement	Island Block	Oatey	
Semco Metal Connectors	Galvanize gutter/spout connector	Island Block		
Silicon 732	Silicone caulking sealant	East End Lumber	DOW Corning	Yes
Snap II Gutter System PVC Cement	PVC cement	Island Block	Bird Vinyl Products Inc.	
Snap Seal #T0509	Spouting/guttering	Q & A Supplies	Snap Seal	
Snap Seal #T0511	Spouting/guttering	Q & A Supplies	Snap Seal	
Snap Seal #T0523	Spouting/guttering	Q & A Supplies	Snap Seal	

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Snap Seal #T0525	Spouting/guttering	Q & A Supplies	Snap Seal	
Solid Vinyl Gutter System	Vinyl (630C) prod. no. 4003-830	Island Block	Bird & Sons Inc.	
Solid Vinyl Gutter System 3D	Product No. 4035-023	Island Block	Bird Vinyl Products Inc.	
Tuff-Kote	Repair patch	Island Block	Tuff-Kote Co.	No
Weather Barrier 1950	Gutter Repair	A-Z Paint Supply	Finnaren/Haley Paint	No

Table 3. Product List of Storage Coatings
* Approved for potable water tank lining by NSF, FDA, Clayton Labs, Environmental Consultants Ltd., and Bermuda Department of Health.

PRODUCT	DESCRIPTION	DISTRIBUTOR	MANUFACTURER	MSDS
Concrete Patch	Bonding Polymer	Island Block	Thoro System Products Inc	No
Masonry Coating	Coating	MSI	Bonsoe	
MoPoxY HS-50 40-BH-11	Epoxy coating		Mobile Paint Manufacturing Co. Inc.	Yes *
MoPoxY HS-50 40-BW-5	Epoxy coating		Mobile Paint Manufacturing Co. Inc.	Yes *
Surecoat	Water proof cement	Barry Duncan Ent.	Bonsal	No
Thorobond	Plaster/Concrete	East End Lumber	Thoro System Products Inc	No
Thorobond	Plaster/Concrete	Island Block	Thoro System Products Inc	No
Thorobond	Plaster/Concrete	MSI	Thoro System Products Inc	No
Thoropatch	Sealant	East End Lumber	Thoro System Products Inc	No
Thoropatch	Sealant	Island Block	Thoro System Products Inc	No
Thoropatch	Sealant	MSI	Thoro System Products Inc	No
Thoroseal	Cement coat	East End Lumber	Thoro System Products Inc	No
Thoroseal	Cement coat	Island Block	Thoro System Products Inc	No
Thoroseal	Cement coat	Mike's Paint Store	Thoro System Products Inc	No
Thoroseal	Cement coat	Sea Chest	Thoro System Products Inc	No *
Tuff Tank	Roto plastics storage	Cash and Splash Supplies	Rotoplastics Trinidad Ltd.	
Vandex	Water Proofing	MSI	Vandex Caribbean	
Water Plug	Hydrolic Cement	Mike's Paint Store	Thoro System Products Inc	No

Table 4. Hazardous Components found in Rain Water Catchment System Coatings sold in the U.S. Virgin Islands along their Maximum Contaminant Levels (MCL's)

Substances	Classification	M C L				Remarks
		OSHA-PEL	STEL	ACGIH-TLV	OTHER	
Ammonia	Inorganic	25 ppm		25 ppm		Mist or liquid may irritate or burn eye, skin and mucus membrane.
Asphalt	Organic					Releases toxic fumes (COx, SOx, NOx) when heated beyond 200 deg. C. IARC states that there is inadequate evidence that bitumins alone are carcinogenic to humans.
Polyvinyl Acetate	Organic					
Butyl Benzylphthalate	Organic			5 mg/l		
Emulsifier	Organic					
Ethylene Glycol	Organic	50 ppm	125 ppm	50 ppm		Can be absorbed through skin. Causes kidney damage.
Diethylene Glycol	Organic	25 ppm				
Talc	Inorganic			2 mg/ l		
"Wood Dust"	Organic		(15 min.) 10 mg/l	5 mg/l		Carcinogenic.
Iron	Inorganic	10		5		
Manganese	Inorganic	5		1		
Chromium	Inorganic	0.1 mg/l		0.05		Linked to cancer in humans.
Nickel	Inorganic	1 mg/l		1		Linked to increased incidence of cancer of the lungs and nasal passage.
Copper	Inorganic	0.1		0.2		
Aluminum	Inorganic	10 mg/l		5	5 mg/l	
Zinc	Inorganic	5		5		
Silicon	Inorganic	15		10		
Mineral Spirit	Organic	100 ppm		100 ppm	525 mg/l	
Titanium Dioxode	Inorganic	15 mg/l		10 mg/l		
Calcium Carbonate	Inorganic	15 mg/l		10 mg/l		
Hydrocarbon Polymer	Organic					
Sodium Silicate	Inorganic					
Magnesium	Inorganic	10 mg/l		15 mg/l		
Monobutyl Ether	Organic					
2,2,4-trimethyl 1,3-pentane diol Monoisobutyrate	Organic					

Substances	Classification	M	C	L		Remarks
		OSHA-PEL	STEL	ACGIH-TLV	OTHER	
Silicone Dioxide	Inorganic	25 "mppcf"		10 mg/l		
Ammonium Hydroxide	Inorganic					
Methyl Isobutyl Ketone	Organic	100 ppm		50 ppm	205 mg/l	
Xylene	Organic	100 ppm		100 ppm	435 mg/l	
Barium Sulphate	Inorganic	10 mg/l		10 mg/l		
Mica	Inorganic	20 MPPCF		3 mg/l		
VM & P Naphtha	Organic	300 ppm		300 ppm		Associated with permanent brain and nervous system damage.
Polyvinylchloride resin (PVC)	Organic					
Tetrahydrofuran (THF)	Organic	200 ppm	250 ppm	200 ppm		
Methyl/Ethyl Ketone	Organic	200 ppm	300 ppm	200 ppm		
Cyclohexanone	Organic	25 ppm		25 ppm		
Methylene Chloride	Organic			200 ppm		
Diethyleneglycol Ethyl Ether	Organic					
Dibutyl Phthalate	Organic	5 mg/l	10 mg/l	5 mg/l		Possible teratogen. Causes reproductive disorders.
Silica, Crystalline Quartz	Inorganic			0.1 mg/l		Found by IARC to be associated with cancer in lab animals.
Portland Cement	Organic	10 mg/l (total dust) 5 mg/l (respirable)		10 mg/l		
Calcium Hydroxide	Organic			0.5 mg/l		
Acrylic Polymer	Organic					

OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
ACGIH: American Conference of Government Industrial Hygienists
TLV: Threshold Limit Values
STEL: Short Term Exposure Limit
IARC: International Agency for Research and Cancer

Conclusion

This survey of water catchment system materials available in the USVI reveals that a wide range of products are being used, especially on the catchment surfaces (the roofs). Few of these products have been approved for use in water catchment systems intended for human consumption. The components of many of these coatings are hazardous chemicals with proven health hazards. Among the health hazards are nervous and kidney damage and an increased risk of cancer.

These coatings are sold by local distributors, the majority of whom do not have material safety data sheets on hand. Furthermore, most of the large distribution outlets either had no MSDSs or were reluctant to provide them. In some cases it seemed that some of the personnel involved had no idea what MSDSs were.

Manufacturers and distributors should be cognizant of the reporting requirements of 40 CFR 372 (Toxic Chemical Reporting: Community Right-to-Know) and of 40 CFR 370 (Hazardous Chemical Reporting: Community Right-to-Know). For example, 40 CFR 372: Subpart C - Supplier Notification Requirement, states that:

> "(a) Except as provided in paragraphs (c), (d) and (e) of this section and 372.65, a person who owns or operates a facility or establishment which ... (2) manufactures (including imports) or processes, (3) sells or otherwise distributes a mixture or trade name product containing a toxic chemical to (i) a facility, or (ii) to a person who in turn may sell or otherwise distributes such mixture or trade name product to a facility described in 372.22 (b), must notify each person to whom the mixture or trade name product is sold or otherwise distributed from the facility or establishment in accordance with paragraph (b) of this section."

Additionally, 29 CFR 370 states that chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated.

To determine the quantity of a hazardous chemical in a mixture, the concentration of the hazardous chemical in weight percent (greater than 1% or 0.1% if carcinogenic) shall be multiplied by the mass (in pounds) of the mixture. Those who are not aware of the necessity to perform this calculation or who cannot do it will not know if these limits are exceeded in a particular product.

The survey had its limitations and difficulties. One of the principal difficulties was the reluctance of some distributors to cooperate in this venture. Many received the survey forms by fax or by mail and failed to return them with information requested although they were sent a letter from the Commissioner of the Department of Planning and Natural Resources asking them to cooperate. Many were reluctant to discuss the products, provide information on accessing manufacturers and in general not willing to cooperate. On the other hand, some distributors were very helpful and did far more than they were required to do. Their assistance is acknowledged and greatly appreciated.

Another limitation was the lack of responses from some St. Croix hardware stores and the financial inability of WRRI to have personnel on the ground to conduct on-site visits as part of the St. Croix survey. Follow-up calls to these establishments were not effective. It is our hope that most of the products used on St. Croix are similar to those used on St. Thomas.

An additional limitation of the survey was the failure to reach the target of 50 contractors, to make an assessment of the market distribution of the products since they are the ones who actually use them. In the aftermath of recent hurricanes, with the construction industry very active, getting input from contractors was virtually impossible.

Despite the outlined limitations, the survey has developed a list of products used in rainwater catchment systems in the U.S. Virgin Islands, along with information on manufacturers, distributors, toxicity and possible health hazards.

It is strongly recommend that all the products utilized in RWCSs be tested and certified to ensure that they are safe before they are approved for such usage. This quote from the Regulation of Drinking Water under the Safe Drinking Water Act (SDWA): Consumer Education Guide, page 2, summarizes both our hopes and fears that

> "cancer-causing substances, in particular, have received a high degree of attention because of the assumption that there is no threshold limit below which a cancer-causing substance does not pose some risk, however small."

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APPENDIX A

MATERIAL SAFETY DATA SHEETS

CONTENTS OF APPENDIX A

I. Roof Coatings

II. Conveyance Coatings

III. Storage Coatings

MATERIAL SAFETY DATA SHEETS

I. ROOF COATINGS

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

MSDS ID CODE : ND
PART NUMBER(S) : ALLOYS

Section I General Information

PRODUCT NAME .....: PAINTED ALUMINUM COILED SHEET
SYNONYMS .....: ALUMINUM

MANUFACTURER .....: NICHOLS ALUMINUM
DIVISION .....: NICHOLS ALUMINUM
MFG PART NUMBER ..:
ADDRESS .....: 1725 ROCKINGHAM RD,
CITY .....: DAVENPORT STATE ..:IA ZIP ..:52802
EMERGENCY PHONE ..: 319/328-6371
OTHER CALLS .....: 319/324-2121

VENDOR .....: NICHOLS ALUMINUM
MSDS PREPARED BY .: DAVE PETERS
DATE PREPARED ....: 03/14/94

********** ADDITIONAL INFORMATION **********
THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHER MORE, VENDEE ASSUMES THE RISK IN HIS USE, STORAGE, AND HANDLING OF THE MATERIAL.

Section II Hazardous Ingredients/Identity Information

INGREDIENT NAME CAS NUMBER	PERCENTAGE	EXPOSURE LIMITS
MANGANESE 7439-96-5	2.0	OSHA PEL : 10MG/M3 ACGIH TLV: 15MG/M3 OTHER :

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Section II Hazardous Ingredients/Identity Information - (CONT.)

SECTION 313 CHEMICALS

INGREDIENT NAME CAS NUMBER	PERCENTAGE	EXPOSURE LIMITS
ALUMINUM (AS DUST) 7429-90-5	96	OSHA PEL : 10MG/M3 ACGIH TLV: 10.0 MG/M3 OTHER : 5.0 MG/M3
MAGNESIUM 7439-95-4	2.0	OSHA PEL : 10MG/M3 ACGIH TLV: 15MG/M3 OTHER :

SECTION 313 SUPPLIER NOTIFICATION

THE CHEMICALS LISTED ABOVE WITH PERCENTAGES ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND RIGHT-TO-KNOW ACT OF 1986 AND OF 40 CFR 372.

Section III Physical/Chemical Characteristics

BOILING POINT
4442F

MELTING POINT
1220F

FREEZING POINT
ND

EVAPORATION RATE
BASIS (NA)=1
RATE: ND

VAPOR DENSITY (AIR=1)
NA

SPECIFIC GRAVITY
(WATER=1)
ND

PERCENT VOLATILE
BY VOLUME
ND

THEORETICAL VOC CONTENT
PERCENT BY WEIGHT
ND

WEIGHT PER GALLON
ND

pH INFORMATION
pH VALUE: NA
CONCENTRATION: ND

PHYSICAL STATE
STATE: ND

VAPOR PRESSURE
VALUE: NA

SOLUBILITY IN WATER:
NIL (% BY WEIGHT)

REACTIVITY IN WATER:
NO DATA

APPEARANCE AND ODOR:

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Section III Physical/Chemical Characteristics - (CONT.)

VARIOUS COLORED COATINGS, SILVER MATALLIC BASE.

********** ADDITIONAL INFORMATION **********
MATERIAL IS (AT NORMAL CONDITIONS): SOLID

Section IV Fire And Explosion Hazard Data

NFPA CODES:
HEALTH .....: 0
FLAMMABILITY ..: 1
REACTIVITY ....: 0
OTHER .....: U

HMIS CODES:
HEALTH .....: ND
FLAMMABILITY ..: ND
REACTIVITY ....: ND
PROTECTION ....: ND

FLAMMABLE LIMITS IN AIR
UPPER LIMIT ..: NA
LOWER LIMIT ..: NA

FLASH POINT
VALUE .....: >200
METHOD USED : ND

AUTOIGNITION TEMPERATURE: NA

EXTINGUISHING MEDIA:
COVER FIRE WITH SAND, MAT, OR FLAX (BURLAP) SACKS. WATER SPRAY IS DANGEROUS IN EARLY STAGE OF FIRE. NOTE CHIRS91

SPECIAL FIRE FIGHTING PROCEDURES:
DO NOT USE WATER OR FOAM.
SMALL FIRE: DRY CHEMICAL, SODA ASH, LIME OR SAND.
LARGE FIRE: WITHDRAW FROM AREA AND LET FIRE BURN.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
DAMP ALUMINUM DUST MAY SPONTANEOUSLY HEAT WITH LIBERATION OF HYDROGEN TO FORM EXPLOSIVE AIR MIXTURES. (SEE ADDITIONAL INFORMATION, SECTION VIII, HEREIN.)

Section V Reactivity Data

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y

CONDITIONS TO AVOID (REGARDING STABILITY):
(SEE OTHER SECTIONS HEREIN.)

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Section V Reactivity Data - (CONT.)

INCOMPATIBILITY (MATERIALS TO AVOID):
ANHYDROUS BROMINE. HALOCARBONS, MERCURY (AMALGON), CHLORINE, IODINE, (ALUMINUM+BARIUM, NITRATE +BARIUM, NITRATE+KPOTASSIUM, NITRATE+SULFUR+ORGANIC MATTER).

HAZARDOUS DECOMPOSITION PRODUCTS:
(SEE OTHER SECTIONS HEREIN.)

HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N

CONDITIONS TO AVOID (REGARDING POLYMERIZATION):
NA

Section VI Health Hazard Data

ROUTES OF ENTRY:
INHALATION, EYES

SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:
INHALATION: NOT LIKELY UNLESS MATERIAL MACHINED, WELDED OR REMELTED. SHORT TERM OVEREXPOSURE TO WELDING FUMES MAY RESULT IN DISCOMFORT SUCH AS DIZZINESS, NAUSEA, OR DRYNESS OR IRRITATION OF THROAT AND NOSE. INGESTION: NOT LIKELY. SKIN: NOT LIKELY. EYES: MAY IRRITATE EYES WHEN WELDING OR PLASMA CUTTING. SHORT TERM OVEREXPOSURE TO SOLVENT FUMES MAY OCCUR.

CHRONIC OVEREXPOSURE:
NA

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
NA

CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN

NATIONAL TOXICOLOGY PROGRAM (Y/N): N	IARC MONOGRAPHS (Y/N): N	OSHA (Y/N): N

********** ADDITIONAL INFORMATION **********
(THRESHOLD LIMIT VALUE: SEE SECTION II.)

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Emergency And First Aid Procedures

EMERGENCY PHONE NUMBER OF MANUFACTURER: 319/328-6371

INHALATION:
NA

EYE CONTACT:
FOR EYE CONTACT, FLUSH WITH WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

SKIN CONTACT:
FOR SKIN CONTACT, REMOVE PARTICLES BY THOROUGHLY WASHING WITH SOAP AND WATER.

INGESTION:
NA

Section VII Precautions For Safe Handling And Use

HAZARD CLASS ..: 4.3 DANGEROUS WHEN WET
US DOT ID .....: SOLID
UN/NA NUMBER ..: UN1396

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
1. HALOGEN ACIDS AND SODIUM HYDROXIDE IN CONTACT WITH ALUMINUM MAY GENERATE EXPLOSIVE MIXTRUES OF HYDROGEN.
2. FINELY DIVIDED ALUMINUM WILL FORM EXPLOSIVE MIXTURES IN AIR.
3. THE WELDING OF ALUMINUM ALLOYS MAY GENERATE CARBON MONOXIDE, CARBON DIOXIDE, OZONE, NITROGEN OXIDES, INFRARED RADIATION AND ULTRAVIOLET RADIATION.
4. COATING MAY BURN IF EXPOSED TO IGNITION SOURCE AT HIGH TEMPERATURES.

OTHER PRECAUTIONS:
NA

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
NA

WASTE DISPOSAL METHODS:
USED OR UNUSED PRODUCT SHOULD BE TESTED TO DETERMINE HAZARD STATUS AND DISPOSAL REQUIREMENTS UNDER FEDERAL, STATE, OR LOCAL LAWS AND REGULATIONS. DISPOSER MUST COMPLY WITH FEDERAL,

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Section VII Precautions For Safe Handling And Use - (CONT.)

STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS.

Section VIII Control Measures

RESPIRATORY PROTECTION:
PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED WHEN MACHING, GRINDING, WELDING OR REMELTING THIS PRODUCT. FACE/EYE PROTECTION, RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING APPROPRIATE TO THE TASK SHOULD BE USED.

VENTILATION REQUIREMENTS:
SEE ABOVE

LOCAL EXHAUST:
SEE ABOVE

MECHANICAL:
NA

SPECIAL:
NA

OTHER:
NA

EYE PROTECTION:
(SEE PERSONAL PROTECTIVE EQUIPMENT, BELOW)

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
(SEE PERSONAL PROTECTIVE EQUIPMENT, BELOW)

WORK/HYGIENIC PRACTICES:
ND

********** ADDITIONAL INFORMATION **********

PERSONAL PROTECTIVE EQUIPMENT:
APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED WHEN MELTING, CASTING, MACHINING, FORGING, OR OTHERWISE PROCESSING. THE NATURE OF THE PROCESSING ACTIVITY WILL DETERMINE WHAT FORM OF EQUIPMENT IS NECESSARY, I.E., GLASSES, RESPIRATOR, PROTECTIVE CLOTHING, AND EAR PROTECTION.

NA = NOT APPLICABLE

MSDS NUMBER : 1574-NAD
PRODUCT NAME: PAINTED ALUMINUM COILED SHEET

Section VIII Control Measures - (CONT.)

ADDITIONAL INFORMATION

1. HALOGEN ACIDS AND SODIUM HYDROXIDE IN CONTACT WITH ALUMINUM MAY GENERATE EXPLOSIVE MIXTURES OF HYDROGEN.
2. FINELY DIVIDED ALUMINUM WILL FORM EXPLOSIVE MIXTURES IN AIR. IT WILL ALSO FORM EXPLOSIVE MIXTURES IN AIR IN THE PRESENCE OF BROMATES, IODATES, OR AMMONIUM NITRATE.
3. WHEN REMELTING ALUMINUM SCRAP, ENTRAPPED MOISTURE OR THE PRESENCE OF STRONG OXIDIZERS SUCH AS AMMONIUM NITRATE COULD CAUSE AN EXPLOSION. THIS APPLIES TO THE COLLECTION OF MOISTURE IN SOW CAVITIES AS WELL. MOISTURE MUST BE DRIVEN OFF PRIOR TO REMELTING.
4. DO NOT TOUCH CAST ALUMINUM METAL OR HEATED ALUMINUM PRODUCT WITHOUT KNOWING METAL TEMPERATURE. ALUMINUM EXPERIENCES NO COLOR CHANGE DURING HEATING. IF METAL IS HOT AND TOUCHED, BURNS CAN RESULT.
5. ALUMINUM POWDER MUST BE PACKAGED AND SHIPPED AS A FLAMMABLE SOLID, UN1396.
6. HARD ALLOY INGOTS IN THE 2000 AND 7000 SERIES MUST BE STRESS-RELIEVED TO PREVENT EXPLOSION WHEN SAWED.
7. THE WELDING OF ALUMINUM ALLOYS MAY GENERATE CARBON MONOXIDE, CARBON DIOXIDE, OZONE, NITROGNE OXIDES, INFRA-RED RADIATION AND ULTRA-VIOLET RADIATION.

THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED REGARDING THE ACCURACY OR CORRECTNESS.

THE CONDITIONS OR METHODS OF HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL AND MAY BE BEYOND OUR KNOWLEDGE. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

********** GENERAL INFORMATION **********

ND= NO DATA AVAILABLE

AMERICAN SATURATED FELT, INC.
47 Maple Avenue P.O. Box 550 Thomaston, Connecticut 06787-1901 (203) 283-8239 1-800-292-6728 FAX (203) 283-0308

MATERIAL SAFETY DATA SHEET

ASPHALT FELTS

PRODUCT INFORMATION

PRODUCT NAME(S)	-15 Premium Gold 432 sq. ft. -15 Plain 432 sq. ft. -15 Plain 400 sq. ft. -15 Plain 324 sq. ft. -15 Plain 216 sq. ft. -15 Perforated 432 sq. ft. -15 "Generic" 432 sq. ft. -30 Premium Gold 216 sq. ft. -30 Plain 216 sq. ft. -30 Plain 18"/"split" rolls -30 Perforated 216 sq. ft. -30 "Generic" 216 sq. ft. -Multi-Purpose 432 sq. ft. -Multi-Purpose 400 sq. ft. -Multi-Purpose 216 sq. ft. -Slaters Felt 432 sq. ft. -Rugged Sheathing 432 sq. ft. -Rugged Sheathing 500 sq. ft.
BRAND NAME	AMERICAN SATURATED FELT, INC.
ADDRESS	47 Maple Avenue P. O. Box 550 Thomaston, CT 06787
PHONE NUMBERS	Connecticut: 203-283-8239 Fax : 203-283-0308
PRODUCT USE	On flat roofs: For Built up Roofing (BUR) On inclined roofs: As underlayment under shingles. On walls: As external sheathing for waterproofing. As general water shedding material. As water shedding breathing membrane. As air barrier for external cladding of structures.

HAZARDOUS INGREDIENTS

ASPHALT	30% to 60%

PHYSICAL DATA

1.	Physical State	Solid (asphalt coated, Surfaced sheets).
2.	Odor and Appearance	Slight petroleum odor-sheet forms Colored mineral granules/white talc or sand covered Blackish (asphaltic)colors also.
3.	Specific Gravity	1.8 to 2.5
4.	Boiling Point	Not applicable
5.	Vapor Pressure	Not applicable
6.	Solubility in Water	Not applicable

FIRE AND EXPLOSION DATA

Flash Point (method used= COC)	Minimum 265° c (approx.)
Flammable limits in air (% by volume)	Unknown
Auto-Ignition Temperature	370-480° c (approx.)
Fire and Explosion Hazards	Addition of water or foam may cause frothing. Flammable gas emmited on heating.
Extinguishing Media	Water Spray, Dry chemical, carbon dioxide for small fires.
Firefighting Procedures	Use water spray to cool fire-exposed containers and as a protective screen. Do not point solid water directly into burning asphalt to avoid spreading. Self-contained breathing apparatus should be worn to protect against possible release of hydrogen sulphide and sulphur dioxide if material is burning.

REACTIVITY DATA

STABILITY	Stable
CONDITIONS TO AVOID	Excessive heat approaching flash point.
MATERIALS TO AVOID	Oxidizing agents, Strong acids.
HAZARDOUS DECOMPOSITION	CO_X, SO_X, NO_X Sulphur compounds, smoke on combustion
HAZARDOUS POLYMERIZATION	Not known to happen.

ENVIRONMENTAL AND DISPOSAL INFORMATION

Product as produced is in solid state. For disposal use standard approved waste disposal procedures. If product has been affected by heat or fire and asphalt in fluid state has been released from the product then, allow to cool and solidity. Break it up and collect in appropriate containers such as drums. Dispose of it through approved waste disposal method such as land fill, etc.

HEALTH HAZARD DATA

This manufactured product as produced and when used under ambient conditions poses no health hazard.

However, if the product is heated beyond 200^{o} or if it catches fire, then, the major constituent asphalt (bitumen) will emanate slightly toxic fumes. Melted asphalt (bitumen from the product could act as a fuel and contribute to the fire.

TOXICITY DATA	The international Agency for Research on Cancer states that there is inadequate evidence that bitumens alone are carcinogenic to humans.

EFFECTS OF OVEREXPOSURE

INHALATION	Fumes from hot asphalt cause nausea, headache, dizziness.
SKIN AND EYES	Hot asphalt burns skin and eyes. Prolonged or repeated skin contact may cause dermatitis.

INGESTION	Ingestion is unlikely.
NOTE:	Under extreme heat, product may liberate hot fluid asphalt.

FIRST AID

EMERGENCY AND FIRST AID PROCEDURES INFORMATION

SKIN	For hot asphalt splash, cool part by water immersion or shower. Do not attempt removal of asphalt but split longitudinally if circumferential to avoid tourniquet effect. For skin soiling without underlying burn, cleanse with mineral oil followed by soap and water. Use olive oil in vicinity of eyes.
EYES	Copious warm water flush - 15 minutes. Physician assessment if eyes inflamed. Cleanse soiling with olive oil.
INHALATION	Evacuate to fresh air. Apply Cardio Pulmonary Resuscitation if required, physician assessment mandatory.
INGESTION	Not applicable.

HANDLING PRECAUTIONS

For product as produced no special protection is essential other than wearing of gloves to protect hands from physical scratches or asphaltic stains.

ADDITIONAL INFORMATION

For product as produced and used, no special procedures of safety are essential.

Should product catch fire through external source remain upwind of fire. Avoid skin and eye contact, avoid inhalation of fumes.

SINCE THIS PRODUCT IS A "MANUFACTURED ARTICLE" AMERICAN SATURATED FELT, INC. IS NOT REQUIRED BY LAW TO PRODUCE A MATERIAL SAFETY DATA SHEET. THIS MATERIAL SAFETY DATA SHEET IS PROVIDED AS A CUSTOMER SERVICE INFORMATION.

THE RECOMMEDATIONS AND DATA PRESENTED ARE BELIEVED TO BE CORREGT, HOWEVER NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THE RESULTS OBTAINED FROM THE USE OF THIS INFORMATION.

Bird
Vinyl Products, Inc.

Material Safety Data Sheet (MSDS)

Bird Vinyl Siding Products meet the "Article" Definition as outlined in the Federal Register, Volume 48, N. 228, November 25, 1983. P. 53340.

REQUIREMENTS	APPLICABILITY
Formed to a specific shape or design during manufacture.	All Bird Vinyl Products are dimension specific.
End use functions are dependent in whole or in part upon its shape or design during end use.	Bird Vinyl Products function properly partly due to their shapes and/or profiles.
Does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use	Bird Vinyl Products are fused in manufacture. This encapsulates any potentially hazardous chemical.

Since Bird Vinyl Products meet the "Article" classification, Bird Vinyl Products would be exempt from the Material Safety Data Sheet (MSDS) requirement, as indicated in 1910.1200(5) (IV).

1010 Withrow Court, Bardstown, Kentucky 40004 Tel: 502·348·9231 Fax: 502·348·1037

M.S.D.S.

MATERIAL SAFETY DATA SHEET

H	1
F	0
R	0
P	B

SECTION I - PRODUCT IDENTIFICATION

TRADE NAME: CONCRETE BONDING ADHESIVE
CHEMICAL FAMILY/SYNONYMS: POLYVINYL ACETATE EMULSION
MANUFACTURER: W. R. BONSAL COMPANY, P.O. BOX 241148, CHARLOTTE, N. C. 28224
EMERGENCY PHONE: (704) 525-1621 Mr. Fred Goeman

SECTION II - HAZARDOUS INGREDIENTS

DESCRIPTION	CAS #	PERCENT	OCCUPATIONAL EXPOSURE LIMITS TLV	PEL	VAPOR PRESSURE (MM HG)
POLYVINYL ACETATE	PROPRIETARY	<50	NOT EST - NON TOXIC OR HAZARDOUS		
WATER	7732-18-5	<60	NON TOXIC OR HAZARDOUS		
BUTYL BENZYL PHTHALATE	85-68-7	2.2	5 mg/m³		
EMULSIFIER	PROPRIETARY	2-4	NE		
ETHYLENE GLYCOL	107-21-1	<.5	50 ppm		
DIETHYLENE GLYCOL	111-46-6	<.5	NE		
TALC	14807-96-6	<.5	2 mg/m³		

SECTION III - PHYSICAL DATA

BOILING POINT (°F) 212°
VAPOR PRESSURE (mmHg.) NA
VAPOR DENSITY (AIR=1) Lighter
SOLUBILITY IN WATER: Dilutable

SPECIFIC GRAVITY (H_2O=1) 1.06
% VOLATILE BY VOLUME (%) 59-62
EVAPORATION RATE

APPEARANCE & ODOR: Milky, white or pink with faint odor.

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT: None to boiling FLAMMABLE LIMITS

EXTINGUISHING MEDIA: For dry solids use water, foam, CO_2, or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES: Water may be used to keep fire exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers exposed to extreme heat may rupture due to pressure build up.

SECTION V - HEALTH HAZARD DATA

'HRESHOLD LIMIT VALUE: 5mg/m³ FOR BENZYL PHTHALATE

:FFECTS OF OVEREXPOSURE: May cause skin or eye irritation upon prolonged or 'epeated contact.
'MERGENCY FIRST AID: Eyes: Hold lids apart, flush with GENTLE stream of water 'or 15 minutes. See a physician. Wash thoroughly with soap and water after use. :f ingested, drink 2-3 cups of milk, fruit juice or water. If unusual symptoms :evelop, seek medical attention.

SECTION VI - REACTIVITY DATA

:TABILITY: UNSTABLE _____ STABLE __X__
:ONDITIONS TO AVOID: NA

'NCOMPATABILITY (MATERIALS TO AVOID): NA

:AZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield CO_2 and/or :race of monomer.
'AZARDOUS POLYMERIZATION: MAY OCCUR _____ WILL NOT OCCUR __X__
:ONDITIONS TO AVOID: NA

SECTION VII - SPILL OR LEAK PROCEDURES

N CASE MATERIAL IS RELEASED OR SPILLED: Flush with water into suitable 'etaining area or container. Small amount of spilled material may be absorbed. 'revent spilled material from entering sewers, storm drains.
'ASTE DISPOSAL METHOD: Dispose of in accordance with applicable local, county, :tate and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION (TYPE): NIOSH approved, if vapor concentration exceeds time weighted TLV.
ENTILATION:
ocal Exhaust: Special: NA
echanical: Yes to within time wtd. TLV Other:
ROTECTIVE GLOVES: Yes, Rubber EYE PROTECTION: Safety glasses, goggles, face shield.
THER PROTECTIVE EQUIPMENT:
ye washers, safety showers, long sleeve clothing.

SECTION IX - SPECIAL PRECAUTIONS

RECAUTIONS IN HANDLING AND STORING: Keep containers cool, dry and away from ources of ignition. Use and store with adequate ventilation. Keep containers :losed.
THER PRECAUTIONS: Do not allow to freeze or subject to extreme temperature ariations.

MATERIAL SAFETY DATA SHEET

RODUCT NAME: CARIBBEAN ROOF ELASTO - WHITE HMIS CODES: H F R P
RODUCT CODE: 22DW075 1 1 0

========== SECTION I - MANUFACTURER IDENTIFICATION ==========

ANUFACTURER'S NAME: MOBILE PAINT MANUFACTURING CO. INC.
DDRESS: P.O. BOX 717, THEODORE, AL 36590
EMERGENCY PHONE: 1-800-255-3924 INFORMATION PHONE: (334) 443-6110
ATE REVISED : 01-15-91 NAME OF PREPARER : JULIE HORBLAND

========== SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION ====

		OCCUPATIONAL EXPOSURE LIMITS			VAPOR PRESSURE		WEIGHT

* Indicates toxic chemical is subject to the reporting requirements of section 313 of Title III of 40 CFR 372.

========== SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS ========

BOILING POINT: 370 Deg F SPECIFIC GRAVITY (H2O=1): 1.4
VAPOR DENSITY: LIGHTER THAN AIR EVAPORATION RATE: SLOWER THAN ETHER
COATING V.O.C. : 0.50 LB/GL 60 G/L
SOLUBILITY IN WATER: DILUTABLE
APPEARANCE AND ODOR:

========== SECTION IV - FIRE AND EXPLOSION HAZARD DATA ==========

FLASH POINT: NO FLASH METHOD USED: N/A
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 3.3% UPPER: N/A

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG

SPECIAL FIREFIGHTING PROCEDURES
CLOSED CONTAINERS MAY EXPLODE, DUE TO THE BUILD-UP OF STEAM PRESSURE WHEN EXPOSED TO EXTREME HEAT. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE EXPLOSION WHEN EXPOSED TO EXTREME HEAT.

UNUSUAL FIRE AND EXPLOSION HAZARDS
MATERIAL MAY SPATTER WHEN TEMPERATURE GOES ABOVE 212 F. DRIED SOLIDS MAY BURN, GIVING OFF OXIDES OF CARBON.

SECTION V - REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID
NONE

INCOMPATIBILITY (MATERIALS TO AVOID)
NONE

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
TOXIC MATERIALS WILL BE GIVEN OFF.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
MAY CAUSE HEADACHE, NAUSEA AND IRRITATION OF THE NOSE, THROAT AND LUNGS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
POSSIBLE PRIMARY SKIN IRRITATION. MATERIAL IS SLIGHTLY CAUSTIC. PRIMARY EYE IRRITATION. SENSITIZER TO EYE TISSUE.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NOT KNOWN.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NO KNOWN EVIDENCE OF ADVERSE HEALTH EFFECTS.

HEALTH HAZARDS (ACUTE AND CHRONIC)
NO KNOWN CHRONIC HEALTH HAZARDS.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
MAY PRODUCE HYPERACTIVE RESPONSE IN PERSONS WITH ASTHMA WHO ARE SENSITIVE TO AIRWAY IRRITANTS.

EMERGENCY AND FIRST AID PROCEDURES
INHALATION:REMOVE TO FRESH AIR.
SKIN CONTACT:REMOVE WITH SOAP AND WATER. REMOVE AND LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
EYE CONTACT:FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SEE A PHYSICIAN FOR MEDICAL TREATMENT
INGESTION:DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. TREAT SYMPTOMATICALLY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

FLOOR MAY BE SLIPPERY, USE CARE TO AVOID FALLS. DIKE AND ABSORB WITH INERT MATERIAL, TRANSFER TO CONTAINER FOR DISPOSAL. KEEP SPILL OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER.

WASTE DISPOSAL METHOD

DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

DO NOT STORE ABOVE 120 F. DO NOT FREEZE. STORE LARGE QUANTITIES ONLY IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. KEEP CONTAINERS CLOSED. USE WITH ADEQUATE VENTILATION. AVOID CONTACT WITH SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

OTHER PRECAUTIONS

DO NOT HANDLE UNTIL THE MANUFACTURERS SAFETY PRECAUTIONS HAVE BEEN READ AND UNDERSTOOD.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION

IN OPEN AREAS USE NIOSH/MSHA APPROVED MECHANICAL FILTER RESPIRATOR TO REMOVE SOLID AIR BORNE PARTICLES OF [illegible] DURING SPRAY APPLICATION. IN RESTRICTED VENTILATION AREAS USE NIOSH/MSHA APPROVED RESPIRATOR TO [illegible] A COMBINATION OF PARTICULATES AND VAPOR.

VENTILATION

PROVIDE VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF HAZARDOUS INGREDIENTS BELOW ACCEPTABLE LIMIT, LEL BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES

USE GLOVES IMPERVIOUS TO WATER AND SOAP.

EYE PROTECTION

SAFETY EYEWEAR INCLUDING SPLASH GUARDS OR SIDE SHIELDS ARE RECOMMENDED.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

USE PROTECTIVE OUTERWEAR AND PREVENT PROLONGED SKIN CONTACT TO CONTAMINATED CLOTHING.

WORK/HYGIENIC PRACTICES

WASH HANDS THOROUGHLY BEFORE EATING, SMOKING OR DRINKING, AND AT THE END OF EACH WORK PERIOD.

SECTION IX - DISCLAIMER

DISCLAIMER

THE INFORMATION PROVIDED IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE AND RELIABLE. IT IS FURNISHED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. RECIPIENTS SHOULD DETERMINE THAT THE INFORMATION IS CURRENT AND SUITABLE FOR THE PROTECTION OF THE ENVIRONMENT AND THE HEALTH AND SAFETY OF YOUR EMPLOYEES AND USERS OF THIS PRODUCT.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: COOL COTE NON-TOXIC - RED
PRODUCT CODE: 22DR009

HMIS CODES: H F R P
1 1 0

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: MOBILE PAINT MANUFACTURING CO. INC.
ADDRESS: P.O. BOX 717, THEODORE, AL 36582
EMERGENCY PHONE: 1-800-255-3924
DATE REVISED : 01-15-91
INFORMATION PHONE: (334) 443-6110
NAME OF PREPARER : JULIE HOAGLAND

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
SILICON DIOXIDE	14808-60-7	20 MPPCF	10 MG/M3		N/A		30
*ETHYLENE GLYCOL	107-21-1	50 PPM C	50 PPM C	125 MG/M3	2.1	68F	3

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 379 Deg F
SPECIFIC GRAVITY (H2O=1): 1.3
VAPOR DENSITY: LIGHTER THAN AIR
EVAPORATION RATE: SLOWER THAN ETH
COATING V.O.C. : 1.15 LB/GL (137 G/L)
SOLUBILITY IN WATER: DILUTABLE
APPEARANCE AND ODOR:

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NO FLASH
METHOD USED: N/A
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 3.2% UPPER: N/A

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG

SPECIAL FIREFIGHTING PROCEDURES
CLOSED CONTAINERS MAY EXPLODE, DUE TO THE BUILD-UP OF STEAM PRESSURE WHEN EXPOSED TO EXTREME HEAT. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE EXPLOSION WHEN EXPOSED TO EXTREME HEAT.

UNUSUAL FIRE AND EXPLOSION HAZARDS
MATERIAL MAY SPATTER WHEN TEMPERATURE GOES ABOVE 212 F. DRIED SOLIDS MAY BURN, GIVING OFF OXIDES OF CARBON.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID
FIRE

INCOMPATIBILITY (MATERIALS TO AVOID)
NONE

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
OXIDIZING MATERIALS WILL BE GIVEN OFF.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
MAY CAUSE HEADACHE, NAUSEA AND IRRITATION OF THE NOSE, THROAT AND LUNGS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
POSSIBLE PRIMARY SKIN IRRITATION (MATERIAL IS SLIGHTLY ALKALINE). PRIMARY EYE IRRITATION. (SENSITIZER TO SOME PEOPLE.)

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NONE KNOWN.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
NO KNOWN EVIDENCE OF ADVERSE HEALTH EFFECTS.

HEALTH HAZARDS (ACUTE AND CHRONIC)
NO KNOWN CHRONIC HEALTH HAZARDS.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
MAY PROVOKE ASTHMATIC RESPONSE IN PERSONS WITH ASTHMA WHO ARE SENSITIVE TO AIRWAY IRRITANTS.

EMERGENCY AND FIRST AID PROCEDURES
INHALATION:REMOVE TO FRESH AIR.
SKIN CONTACT:REMOVE WITH SOAP AND WATER. REMOVE AND LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
EYE CONTACT:FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SEE A PHYSICIAN FOR MEDICAL TREATMENT
INGESTION:DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. TREAT SYMPTOMATICALLY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
FLOOR MAY BE SLIPPERY, USE CARE TO AVOID FALLS. DIKE AND ABSORB WITH INERT MATERIAL, TRANSFER TO CONTAINER FOR DISPOSAL. KEEP SPILL OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER.

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
DO NOT STORE ABOVE 120 F. DO NOT FREEZE. STORE LARGE QUANTITIES ONLY IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. KEEP CONTAINERS CLOSED. USE WITH ADEQUATE VENTILATION. AVOID CONTACT WITH SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

OTHER PRECAUTIONS
DO NOT HANDLE UNTIL THE MANUFACTURERS SAFETY PRECAUTIONS HAVE BEEN READ AND UNDERSTOOD.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION
IN OPEN AREAS USE NIOSH/MSHA APPROVED MECHANICAL FILTER RESPIRATOR TO REMOVE SOLID AIR BORNE PARTICLES OR OVERSPRAY DURING SPRAY APPLICATION. IN RESTRICTED VENTILATION AREAS USE NIOSH/MSHA APPROVED RESPIRATOR TO REMOVE A COMBINATION OF PARTICULATES AND VAPOR.

VENTILATION
PROVIDE VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF HAZARDOUS INGREDIENTS BELOW ACCEPTABLE LIMIT, LEL BELOW STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

PROTECTIVE GLOVES
USE GLOVES IMPERVIOUS TO WATER AND SOAP.

EYE PROTECTION
SAFETY EYEWEAR INCLUDING SPLASH GUARDS OR SIDE SHIELDS ARE RECOMMENDED.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
USE PROTECTIVE OUTERWEAR AND PREVENT PROLONGED SKIN CONTACT TO CONTAMINATED CLOTHING.

WORK/HYGIENIC PRACTICES
WASH HANDS THOROUGHLY BEFORE EATING, SMOKING OR DRINKING, AND AT THE END OF EACH WORK PERIOD.

SECTION IX - DISCLAIMER

DISCLAIMER
THE INFORMATION PROVIDED IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE AND RELIABLE. IT IS FURNISHED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. RECIPIENTS SHOULD DETERMINE THAT THE INFORMATION IS CURRENT AND SUITABLE FOR THE PROTECTION OF THE ENVIRONMENT AND THE HEALTH AND SAFETY OF YOUR EMPLOYEES AND USERS OF THIS PRODUCT.

MATERIAL SAFETY DATA SHEET

DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10004
INTERNAL ID: 10004
DAP BLACK-TITE ROOF SEALANT
REVISION: 8
DATE: JUNE 13, 1994

NATIONAL PAINT AND COATINGS ASSOCIATION		
HAZARDOUS MATERIAL IDENTIFICATION SYSTEM	HEALTH HAZARD	1 - SLIGHT
	FLAMMABILITY HAZARD	2 - MODERATE
	REACTIVITY HAZARD	0 - MINIMAL
	PERSONAL PROTECTION	B - GLASSES, GLOVES

SECTION I. MATERIAL IDENTIFICATION

TRADE/MATERIAL NAME: DAP BLACK-TITE ROOF SEALANT

DESCRIPTION: SEALANT

CAS: MIXTURE

PREVIOUS MSDS REVISION DATE: APRIL 19, 1994

DOT INFORMATION FOR DOMESTIC GROUND TRANSPORT:
SHIPPING NAME (49 CFR 172.101): CONSUMER COMMODITY
D.O.T. HAZARD CLASS (49 CFR 172.101): ORM-D
D.O.T. ID NO. (49 CFR 172.101): NONE
D.O.T. LABEL REQUIRED (49 CFR 172.101): NONE
D.O.T. PACKAGING GROUP (49 CFR 172.101): NONE
EPA WASTE CODE-IF DISCARDED (40 CFR 261): NONE

MANUFACTURER:DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

PHONE:24 HOUR EMERGENCY:
INFO TRAC 1-800-535-5053
DAP, INC. 1-800-543-3840
GENERAL INFORMATION:
DAP, INC. 1-800-543-3840

SECTION II. INGREDIENTS AND HAZARDS

INGREDIENT NAME:	CAS NUMBER:	PERCENT:	EXPOSURE LIMITS:
MINERAL SPIRITS	64742-41-8	5-10	OSHA PEL:500PPM TWA ACGIH TLV:100PPM TWA
MINERAL SPIRITS	8052-41-3	5-10	OSHA PEL:100PPM TWA ACGIH TLV:100PPM TWA

REMAINING INGREDIENTS ARE NOT REGULATED BY OSHA AND ARE CONSIDERED TRADE SECRETS.

INGREDIENTS PER THE NEW JERSEY RIGHT TO KNOW ACT: CALCIUM CARBONATE 1317-65-3, HYDROUS MAGNESIUM SILICATE 14807-96-6, ASPHALT 64742-93-4, MINERAL SPIRITS 64741-41-8, AND MINERAL SPIRITS 8052-41-3.

MSDS 10004 CONTINUES ON PAGE 2

MATERIAL SAFETY DATA SHEET

DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10004
INTERNAL ID: 10004
DAP BLACK-TITE ROOF SEALANT
REVISION: 8
DATE: JUNE 13, 1994

SECTION III. PHYSICAL DATA

PEARANCE & ODOR: BLACK PASTE WITH A GASOLINE-LIKE ODOR

ILING POINT: NE
APOR PRESSURE: 3.1 MM HG @ 20C
ATER SOLUBILITY (%): NEGLIGIBLE
APOR DENSITY (AIR=1): >1

EVAPORATION RATE: (N-BUTYL ACETATE=1):0.15
SPECIFIC GRAVITY (H2O=1): 1.6
% VOLATILE BY VOLUME: 20-25

ISCOSITY (SLUMP): 0.4" MAX @ 122F FOR 10 MIN.

C LESS WATER LESS EXEMPT SOLVENT (GRAMS/LITER): 190-195
C MATERIAL (GRAMS/LITER): 190-195

SECTION IV. FIRE AND EXPLOSION DATA

ASH POINT (METHOD): 129F (C.C.) LIMITS: LEL %: NE UEL %: NE

TINGUISHING MEDIA: FOAM, CARBON DIOXIDE, DRY CHEMICALS

USUAL FIRE OR EXPLOSION HAZARDS: CONTAINERS MAY EXPLODE IF EXPOSED TO EXTREME EAT. ELIMINATE SOURCE OF IGNITION: HEAT, ELECTRICAL EQUIPMENT, SPARKS AND OPEN AMES. DO NOT PUT IN CONTACT WITH OXIDIZING OR CAUSTIC MATERIALS.

PECIAL FIRE-FIGHTING PROCEDURES: FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-NTAINED BREATHING APPARATUS, IS RECOMMENDED TO PROTECT FROM COMBUSTION PRODUCTS. OL EXPOSED CONTAINERS WITH WATER.

SECTION V. REACTIVITY DATA

MATERIAL IS STABLE . HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

EMICAL INCOMPATIBILITIES: STRONG OXIDIZERS AND CAUSTICS

NDITIONS TO AVOID: EXCESSIVE HEAT

ARDOUS DECOMPOSITION PRODUCTS: NORMAL COMBUSTION PRODUCTS, I.E. COX, NOX

THIS PRODUCT IS NOT CONSIDERED A CARCINOGEN BY NTP, IARC, OSHA

EDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY CONTACT: NONE KNOWN

RIMARY ENTRY ROUTE(S): INHALATION OF SOLVENT VAPORS AND SKIN CONTACT.

UTE EFFECTS: MAY IRRITATE EYES, SKIN, NOSE, AND UPPER RESPIRATORY TRACT. HARMFUL IF INHALED. HARMFUL OR FATAL IF SWALLOWED. IF INGESTED THIS PRODUCT MAY CAUSE OMITING, DIARRHEA, AND DEPRESSED RESPIRATION. INHALATION MAY AFFECT THE BRAIN OR ERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE, OR NAUSEA.

RONIC EFFECT(S): REPORTS HAVE ASSOCIATED PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE WITH PROLONGED AND REPEATED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS.

MATERIAL SAFETY DATA SHEET

DAP, INC.
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DAYTON, OH 45401-0277

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REVISION: 8
DATE: JUNE 13, 1994

] HEALTH HAZARD INFORMATION CONTINUED FROM PAGE 2]

FIRST AID:

EYE CONTACT:FLUSH WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15 MINUTES. SEE A PHYSICIAN IF IRRITATION PERSISTS.

SKIN CONTACT:WASH THOUROUGHLY WITH SOAP AND WATER.

INHALATION:REMOVE TO FRESH AIR. CONTACT A PHYSICIAN IMMEDIATELY.

INGESTION:DO NOT INDUCE VOMITING. CONTACT A PHYSICIAN OR REGIONAL POISON CONTROL CENTER IMMEDIATELY.

] SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES]

SPILL / LEAK PROCEDURES: USE ABSORBENT MATERIAL OR SCRAPE UP DRIED MATERIAL AND PLACE INTO CONTAINERS.

WASTE MANAGEMENT / DISPOSAL: DISPOSE OF ACCORDING TO FEDERAL, STATE, AND LOCAL REGULATIONS. DISCARDED MATERIAL SHOULD BE INCINERATED AT A PERMITTED FACILITY. DO NOT REUSE EMPTY CONTAINER.

] SECTION VIII. SPECIAL PROTECTION INFORMATION]

PERSONAL PROTECTIVE EQUIPMENT:

GOGGLES:GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS.

GLOVES:SOLVENT IMPERVIOUS GLOVES

RESPIRATOR:IF 8-HOUR EXPOSURE LIMIT OR VALUE IS EXCEEDED FOR ANY COMPONENT, USE AN APPROVED NIOSH/OSHA RESPIRATOR. CONSULT YOUR SAFETY EQUIPMENT SUPPLIER AND THE OSHA REGULATION, 29 CFR 1910.134 FOR RESPIRATOR REQUIREMENTS.

WORKPLACE CONSIDERATIONS:

VENTILATION:PROVIDE SUFFICIENT MECHANICAL VENTILATION (LOCAL OR GENERAL EXHAUST) TO MAINTAIN EXPOSURE BELOW PEL AND TLV. VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS. CHECK ALL LOW AREAS (BASEMENTS, SUMPS, ETC.) FOR VAPOR BEFORE ENTERING.

SAFETY STATIONS:
PROVIDE EYEWASH AND SOLVENT IMPERVIOUS APRON IF BODY CONTACT WITH PRODUCT OCCURS.
BARRIER CREAMS MAY BE USED.

CONTAMINATED EQUIPMENT:
WASH CONTAMINATED CLOTHING BEFORE REUSE.

MATERIAL SAFETY DATA SHEET

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P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10004
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DAP BLACK-TITE ROOF SEALANT
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SECTION IX. SPECIAL PRECAUTIONS

STORAGE SEGREGATION: STORE AWAY FROM CAUSTICS AND OXIDIZERS.

SPECIAL HANDLING / STORAGE: KEEP OUT OF REACH OF CHILDREN. KEEP CONTAINERS FROM EXCESSIVE HEAT AND FREEZING. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE.

OTHER PRECAUTIONS: INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING VAPORS MAY BE HARMFUL OR FATAL.

DOT CLASS: SEE SECTION I UN REGISTER: SEE SECTION I

END OF MSDS 10004 --- PAGE 4

OREGON RESEARCH & DEVELOPMENT CORP.
MATERIAL SAFETY DATA SHEET

ELASTO SEAL® Product Identity (As Used on Label and List)

SECTION I

Manufacturer's Name OREGON RESEARCH & DEVELOPMENT CORPORATION	Emergency Telephone Number 911 - ASK FOR POISON CONTROL CENTER
Address (Number, Street, City, State, and ZIP Code) 1895 16TH STREET S.E. SALEM, OREGON 97302-1436	Telephone Number for Information 1-800-345-0809 Date Prepared JULY 10, 1991, UPDATED MAY 1994 Signature of Preparer (optional)

SECTION II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Pigments				
Sophicticated Rubberized Acrylic Latex				
Solvents (Water)				
Misc. inert ingredients				
[redacted]				
Contains no VOC's				

ALL MATERIALS ARE WITHIN ESTABLISHED EPA LIMITS

SECTION III — Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H_2O = 1)	1.15 est.
Vapor Pressure (mm Hg)	1.75 mmHg	Melting Point	N.A.
Vapor Density (AIR = 1)	N.A.	Evaporation Rate (Butyl Acetate = 1)	0.83-1.0
Solubility in Water	Dilutable		

Appearance and Odor
Thick black waterbased elastic coating. Contains no petroleum. Nearly oderless except with slight ammonia smell

SECTION IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	N.A.	Flammable Limits	N.A.	LEL / UEL

Extinguishing Media
N.A.

Special Fire Fighting Procedures
N.A.

Unusual Fire and Explosion Hazards
N.A.

SECTION V — Reactivity Data

Stability	Unstable		Conditions to Avoid: None
	Stable	X	

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or Byproducts: Thermal decomposition may produce carbon monoxide and/or carbon dioxide.

Hazardous Polymerization	May Occur		Conditions to Avoid: None
	Will Not Occur	X	

SECTION VI — Health Hazard Data

Routes(s) of Entry: Inhalation? Skin? Ingestion?
See Emergency and First Aid Procedures.

Health Hazards (Acute and Chronic): N.A.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
N.A. No No No

Signs and Symptoms of Exposure: N.A.

Medical Conditions Generally Aggravated by Exposure
Contains some ammonia for pH control. Mist or liquid may irritate or burn eyes, skin and mucus membrane.

Emergency and First Aid Procedures
Flush eyes and skin with water for at least 30 minutes if irritation occurs. Remove contaminated clothing. Seek medical attention as needed. Seek ventilation and fresh air as needed.

SECTION VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
Since some persons might be skin sensitive, gloves are recommended. Use absorbent material and place in approved container and bury in approved landfill.

Waste Disposal Method
Collect and bury in landfill or wash into sewage treatment plant in small quantities. For large quantities, contact Environmental Protection Agency or this company.

Precautions to Be Taken in Handling and Storing
Best stored between 40° and 80° F. **DO NOT FREEZE!**

Other Precautions: N.A.

SECTION VIII — Control Measures

Respiratory Protection (Specify Type)
If sprayed, we recommend respirator filter mask suitable for spray painting. NIOSH approved.

Ventilation	Local Exhaust: Provide proper ventilation as needed.	Special	N.A.
	Mechanical (General): Acceptable	Other	N.A.
Protective Gloves	Advisable	Eye Protection	Face shield or safety glasses as needed

Other Protective Clothing or Equipment
Wear protective clothing as needed.

Work/Hygienic Practices
An eyewash and safety shower should be nearby and ready for use.

BETHLEHEM STEEL CORPORATION AND SUBSIDIARY COMPANIES

MATERIAL SAFETY DATA SHEET

GENERAL INFORMATION

Manufacturer:
Bethlehem Steel Corporation
Bethlehem, PA 18016
For Additional Information, contact:
Occupational Health & Safety Division
215/694-5105 or 7066

Creation Date 11/'85
Revision Date: 5/'86

MSDS Code: A145

PRODUCT IDENTIFICATION

Product Name:
GALVALUME AND BETHALUME STEEL PRODUCTS

Formula
NA

Synonym(s):
NA

Chemical Family:
NA

TYPICAL CHEMICAL COMPOSITION (1)

Ingredient (2)	CAS No.	Wt. %	Permissible Air Level (3) OSHA PEL	Permissible Air Level (3) ACGIH TLV
Base Metal:				
Iron	7439-89-6	Balance	10(4)	5(4)
Manganese	7439-96-5	.25-2.0	5.0(5)	1.0(6)
Chromium	7440-47-3	.01-2.0	0.1(7)	.05(7)
Nickel	7440-02-0	.01-1.0	1.0(8)	1.0(8)
Copper	7440-50-8	.01-1.0	0.1(9)	0.2(9)
Trace Elements	NA	LT 2.0	NA	NA
Metallic Coating:				
Galvalume:				
Aluminum	7429-90-5	50-60	NA	5(10)
Zinc	7440-66-6	40(Min)	5.0(11)	5.0(11)
Silicon	7440-21-3	1.5-2.0	15 (Total Dust)	10
			5 (Respirable Dust)	5
Trace Elements	NA	LT 1.0	NA	NA
Bethalume:				
Aluminum	7429-90-5	GT 95	NA	5(10)
Silicon	7440-21-3	4.0(Max)	15 (Total Dust)	10
			5 (Respirable Dust)	5
Trace Elements	NA	LT 1.0	NA	NA

Nonmetallic Coatings (Optional): See "Additional or Miscellaneous Information"

SEE LAST PAGE FOR IMPORTANT ADDITIONAL TERMS AND CONDITIONS INCLUDING DISCLAIMER OF WARRANTIES.

Iron (Fe)

Subjecting iron and alloys containing iron to high temperatures (such as occurs during welding) will cause the formation of iron oxide. Long-term exposure to iron oxide fumes or dusts has been associated with a benign lung condition known as siderosis which is observable as an X-ray change. No physical impairment of lung function has been linked to siderosis.

Manganese (Mn)

Mn intoxication is usually due to the oxide or salts of Mn, elemental Mn exhibits very low toxicity. The dusts and fumes can act as minor irritants to the eyes and respiratory tract. Both acute and chronic exposures may adversely affect the central nervous system (CNS), but symptoms are more likely to occur after at least 1 or 2 years of prolonged or repeated exposures. Early symptoms may include weakness, in lower extremities, sleepiness, salivation, nervousness, and apathy. In more advanced stages, severe muscular incoordination, impaired speech, spastic walking, mask-like facial expression and uncontrollable laughter may occur. Manganese fumes have also been reported to result in metal fume fever, a flu-like syndrome with symptoms such as dizziness, chills, fever, headache, and nausea. An increased incidence of pneumonia, bronchitis, and pneumonitis has been reported in some worker populations exposed to manganese. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections.

Chromium (Cr)

The toxicity and health hazards of chromium are heavily dependent upon its oxidation state. The elemental (as in the metal), divalent, and trivalent forms are of very low toxicity. The hexavalent form (such as occurs in chromates and chromic acid) is very toxic and can produce both acute and chronic effects. Adverse effects on the skin may include ulcerations, irritative dermatitis, and allergic skin reactions. Adverse effects on the respiratory system may include bronchospasms, edema, hypersecretion, bronchitis, irritation, allergic asthmatic reactions, and ulceration and perforation of the nasal septum. Respiratory symptoms may include coughing and wheezing, shortness of breath, and nasal itch. Eye irritation or inflammation can also be produced. The International Agency for Research on Cancer (IARC) has determined a "causal" association between occupational exposure to chromium and certain chromium compounds and cancer in humans. This determination was based on evidence where exposures were primarily to hexavalent chromium compounds. The American Conference of Governmental Industrial Hygienists (ACGIH) has reviewed the available data and concluded that chromium metal is not carcinogenic to humans. (NOTE: The chromium contained in this product is principally in the elemental form).

Nickel (Ni)

Ni fumes and dusts are respiratory irritants and may cause a severe pneumonitis. Skin contact with nickel and its compounds may cause an allergic dermatitis. The resulting skin rash is often referred to as "nickel itch." Ni and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e., the conjunctiva). Animal and/or epidemiology studies have linked nickel and certain nickel compounds to an increased incidence of cancer of the lungs and nasal passages.

Copper (Cu)

Inhalation of Cu fume may cause irritation of the eyes nose, and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough, and weakness. Cu fume may also produce a metallic or sweet taste. Repeated or prolonged exposure to Cu fume may cause discoloration of the skin and hair.

Aluminum (Al)

Particles of aluminum deposited in the eye may cause irreversible tissue damage of the cornea. Al salts may cause dermatitis, eczema, conjunctivitis, and irritation of the mucous membranes of the upper respiratory tract. Long-term inhalation exposure to Al dusts or fumes has been associated with a fibrotic lung condition known as Shaver's disease; however, the evidence for this is not conclusive since affected workers were exposed to other substances (such as silica) as well. Symptoms of this condition may include shortness of breath, cough, and fatigue.

Zinc (Zn)

Subjecting zinc or alloys containing zinc to high temperatures (such as occurs during welding) will cause the formation of zinc oxide. Exposure to zinc oxide fumes or dusts can result in a flu-like illness called metal fume fever. Early symptoms may include a sweet or metallic taste in the mouth, dryness and irritation of the throat, and coughing. These symptoms may progress to shortness of breath, headache, fever, chills, muscle aches, nausea, vomiting, weakness, fatigue, and profuse sweating. The attack may last 6-48 hours and is more likely to occur after a period away from the job.

This is considered to be a nuisance particulate by ACGIH.

Usual Routes of Entry:

Inhalation

Medical Conditions Possibly Aggravated:

Chronic diseases or disorders of the respiratory system.

Carcinogen Information:

NTP and IARC consider (1) chromium and certain chromium compounds to be known human carcinogens and (2) nickel and certain nickel compounds to be probable human carcinogens. See above subsection on "Health Effects/Signs and Symptoms" for more information on the carcinogenicity of chromium, nickel, and their compounds.

----------FIRST AID AND MEDICAL EMERGENCY PROCEDURES ----------

Eye Contact:

Not anticipated to pose a significant eye hazard.

Skin Contact:

Not anticipated to pose a significant skin hazard.

Inhalation:

Remove from excessive exposure levels unless proper respiratory protection is worn.

Ingestion:

Not considered an ingestion hazard.

OCCUPATIONAL EXPOSURE CONTROL MEASURES

Engineering Controls (Ventilation, etc.):
Ventilation should be sufficient to maintain exposure levels below the applicable exposure limit.

Work Practices (Handling and Storage, etc):
Arc or spark generated when welding or burning on these products could be a source of ignition for combustible or flammable materials.

Eye Protection:
Not anticipated to pose a significant eye hazard.

Skin Protection:
Not anticipated to pose a significant skin hazard.

Respiratory Protection:
When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH-approved respirator for dusts and metal fume within the use limits of the respirator.

SPILL, LEAK, AND DISPOSAL INFORMATION

Procedures to Follow if Material is Released or Spilled:
NA

Waste Disposal Method(s):
Any excess product can be recycled for further use, disposed in a permitted hazardous waste landfill, or disposed by other methods which are in accordance with local, state, and federal regulations.

ADDITIONAL OR MISCELLANEOUS INFORMATION

When evaluating exposures to chromium or chromium compounds, consideration should be given to the oxidation state (or valence) of the chromium to which employees are being exposed.

Nonmetallic coatings may be applied (often at the customer's request) to the surface of steel products. These are usually classified as protective coatings or lubricants. For Galvalume and Bethalume products, the typical nonmetallic coatings are rust preventive oils, chromate treatment, or phosphate, borax, and stearate soaps The possible presence of these coatings should be recognized and considered when evaluating potential employee health hazards and exposures during welding or other dust/fume generating activities.

****

Footnotes:

(1) Concentrations may vary somewhat between batches or lots. Where possible, a concentration range is indicated. Occasionally, how- ever, levels may even fall outside of the usual concentration ranges.
(2) Common names, if applicable, appear in parentheses following the chemical names.
(3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M^3.
(4) As iron oxide fume.
(5) Ceiling value for manganese.

(6) As manganese fume.
(7) As hexavalent chromium compounds.
(8) As nickel metal and insoluble compounds.
(9) As copper fume.
(10) As aluminum welding fumes.
(11) As zinc oxide fume.

Abbreviations:

NA = Not Applicable
NE = Not Established
UK = Unknown (No applicable information was found).
GT = Greater Than
LT = Less Than

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: DODP21035A GALVAN REPAIR PAINT **HMIS CODES:** H 1 F 2 R 0 P
PRODUCT CODE: 0080166A

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: MOBILE PAINT MANUFACTURING CO. INC.
ADDRESS: P.O. BOX 717, THEODORE, AL 36582
EMERGENCY PHONE: 1-800-255-3924 **INFORMATION PHONE:** (334) 443-6110
DATE REVISED : 11-22-94 **NAME OF PREPARER :**
REASON REVISED : REVISED RESPIRATORY PROTECTION (SECTION VIII)

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
MINERAL SPIRITS	8052-41-2	100 PPM	100 PPM	525 MG/M3	2.0	68F	25
*ETHYLENE GLYCOL MONOBUTYL ETHER	111-76-2	25 PPM	25 PPM	SKIN	0.6	68F	2
SILICON DIOXIDE	68611-44-9	20 MPPCF	10 MG/M3		N/A		(5.0%
*ZINC DUST	7440-66-6	15 MG/M3	10 MG/M3		N/A		68

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE: 300 to 336 Deg F **SPECIFIC GRAVITY (H2O=1):** 2.1
VAPOR DENSITY: HEAVIER THAN AIR **EVAPORATION RATE:** SLOWER THAN ETHE
COATING V.O.C. : 4.48 LB/GL (537 G/L)
SOLUBILITY IN WATER: NEGLIGIBLE
APPEARANCE AND ODOR: TYPICAL PAINT SOLVENT ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 100-109 F **METHOD USED:** SETAFLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- **LOWER:** 0.9% **UPPER:** 10.6%

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL

SPECIAL FIREFIGHTING PROCEDURES
DURING EMERGENCY CONDITIONS OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION. KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAME.

UNUSUAL FIRE AND EXPLOSION HAZARDS
CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. APPLICATION TO HOT SURFACES REQUIRES SPECIAL PRECAUTIONS. FULL PROTECTIVE EQUIPMENT INCLUDING SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED. WATER SPRAY MAY BE INEFFECTIVE. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID

HYDROGEN WILL EVOLVE WHEN IN CONTACT WITH WATER OR DAMP AIR.

INCOMPATIBILITY (MATERIALS TO AVOID)

AVOID CONTACT WITH ACIDS, ALKALIS, AND WATER.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

NONE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

TIGHTNESS OF CHEST, METALLIC TASTE, COUGH, DIZZINESS, FEVER, CHILLS, HEADACHE, NAUSEA, AND DRY THROAT. MAY PRODUCE SYMPTOMS KNOWN AS METAL FUME FEVER OR ZINC SHAKES, AN ACUTE SELF-LIMITING CONDITION WITHOUT RECOGNIZED COMPLICATIONS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

LIKE ANY FINELY DIVIDED PARTICULATE MATTER, THIS MATERIAL MAY CAUSE MECHANICAL IRRITATION TO SKIN AND EYES.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

HEALTH HAZARDS (ACUTE AND CHRONIC)

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

ZINC VAPOR MAY BE AN IRRITANT TO PRE-EXISTING RESPIRATORY CONDITIONS.

EMERGENCY AND FIRST AID PROCEDURES

SYMPTOMS RESULTING FROM INHALATION OVEREXPOSURE USUALLY DISAPPEAR WITHIN 24 HOURS. SYMPTOMATIC TREATMENT, SUCH AS BED REST, POSSIBLY ASPIRIN, TO AFFORD RELIEF FROM FEVER AND CHILL.
EYE CONTACT - FLUSH EYES WITH COPIUS AMOUNTS OF WATER. IN ALL CASES, CONSULT PHYSICIAN FOR MEDICAL ATTENTION.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
PROHIBIT SMOKING, AVOID ALL IGNITION SOURCES, AND AVOID DUSTING. METAL SHOULD BE CONTAINED FOR RECYCLING.

WASTE DISPOSAL METHOD
CONTAIN IN A DRY CLOSED CONTAINER. MATERIAL MAY BE RECYCLED OR DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
STORE IN A COOL, DRY, WELL-VENTILATED SPACE, SEPARATE FROM ACIDS AND ALKALIS. PROTECT FROM PHYSICAL DAMAGE.

OTHER PRECAUTIONS
PRACTICE GOOD PERSONAL HYGIENE WHEN WORKING IN AREAS WHERE THIS MATERIAL IS USED. KEEP AREAS WHERE ZINC DUST IS USED AND/OR STORED FREE FROM ALL IGNITION SOURCES

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION
USE NIOSH/MSHA APPROVED TYPE RESPIRATOR FOR DUSTING CONDITIONS OR IN THE PRESENCE OF ZINC VAPOR.

VENTILATION
LOCAL EXPLOSION-PROOF EXHAUST VENTILATION TO REDUCE DUST CONCENTRATIONS TO LESS THAN PERMISSIBLE EXPOSURE LIMITS.

PROTECTIVE GLOVES
RECOMMENDED TO PREVENT SKIN IRRITATION IN HYPERSENSITIVE INDIVIDUALS.

EYE PROTECTION
USE SAFETY EYEWEAR FOR PROTECTION AGAINST AIRBORNE PARTICULATE MATTER.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
BARRIER CREAMS MAY HELP PREVENT SKIN IRRITATION IN HYPERSENSITIVE INDIVIDUALS. FIRE RESISTANT COVERALLS ARE RECOMMENDED

WORK/HYGIENIC PRACTICES
PRACTICE GOOD PERSONAL HYGIENE WHEN WORKING IN AREAS WHERE THIS MATERIAL IS USED.

SECTION IX - DISCLAIMER

DISCLAIMER
THE INFORMATION PROVIDED IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE AND RELIABLE. IT IS FURNISHED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. RECIPIENTS SHOULD DETERMINE THAT THE INFORMATION IS CURRENT AND SUITABLE FOR THE PROTECTION OF THE ENVIRONMENT AND THE HEALTH AND SAFETY OF YOUR EMPLOYEES AND USERS OF THIS PRODUCT.

MASTERS CHOICE
The Ultimate Urethane

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Manufacturer's Name: Masters Choice, Inc.
1700 Washington Street
Jamestown, NY 14701

Emergency Telephone No.
(412) 628-9100 work hours
(412) 628-8093 after 5 p.m.
(716) 487-0007

Date of Preparation: 9/1/92

Information Telephone No.
(716) 487-0007

Section I — Product Identification

Product Number: MC-510
Product Name: METAL REROOF
Product Class: AQUEOUS ACRYLIC/URETHANE

Section II — Hazardous Ingredients

Ingredient	CAS No.	Percent	Occupational Exposure Limits	Vapor Pressure
Diethylene Glycol monobutyl ether	111-76-2	0.9%	25 ppm	0.6 mmhg @ 20 deg. C.
2, 2, 4 - Trimethyl- 1, 3 Pentanediol monoisobutyrate	25265-77-4	0.09%	NONE	1 mmgh @ 87 deg C.

Section III — Physical Data

Boiling Range:	Approx. 250deg. F.
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Ether
% Volatile Volume:	67.5%
Weight Per Gallon	10.17lbs./gal.

Section IV — Fire & Explosion Hazard Data

Flammability Classification	OSHA: N/A	Flash Point:	NON COMBUSTIBLE
	DOT: NOT REGULATED	LEL:	N/A

Extinguishing Media: Foam . . . (XX) "Alcohol" Foam . . . ( ) CO2 . . . (XX)
Dry Chemical . . . (XX) Water Fog . . . (XX) Other . . . ( )

Section V — Health Hazard Data

Effects of Overexposure:

INHALATION — Vapor or mist can cause headache, nausea, and irritation of the nose, throat and lungs.
SKIN CONTACT — Irritating to skin upon repeated or prolonged contact.
EYE CONTACT — Slightly irritating to eyes.

Emergency & First Aid Procedures:

INHALATION — Move subject to fresh air.
EYE & SKIN CONTACT — Flush eyes for a minimum of 15 minutes with running water. Wash skin thoroughly soap and water. Consult a physician.

Section VI — Reactivity Data

Stability: Stable
Conditions to Avoid: Keep from heat or flame.
Hazardous Decomposition Products: N/A.
Hazardous Polymerization: Will Not Occur.
Incompatibility (Materials to Avoid): Product may coagulate or flocculate if mixed with highly ionic solutions or organic solvents.

Section VII — Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material (sand, earth, fuller's earth, etc.) and transfer liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing and wash affected skin areas with water. Wash clothing before reuse. Keep spill out of all sewers and open bodies of water.
Waste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant liquid and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and federal regulations.

Section VIII - Safe Handling and Use Information

Ventilation Type: Mechanical local exhaust ventilation at point of contaminant release.
Respiratory Protection: None required if good ventilation is maintained. Otherwise, wear self-contained breathing appratatus (pressure-demand, MSHA/NIOSH-approved or equivalent).
Protective Gloves: Chemical resistant rubber or plastic preferred.
Eye Protection: Chemical splash goglles (ANSI Z-87.1 or approved equivalent).
Other Protective Equipment: Impermeable apron to keep material off clothing.

Section IX — Special Precautions

Storage Temperature: Max 49C / 120F, Min. 1C / 34F
Precautionary Labeling: KEEP FROM FREEZING — PRODUCT MAY COAGULATE.
NOTE: Monomer vapors can be evolved when product is heated during processing operation. In such a case, use local exhaust ventilation with a minimum capture velocity of 100 ft. / min. (30m / min.) at the point of monomer evolution. Refer to *Industrial Ventilation, A Manual of Recommended Practice* published by the American Conference of Governemtn Industrial Hygienists.
Other Precautions: The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Masters Choice, Inc. or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This product should not be swallowed or allowed to come in contact with eyes.

HMIS RATING	
HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

VOC
Less than 250 g/l

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Cromac Chemical Co. Ltd.	(416) 789-7201
ADDRESS (Number, Street, City, State and ZIP Code) 289 Bridgeland Avenue, Toronto, Ontario M6A 1Z6	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS Methylene Chloride
CHEMICAL FAMILY	FORMULA

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Methylene Chloride	100	200 ppm	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES	%	TLV (Units)

SECTION III PHYSICAL DATA

BOILING POINT (oC)	39.8	SPECIFIC GRAVITY (H_2O=1)	1.32
VAPOR PRESSURE (mm Hg.)	352.1	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR = 1)	2.93	EVAPORATION RATE (ether =1)	less than
SOLUBILITY IN WATER	moderate		

APPEARANCE AND ODOR Colorless liquid, ether-like.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lel / Uel

EXTINGUISHING MEDIA Foam, Carbon Dioxide, Dry Chemical.

SPECIAL FIRE FIGHTING PROCEDURES Self-contained respiratory protection should be provided for firemen fighting fires in buildings where Methylene Chloride is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS At high temperatures, Methylene Chloride can decompose to give off Hydrogen Chloride gas & Phosgene.

SECTION V HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE 200 ppm by volume in air

FFECTS OF OVEREXPOSURE Headache, mental confusion, depression, fatigue, loss of appetite, nausea, vomiting, cough, loss of sense of balance and visual disturbances.

MERGENCY AND FIRST AID PROCEDURES Remove patient immediately from the contaminated area. Obtain medical assistance ASAP. Wash thoroughly with water any body areas contaminated with Methylene Chloride.

SECTION VI REACTIVITY DATA

TABILITY	UNSTABLE		CONDITIONS TO AVOID Open flames, electrical arc.
	STABLE	X	

NCOMPATABILITY (Materials to avoid) Aluminum titanium, pure oxygen and alkali metals.

AZARDOUS DECOMPOSITION PRODUCTS Hydrogen chloride, phosgene.

AZARDOUS OLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Spills should be cleaned up immediately. Soak up spills with rags and/or mops.

ASTE DISPOSAL METHOD Be sure all Federal, state and local regulations regarding health and pollution are followed.

SECTION VIII SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION (Specify type) Self-contained breathing apparatus.

ENTILATION	LOCAL EXHAUST satisfactory for use under normal conditions	SPECIAL
	MECHANICAL (General)	OTHER

ROTECTIVE GLOVES Neoprene | EYE PROTECTION Safety goggles

THER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not store in pits, depressions and basements or in unventilated areas.

THER PRECAUTIONS

SECTION V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: X Inhalation X Skin Contact ___ Eye Contact ___ Ingestion

EFFECT OF OVEREXPOSURE

ACUTE: Inhalation: Severe overexposure may result in nausea, dizziness, headache. Can cause drowsiness, irritation of eyes and nasal passages.
Skin Contact: Skin irritant. Liquid contact may remove natural skin oils resulting in skin irritation. Dermatitis may occur with prolonged contact.
Skin Absorption: Prolonged or widespread exposure may result in the absorption of harmful amounts of material.
Eye Contact: Overexposure may result in severe eye injury with corneal or conjuctival inflammation on contact with the liquid. Vapors slightly uncomfortable.
Ingestion: Moderately toxic. May cause nausea, vomiting, diarrhea. May cause mental sluggishness.
CHRONIC: Symptoms of respiratory tract irritation and damage to respiratory epithelium were reported in rats exposed to 5000 ppm THF for 90 days. Elevation of SGPT suggests a disturbance in liver function. The NOEL was reported to be 200 ppm.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing diseases of the eyes, skin or respiratory system may have increased susceptibility to the toxicity of excessive exposures.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: If overcome by vapors, remove to fresh air and if breathing stopped, give artificial respiration - preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call physician.
Eye Contact: Flush eyes with plenty of water for 15 minutes and call a physician.
Skin Contact: Remove contaminated clothing and shoes. Wash skin with plenty of soap and water for at least 15 minutes. If irritation develops, get medical attention.
Ingestion: Give 1 or 2 glasses of water or milk. Do not induce vomiting. Call physician or poison control center immediately.

SECTION VI - REACTIVITY

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Keep away from heat, sparks, open flame and other sources of ignition.
	STABLE	X	

INCOMPATIBILITY
(MATERIALS TO AVOID) Caustics, ammonia, inorganic acids, chlorinated compounds, strong oxidizers and isocynates.

HAZARDOUS DECOMPOSITION PRODUCTS
When forced to burn, this product gives out carbon monoxide, carbon dioxide, hydrogen chloride and smoke.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		Keep away from heat, sparks, open flame and other sources of ignition
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate all ignition sources. Avoid breathing of vapors. Keep liquid out of eyes. Flush with large amount of water. Contain liquid with sand or earth. Absorb with sand or nonflammable absorbent material and transfer into steel drums for recovery or disposal. Prevent liquid from entering drains.

WASTE DISPOSAL METHOD
Follow local, State and Federal regulations. Consult disposal expert. Can be disposed of by incineration. Excessive quantities should not be permitted to enter drains. Empty containers should be air dried before disposing. Hazardous Waste Code: 214.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Atmospheric levels should be maintained below established exposure limits contained in Section II. If airborne concentrations exceed those limits, use of a NIOSH-approved organic vapor cartridge respirator with full face-piece is recommended. The effectiveness of an air purifying respirator is limited. Use it only for a single short-term exposure. For emergency and other conditions where short term exposure guidelines may be exceeded, use an approved positive pressure self-contained breathing apparatus.

VENTILATION
Use only with adequate ventilation. Provide sufficient ventilation in volume and pattern to keep contaminants below applicable exposure limits set forth in Section II. Use only explosion proof ventilation equipment.

PROTECTIVE GLOVES	EYE PROTECTION
PVA coated	Splashproof chemical goggles

OTHER PROTECTIVE EQUIPMENT AND HYGIENIC PRACTICES
Impervious apron and a source of running water to flush or wash the eyes and skin in case of contact.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in the shade between 40°F - 110°F. Keep away from heat, sparks, open flame and other sources of ignition. Avoid prolonged breathing of vapor. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Train employees on all special handling procedures before they work with this product.

OTHER PRECAUTIONS
Follow all precautionary information given on container label, product bulletins and our solvent cementing literature. All handling equipment should be electrically grounded.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

Prepared by George Blanco of IPS

MASTERS CHOICE
The Ultimate Urethane

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Manufacturer's Name: Masters Choice, Inc.
1700 Washington Street
Jamestown, NY 14701

Emergency Telephone No.
(412) 628-9100 work hours
(412) 628-8093 after 5 p.m.
(716) 487-0007

Date of Preparation: 9/1/92

Information Telephone No.
(716) 487-0007

Section I — Product Identification

Product Number: MC-002
Product Name: PATCHWORKS
Product Class: AQUEOUS ACRYLIC/URETHANE

Section II — Hazardous Ingredients

Ingredient	CAS No.	Percent	Occupational Exposure Limits	Vapor Pressure
Diethylene Glycol monobutyl ether	111-76-2	0.48%	25 ppm	0.6 mmhg @ 20 deg. C.
2, 2, 4 - Trimethyl-1, 3 Pentanediol monoisobutyrate	25265-77-4	0.06%	NONE	1 mmgh @-87 deg C.

Section III — Physical Data

Boiling Range:	Approx. 250deg. F.
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Ether
% Volatile Volume:	48.0%
Weight Per Gallon	10.85lbs./gal.

Section IV — Fire & Explosion Hazard Data

Flammability Classification	OSHA: N/A	Flash Point:	NON COMBUSTIBLE
	DOT: NOT REGULATED	LEL:	N/A

Extinguishing Media:
Foam . . . (XX) "Alcohol" Foam . . . ( ) CO2 . . . (XX)
Dry Chemical . . . (XX) Water Fog . . . (XX) Other . . . ( )

Section V — Health Hazard Data

fects of Overexposure:

INHALATION — Vapor or mist can cause headache, nausea, and irritation of the nose, throat and lungs.

SKIN CONTACT — Irritating to skin upon repeated or prolonged contact.

EYE CONTACT — Slightly irritating to eyes.

nergency & First Aid Procedures:

INHALATION — Move subject to fresh air.

EYE & SKIN CONTACT — Flush eyes for a minimum of 15 minutes with running water. Wash skin thoroughly soap and water. Consult a physician.

Section VI — Reactivity Data

ability: Stable

nditions to Avoid: Keep from heat or flame.

zardous Decomposition Products: N/A.

rdous Polymerization: Will Not Occur.

patibility (Materials to Avoid): Product may coagulate or flocculate if mixed with highly ionic solutions or organic solvents.

Section VII — Spill or Leak Procedures

ps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material (sand, earth, fuller's earth, etc.) d transfer liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing and wash ected skin areas with water. Wash clothing before reuse. Keep spill out of all sewers and open bodies of water.

ste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant d and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and eral regulations.

Section VIII - Safe Handling and Use Information

tion Type: Mechanical local exhaust ventilation at point of contaminant release.

spiratory Protection: None required if good ventilation is maintained. Otherwise, wear self-contained breathing appratatus (pres-e-demand, MSHA/NIOSH-approved or equivalent).

otective Gloves: Chemical resistant rubber or plastic preferred.

e Protection: Chemical splash goglles (ANSI Z-87.1 or approved equivalent).

ner Protective Equipment: Impermeable apron to keep material off clothing.

Section IX — Special Precautions

rage Temperature: Max 49C / 120F, Min. 1C / 34F

ecautionary Labeling: KEEP FROM FREEZING — PRODUCT MAY COAGULATE.

OTE: Monomer vapors can be evolved when product is heated during processing operation. In such a case, use local exhaust tilation with a minimum capture velocity of 100 ft. / min. (30m / min.) at the point of monomer evolution. Refer to *Industrial Ventila-Manual of Recommended Practice* published by the American Conference of Governemtn Industrial Hygienists.

er Precautions: The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with siers Choice, Inc. or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable eir circumstances. This product should not be swallowed or allowed to come in contact with eyes.

HMIS RATING	
HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

VOC

Less than 250 g/l

MASTERS CHOICE
The Ultimate Urethane

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Manufacturer's Name: Masters Choice, Inc.
1700 Washington Street
Jamestown, NY 14701

Emergency Telephone No.
(412) 628-9100 work hours
(412) 628-8093 after 5 p.m.
(716) 487-0007

Date of Preparation: 9/1/92

Information Telephone No.
(716) 487-0007

Section I — Product Identification

Product Number: MC-004
Product Name: PRIMER/SEALER
Product Class: AQUEOUS ACRYLIC/URETHANE

Section II — Hazardous Ingredients

Ingredient	CAS No.	Percent	Occupational Exposure Limits	Vapor Pressure
	NO	HAZARDOUS	INGREDIENTS	

Section III — Physical Data

Boiling Range:	Approx. 212 deg. F.
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Ether
% Volatile Volume:	76%
Weight Per Gallon	8.71lbs./gal.

Section IV — Fire & Explosion Hazard Data

Flammability Classification	OSHA:	N/A	Flash Point:	NON COMBUSTIBLE
	DOT:	NOT REGULATED	LEL:	N/A

Extinguishing Media: N/A
UNUSUAL FIRE & EXPLOSION HAZARDS: This product will not burn,but may spatter if the temperature exceeds the boiling point. Polymer film is capable of burning, giving off oxides, carbon and nitrogen.

SPECIAL FIRE FIGHTING PROCEDURES: N/

Section V — Health Hazard Data

Effects of Overexposure:

INHALATION — Vapor or mist can cause headache, nausea, and irritation of the nose, throat and lungs.

SKIN CONTACT — Irritating to skin upon repeated or prolonged contact.

EYE CONTACT — Slightly irritating to eyes.

Emergency & First Aid Procedures:

INHALATION — Move subject to fresh air.

EYE & SKIN CONTACT — Flush eyes for a minimum of 15 minutes with running water. Wash skin thoroughly soap and water. Consult a physician.

Section VI — Reactivity Data

Stability: Stable

Conditions to Avoid: Keep from heat or flame.

Hazardous Decomposition Products: N/A.

Hazardous Polymerization: Will Not Occur.

Incompatibility (Materials to Avoid): Product may coagulate or flocculate if mixed with highly ionic solutions or organic solvents.

Section VII — Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material (sand, earth, fuller's earth, etc.) and transfer liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing and wash affected skin areas with water. Wash clothing before reuse. Keep spill out of all sewers and open bodies of water.

Waste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant liquid and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and federal regulations.

Section VIII - Safe Handling and Use Information

Ventilation Type: Mechanical local exhaust ventilation at point of contaminant release.

Respiratory Protection: None required if good ventilation is maintained. Otherwise, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent).

Protective Gloves: Chemical resistant rubber or plastic preferred.

Eye Protection: Chemical splash goglles (ANSI Z-87.1 or approved equivalent).

Other Protective Equipment: Impermeable apron to keep material off clothing.

Section IX — Special Precautions

Storage Temperature: Max 49C / 120F, Min. 1C / 34F

Precautionary Labeling: KEEP FROM FREEZING — PRODUCT MAY COAGULATE.

NOTE: Monomer vapors can be evolved when product is heated during processing operation. In such a case, use local exhaust ventilation with a minimum capture velocity of 100 ft. / min. (30m / min.) at the point of monomer evolution. Refer to *Industrial Ventilation: A Manual of Recommended Practice* published by the American Conference of Governemtn Industrial Hygienists.

Other Precautions: The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Masters Choice, Inc. or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This product should not be swallowed or allowed to come in contact with eyes.

HMIS RATING	
HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

VOC

Less than 250 g/l

MASTERS CHOICE
The Ultimate Urethane

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Manufacturer's Name: Masters Choice, Inc.
1700 Washington Street
Jamestown, NY 14701

Emergency Telephone No.
(412) 628-9100 work hours
(412) 628-8093 after 5 p.m.
(716) 487-0007

Date of Preparation: 9/1/92

Information Telephone No.
(716) 487-0007

Section I — Product Identification

Product Number: MC-512
Product Class: AQUEOUS ACRYLIC/URETHANE

Product Name: PROFESSIONAL RUBBER REROOF

Section II — Hazardous Ingredients

Ingredient	CAS No.	Percent	Occupational Exposure Limits	Vapor Pressure
Diethylene Glycol monobutyl ether	111-76-2	0.9%	25 ppm	0.6 mmhg @ 20 deg. C.
2, 2, 4 - Trimethyl-1, 3 Pentanediol monoisobutyrate	25265-77-4	0.09%	NONE	1 mmgh @ 87 deg C.

Section III — Physical Data

Boiling Range:	Approx. 250deg. F.
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Ether
% Volatile Volume:	67.5%
Weight Per Gallon	10.17lbs./gal.

Section IV — Fire & Explosion Hazard Data

Flammability Classification	OSHA: N/A DOT: NOT REGULATED	Flash Point: LEL:	NON COMBUSTIBLE N/A
Extinguishing Media:	Foam . . . (XX) Dry Chemical . . . (XX)	"Alcohol" Foam . . . ( ) Water Fog . . . (XX)	CO2 . . . (XX) Other . . . ( )

Section V — Health Hazard Data

ffects of Overexposure:

INHALATION — Vapor or mist can cause headache, nausea, and irritation of the nose, throat and lungs.
SKIN CONTACT — Irritating to skin upon repeated or prolonged contact.
EYE CONTACT — Slightly irritating to eyes.

mergency & First Aid Procedures: .

INHALATION — Move subject to fresh air.
EYE & SKIN CONTACT — Flush eyes for a minimum of 15 minutes with running water. Wash skin thoroughly soap and water. Consult a physician.

Section VI — Reactivity Data

tability: Stable
onditions to Avoid: Keep from heat or flame.
azardous Decomposition Products: N/A.
'azardous Polymerization: Will Not Occur.
ıcompatibility (Materials to Avoid): Product may coagulate or flocculate if mixed with highly ionic solutions or organic solvents.

Section VII — Spill or Leak Procedures

teps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material (sand, earth, fuller's earth, etc.) nd transfer liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing and wash ffected skin areas with water. Wash clothing before reuse. Keep spill out of all sewers and open bodies of water.
/aste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant quid and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and ederal regulations.

Section VIII - Safe Handling and Use Information

'entilation Type: Mechanical local exhaust ventilation at point of contaminant release.
:espiratory Protection: None required if good ventilation is maintained. Otherwise, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent).
'rotective Gloves: Chemical resistant rubber or plastic preferred.
:ye Protection: Chemical splash goglles (ANSI Z-87.1 or approved equivalent).
)ther Protective Equipment: Impermeable apron to keep material off clothing.

Section IX — Special Precautions

itorage Temperature: Max 49C / 120F, Min. 1C / 34F
'recautionary Labeling: KEEP FROM FREEZING — PRODUCT MAY COAGULATE.
IOTE: Monomer vapors can be evolved when product is heated during processing operation. In such a case, use local exhaust entilation with a minimum capture velocity of 100 ft. / min. (30m / min.) at the point of monomer evolution. Refer to *Industrial Ventilation: A Manual of Recommended Practice* published by the American Conference of Governemtn Industrial Hygienists.
)ther Precautions: The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with lasters Choice, Inc. or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable) their circumstances. This product should not be swallowed or allowed to come in contact with eyes.

HMIS RATING	
HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

VOC
Less than 250 g/l

Section V — Health Hazard Data

Effects of Overexposure:

INHALATION — Vapor or mist can cause headache, nausea, and irritation of the nose, throat and lungs.
SKIN CONTACT — Irritating to skin upon repeated or prolonged contact.
EYE CONTACT — Slightly irritating to eyes.

Emergency & First Aid Procedures:

INHALATION — Move subject to fresh air.
EYE & SKIN CONTACT — Flush eyes for a minimum of 15 minutes with running water. Wash skin thoroughly soap and water. Consult a physician.

Section VI — Reactivity Data

Stability: Stable
Conditions to Avoid: Keep from heat or flame.
Hazardous Decomposition Products: N/A.
Hazardous Polymerization: Will Not Occur.
Incompatibility (Materials to Avoid): Product may coagulate or flocculate if mixed with highly ionic solutions or organic solvents.

Section VII — Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Dike and contain spill with inert material (sand, earth, fuller's earth, etc.) and transfer liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing and wash affected skin areas with water. Wash clothing before reuse. Keep spill out of all sewers and open bodies of water.
Waste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant liquid and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and federal regulations.

Section VIII - Safe Handling and Use Information

Ventilation Type: Mechanical local exhaust ventilation at point of contaminant release.
Respiratory Protection: None required if good ventilation is maintained. Otherwise, wear self-contained breathing appratatus (pressure-demand, MSHA/NIOSH-approved or equivalent).
Protective Gloves: Chemical resistant rubber or plastic preferred.
Eye Protection: Chemical splash goglles (ANSI Z-87.1 or approved equivalent).
Other Protective Equipment: Impermeable apron to keep material off clothing.

Section IX — Special Precautions

Storage Temperature: Max 49C / 120F, Min. 1C / 34F
Precautionary Labeling: KEEP FROM FREEZING — PRODUCT MAY COAGULATE.
NOTE: Monomer vapors can be evolved when product is heated during processing operation. In such a case, use local exhaust ventilation with a minimum capture velocity of 100 ft. / min. (30m / min.) at the point of monomer evolution. Refer to *Industrial Ventilation: A Manual of Recommended Practice* published by the American Conference of Governemtn Industrial Hygienists.
Other Precautions: The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Customers Choice, Inc. or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This product should not be swallowed or allowed to come in contact with eyes.

HMIS RATING	
HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	E

VOC
Less than 250 g/l

MASTERS CHOICE®
The Ultimate Urethane

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Manufacturer's Name: Masters Choice, Inc.
200 Harrison Street
Jamestown, NY 14702

Emergency Telephone No.
(412) 628-9100 work hours
(412) 628-8093 after 5 p.m.
(716) 487-0007

Date of Preparation: 9/1/92

Information Telephone No.
(716) 487-0007

Section I — Product Identification

Product Number: MC-002
Product Name: RUST INHIBITING PRIMER
Product Class: AQUEOUS ACRYLIC/URETHANE

Section II — Hazardous Ingredients

Ingredient	CAS No.	Percent	Occupational Exposure Limits	Vapor Pressure
Ethylene Glycol monobutyl ether	111-76-2	10.4%	25 ppm	0.6 mmhg @ 20 deg. C.

Section III — Physical Data

Boiling Range:	Approx. 250deg. F.
Vapor Density:	Heavier Than Air
Evaporation Rate:	Slower Than Ether
% Volatile Volume:	60%
Weight Per Gallon	11.00 lbs/gal.

Section IV — Fire & Explosion Hazard Data

Flammability Classification	OSHA: N/A		Flash Point:	NON COMBUSTIBLE
	DOT: NOT REGULATED		LEL:	N/A
Extinguishing Media:	Foam . . . (XX)	"Alcohol" Foam . . . ( )		CO2 . . . (XX)
	Dry Chemical . . . (XX)	Water Fog . . . (XX)		Other . . . ( )

OREGON RESEARCH & DEVELOPMENT CORP.
MATERIAL SAFETY DATA SHEET

SNOW ROOF® Product Identity (As Used on Label and List)

SECTION I

Manufacturer's Name
OREGON RESEARCH & DEVELOPMENT CORPORATION
Address (Number, Street, City, State, and ZIP Code)
1895 16TH STREET S.E.
SALEM, OREGON 97302-1436

Emergency Telephone Number
911 - ASK FOR POISON CONTROL CENTER
Telephone Number for Information
1-800-345-0809
Date Prepared
JULY 10, 1991, UPDATED MAY 1994
Signature of Preparer (optional)

SECTION II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s)) | OSHA PEL | ACGIH TLV | Other Limits Recommended | % (optional)

Pigments

Sophisticated Acrylic Latex

Solvents (Water)

Misc. inert ingredients

[redacted] less than ½ of 1%, pH is less than 10

Contains no VOC's

ALL MATERIALS ARE WITHIN ESTABLISHED EPA LIMITS

SECTION III — Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H 0 = 1)	1.15 est
Vapor Pressure (mm Hg.)	1.75 mmHg	Melting Point	N.A.
Vapor Density (AIR = 1)	N.A.	Evaporation Rate (Butyl Acetate = 1)	0.83-1.0
Solubility in Water	Dilutable		
Appearance and Odor	Thick, creamy, white liquid. Slight ammonia odor.		

SECTION IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	N.A.	Flammable Limits	N.A.	LEL	UEL
Extinguishing Media	N.A.				
Special Fire Fighting Procedures	N.A.				
Unusual Fire and Explosion Hazards	N.A.				

SECTION V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		None
	Stable	X	

Incompatibility (Materials to Avoid)
None

Hazardous Decomposition or Byproducts
Thermal decomposition may produce carbon monoxide and/or carbon dioxide.

Hazardous Polymerization			Conditions to Avoid
	May Occur		None
	Will Not Occur	X	

SECTION VI — Health Hazard Data

Routes(s) of Entry: Inhalation? Skin? Ingestion?
See Emergency and First Aid Procedures.

Health Hazards (Acute and Chronic)
N.A.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
N.A. No No No

Signs and Symptoms of Exposure
N.A.

Medical Conditions Generally Aggravated by Exposure
Contains some ammonia for pH control. Mist or liquid may irritate or burn eyes, skin and mucus membrane.

Emergency and First Aid Procedures
Flush eyes and skin with water for at least 30 minutes if irritation occurs. Remove contaminated clothing. Seek medical attention as needed. Seek ventilation and fresh air as needed.

SECTION VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
Since some persons might be skin sensitive, gloves are recommended. Use absorbent material and place in approved container and bury in approved landfill.

Waste Disposal Method
Collect and bury in landfill or wash into sewage treatment plant in small quantities. For large quantities, contact Environmental Protection Agency or this company.

Precautions to Be Taken in Handling and Storing
Best stored between 40° and 80° F. **DO NOT FREEZE!**

Other Precautions
N.A.

SECTION VIII — Control Measures

Respiratory Protection (Specify Type)
If sprayed, we recommend respirator filter mask suitable for spray painting, NIOSH approved.

Ventilation			
	Local Exhaust: Provide proper ventilation as needed.	Special: N.A.	
	Mechanical (General): Acceptable	Other: N.A.	
Protective Gloves: Advisable		Eye Protection: Face shield or safety glasses as needed	

Other Protective Clothing or Equipment
Wear protective clothing as needed.

Work/Hygienic Practices
An eyewash and safety shower should be nearby and ready for use.

TOPCOAT Material Safety Data Sheet

IDENTITY *(As Used on Label and List)* TOPCOAT WOB	*Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.*

Section I

Manufacturer's Name TOPCOAT, a division of Major Group Incorporated	**Emergency Telephone Number** 508-668-4128
Address *(Number, Street, City, State and ZIP Code)* 24 Industrial Road	**Telephone Number for Information** 508-668-4128
Walpole, MA 02081	**Date Prepared** 1/3/96
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optior*
1. Ammonia CAS #1336-21-6	25 ppm	25 ppm		<1%

HMIS Health Rating:

Fire - 0

Health - 1

Reactivity - 0

Personal Protection - G

Section III — Physical / Chemical Characteristics

Boiling Point	212°F	**Specific Gravity (H_2O =1)**	1.45
Vapor Pressure (mm Hg.)	N/A	**Melting Point**	N/A
Vapor Density (AIR = 1)	N/A	**Evaporation Rate (Water = 1)**	1.0

Solubility in Water Dilutable in water

Appearance and Odor Thick liquid with ammonia odor

Section IV — Fire and Explosion Hazard Data

Flash Point *(Method Used)* >240°F TCC	**Flammable Limits** N/A	**LEL** N/A	**UEL** N/A

Extinguishing Media Water spray, CO_2, foam used on the dry film

Special Fire Fighting Procedures Self contained breathing apparatus recommended

Unusual Fire and Explosion Hazards N/A

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid N/A
	Stable	X	

Incompatibility *(Materials to Avoid)* N/A

Hazardous Decomposition or Byproducts Carbon Dioxide and Carbon Monoxide

Hazardous Polymerization	May Occur		Conditions to Avoid N/A
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes

Inhalation: Vapor or mist can cause headaches, dizziness or nausea. Also irritation of the throat and nose.

Eye Contact: Exposure to vapor can cause irritation to the eyes.

Skin Contact: Exposure can cause irritation or reddening of the skin

Delayed Effects: N/A

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

EXPOSURE LIMIT INFORMATION

	Component	OSHA		ACGIH	
No.	Units	TWA	STEL	TLV	STEL
1	ppm	25		25	
2					
3					
4					

5 Not Required

EMERGENCY RESPONSE INFORMATION

FIRST AID PROCEDURES

Inhalation Remove individual to an area that has fresh air. If breathing has stopped, apply artificial respiration. Contact physician immediately.

Ingestion If individual is awake, give water to drink. Call physician immediately.

Eye and Skin Contact Flush eyes with water for 15 minutes. If irritation persists call physician. Wash contaminated skin with soap and water.

Note to Physician N/A

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Dam up area to prevent spreading. Caution, area will be slippery. Use absorbent material to dry up compound. Provide ventilation in closed areas.

Waste Disposal Method Dispose of the absorbent material and dry compound according to local, state, and federal regulations.

Precautions to Be Taken in Handling and Storing Store in a well ventilated area at temperatures between 50°F - 80°F.

Other Precautions Protect from freezing.

Section VIII — Control Measures

Respiratory Protection *(Specify Type)* NIOSH approved organic vapor cartridge type

Ventilation	**Local Exhaust**	Yes	**Special**	N/A
	Mechanical *(General)*	Yes	**Other**	N/A
Protective Gloves	Impervious type		**Eye Protection**	Safety Glasses

Other Protective Clothing or Equipment N/A

ABBREVIATIONS

ACGIH = American Conference of Governmental Industrial Hygienists
OSHA = Occupational Safety and Health Administration
TLV = Threshold Limit Value
PEL = Permissible Exposure Limit
TWA = Time Weighted Average
STEL = Short-Term Exposure Limit

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
Ammonia	#1336-21-6	<1%

MATERIAL SAFETY DATA SHEETS

II. CONVEYANCE COATINGS

DAP Inc.
P.O. Box 277
Dayton, OH 45401 0277
513/667-4401
Fax: 513/667-3331

To: NONE

Date: 7-19-96

From: MATT SAULS

Page 1 of 9

ENCLOSED IS A DAP MATERIAL SAFETY DATA SHEET(S) THAT COMPLIES WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200.

IT IS DAP'S POLICY TO LIST AN INGREDIENT ON THE MSDS AND GIVE APPROPRIATE WARNINGS IF IT IS IN THE PRODUCT AT GREATEER THAN 1% (OR 0.1% IF A CARCINOGEN), AND IT MEETS ANY ONE OF THE FOLLOWING CRITERIA:

1) IS LISTED IN THE OSHA Z-TABLES WITH AN ESTABLISHED PERMISSIBLE EXPOSURE LIMIT (PEL);
2) THE ACGIH HAS ESTABLISHED A THRESHOLD LIMIT VALUE (TLV OR 8-HOUR TIME WEIGHTED AVERAGE);
3) IS LISTED BY NTP, IARC OR OSHA AS A KNOWN CARCINOGEN;
4) HAS A FLASH POINT BELOW 200 DEGREES F.;
5) MAY UNDERGO HAZARDOUS POLYMERIZATION;
6) IS A STRONG OXIDIZING OR CAUSTIC AGENT;
7) IS LISTED ON THE SARA 313 LIST OF REPORTABLE CHEMICALS.

ABBREVIATIONS USED IN DAP'S MATERIAL SAFETY DATA SHEETS:

ACGIH - AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
IARC - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
NA - NOT APPLICABLE
NE - NOT ESTABLISHED
PEL - PERMISSIBLE EXPOSURE LIMIT
NTP - NATIONAL TOXICOLOGY PROGRAM
SARA - SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
STEL - SHORT TERM EXPOSURE LIMIT
TLV - THRESHOLD LIMIT VALUE (8-HR TIME WEIGHTED AVERAGE OR TWA)
VOC - VOLATILE ORGANIC COMPOUND
NJRTK - NEW JERSEY RIGHT TO KNOW LAW

PLEASE FILE THIS INFORMATION WITH YOUR PERMANENT RECORDS OF PRODUCT INFORMATION.

MATERIAL SAFETY DATA SHEET

DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10006
INTERNAL ID: 10006
DAP BUTYL GUTTER & LAP SEALANT
REVISION: 5
DATE: MAY 19, 1993

NATIONAL PAINT AND COATINGS ASSOCIATION HAZARDOUS MATERIAL IDENTIFICATION SYSTEM		
	HEALTH HAZARD	1 - SLIGHT
	FLAMMABILITY HAZARD	3 - SERIOUS
	REACTIVITY HAZARD	0 - MINIMAL
	PERSONAL PROTECTION	B - GLASSES, GLOVES

SECTION I. MATERIAL IDENTIFICATION

TRADE/MATERIAL NAME: DAP BUTYL GUTTER & LAP SEALANT.

DESCRIPTION: CAULK

CAS: MIXTURE

PREVIOUS MSDS REVISION DATE: MARCH 30, 1992

DOT INFORMATION FOR DOMESTIC GROUND TRANSPORT OF CONTAINERS 32OZ. OR LESS:
SHIPPING NAME (49 CFR 172.101): CONSUMER COMMODITY
D.O.T. HAZARD CLASS (49 CFR 172.101): ORM-D
D.O.T. ID NO. (49 CFR 172.101): NONE
D.O.T. LABEL REQUIRED (49 CFR 172.101): NONE
D.O.T. PACKAGING GROUP (49 CFR 172.101): NONE
EPA WASTE CODE - IF DISCARDED (40 CFR 261): NONE

MANUFACTURER: DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

PHONE: 24 HOUR EMERGENCY:
INFO TRAC 1-800-535-5053
DAP, INC. 1-800-543-3840
GENERAL INFORMATION:
DAP, INC. 1-800-543-3840

SECTION II. INGREDIENTS AND HAZARDS

INGREDIENT NAME:	CAS NUMBER:	PERCENT:	EXPOSURE LIMITS:
MINERAL SPIRITS	8052-41-3	5-10	OSHA PEL: 100PPM TWA * ACGIH TLV: 100PPM TWA
M&P NAPHTHA.	64742-89-8	5-10	OSHA PEL: 300PPM TWA ACGIH TLV: 300PPM TWA

REMAINING INGREDIENTS ARE NOT REGULATED BY OSHA AND ARE CONSIDERED TRADE SECRETS.
*AS PETROLEUM DISTILLATES

MSDS 10006 CONTINUES ON PAGE 2

MATERIAL SAFETY DATA SHEET

DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10006
INTERNAL ID: 10006
DAP BUTYL GUTTER & LAP SEALANT
REVISION: 5
DATE: MAY 19, 1993

SECTION III. PHYSICAL DATA

APPEARANCE & ODOR: OPAQUE PASTE WITH A PETROLEUM DISTILLATE ODOR

BOILING POINT: 212F
VAPOR PRESSURE: 30MMHG @ 100F (VM&P NAPHTHA)
WATER SOLUBILITY (%): NEGLIGIBLE
VAPOR DENSITY (AIR=1): > 1
EVAPORATION RATE: (N-BUTYL ACETATE=1): < 1
SPECIFIC GRAVITY (H20=1): 1.46
% VOLATILE BY VOLUME: 27

VISCOSITY (SLUMP): 0.2"MAX @ 122F FOR 10 MIN.

VOC LESS WATER LESS EXEMPT SOLVENT (GRAMS/LITER): 210-215
VOC MATERIAL (GRAMS/LITER): 210-215

SECTION IV. FIRE AND EXPLOSION DATA

FLASH POINT (METHOD): (TAG C.C.) SBF LIMITS: LEL %: NE UEL %: NE

EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE, DRY CHEMICALS

UNUSUAL FIRE OR EXPLOSION HAZARDS: CONTAINERS MAY EXPLODE IF EXPOSED TO EXTREME HEAT. ELIMINATE SOURCE OF IGNITION: HEAT, ELECTRICAL EQUIPMENT, SPARKS AND OPEN FLAMES. DO NOT PUT IN CONTACT WITH OXIDIZING OR CAUSTIC MATERIALS.

SPECIAL FIRE-FIGHTING PROCEDURES: FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED BREATHING APPARATUS, IS RECOMMENDED TO PROTECT FROM COMBUSTION PRODUCTS. COOL EXPOSED CONTAINERS WITH WATER.

SECTION V. REACTIVITY DATA

MATERIAL IS STABLE . HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

CHEMICAL INCOMPATIBILITIES: STRONG OXIDIZERS AND CAUSTICS

CONDITIONS TO AVOID: EXCESSIVE HEAT AND FREEZING.

HAZARDOUS DECOMPOSITION PRODUCTS: NORMAL COMBUSTION PRODUCTS, I.E. COX, NOX

SECTION VI. HEALTH HAZARD INFORMATION

THIS PRODUCT IS NOT CONSIDERED A CARCINOGEN BY NTP, IARC AND OSHA.

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY CONTACT: NONE KNOWN

PRIMARY ENTRY ROUTE(S): INHALATION OF SOLVENT VAPORS AND SKIN CONTACT.

ACUTE EFFECTS: MAY IRRITATE EYES, SKIN, NOSE, AND UPPER RESPIRATORY TRACT. HARMFUL IF INHALED. HARMFUL OR FATAL IF SWALLOWED. IF INGESTED THIS PRODUCT MAY CAUSE VOMITING, DIARRHEA, AND DEPRESSED RESPIRATION. INHALATION MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

CHRONIC EFFECT(S): REPORTS HAVE ASSOCIATED PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE WITH PROLONGED AND REPEATED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS.

HEALTH HAZARD INFORMATION CONTINUES ON PAGE 3 --- PAGE 2

MATERIAL SAFETY DATA SHEET

OAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: OAP / 10006
INTERNAL ID: 10006
OAP BUTYL GUTTER & LAP SEALANT
REVISION: 5
DATE: MAY 19, 1993

HEALTH HAZARD INFORMATION CONTINUED FROM PAGE 2

FIRST AID:

EYE CONTACT: FLUSH WITH LARGE AMOUNTS OF WATER FOR 15 MINUTES. CONTACT A PHYSICIAN IMMEDIATELY.

SKIN CONTACT: WASH IMMEDIATELY WITH SOAP AND WATER.

INHALATION: REMOVE TO FRESH AIR. CONTACT A PHYSICIAN IMMEDIATELY.

INGESTION: DO NOT INDUCE VOMITING. CONTACT A PHYSICIAN OR REGIONAL POISON CONTROL CENTER IMMEDIATELY.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

SPILL / LEAK PROCEDURES: USE ABSORBENT MATERIAL OR SCRAPE UP DRIED MATERIAL AND PLACE INTO CONTAINERS.

WASTE MANAGEMENT / DISPOSAL: DISPOSE OF ACCORDING TO FEDERAL, STATE, AND LOCAL REGULATIONS. DISCARDED MATERIAL SHOULD BE INCINERATED AT A PERMITTED FACILITY. DO NOT REUSE EMPTY CONTAINER.

SECTION VIII. SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT:

GOGGLES: GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS

GLOVES: SOLVENT IMPERVIOUS GLOVES

RESPIRATOR: IF 8-HOUR EXPOSURE LIMIT OR VALUE IS EXCEEDED FOR ANY COMPONENT, USE AN APPROVED NIOSH/OSHA RESPIRATOR. CONSULT YOUR SAFETY EQUIPMENT SUPPLIER AND THE OSHA REGULATION, 29 CFR 1910.134 FOR RESPIRATOR REQUIREMENTS.

WORKPLACE CONSIDERATIONS:

VENTILATION: PROVIDE SUFFICIENT MECHANICAL VENTILATION (LOCAL OR GENERAL EXHAUST) TO MAINTAIN EXPOSURE BELOW PEL AND TLV. VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS. CHECK ALL LOW AREAS (BASEMENTS, SUMPS, ETC.) FOR VAPOR BEFORE ENTERING.

SAFETY STATIONS:
PROVIDE EYEWASH AND SOLVENT IMPERVIOUS APRON IF BODY CONTACT WITH PRODUCT OCCURS.
BARRIER CREAMS MAY BE USED.

CONTAMINATED EQUIPMENT:
WASH CONTAMINATED CLOTHING BEFORE REUSE.

MSDS 10006 CONTINUED ON PAGE 4

MATERIAL SAFETY DATA SHEET

DAP, INC.
P.O. BOX 277
DAYTON, OH 45401-0277

MSDS NO: DAP / 10006
INTERNAL ID: 10006
DAP BUTYL GUTTER & LAP ..
SEALANT
REVISION: 5
DATE: MAY 19, 1993 ..

SECTION IX. SPECIAL PRECAUTIONS

STORAGE SEGREGATION: STORE AWAY FROM CAUSTICS AND OXIDIZERS.

SPECIAL HANDLING / STORAGE: KEEP OUT OF REACH OF CHILDREN. KEEP CONTAINERS FROM EXCESSIVE HEAT AND FREEZING. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. DO NOT STORE AT TEMPERATURES ABOVE 120F.

OTHER PRECAUTIONS: INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING VAPORS MAY BE HARMFUL OR FATAL.

DOT CLASS: SEE SECTION I UN REGISTER: SEE SECTION I

THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE IF THEY ARE APPROPRIATE.

END OF MSDS 10006 --- PAGE 4

MATERIAL SAFETY DATA SHEET

Date Revised: OCT 1991
Superseded:

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act and shall not be used for any other purpose. IPS Corporation urges the customers receiving this Material Safety Data Sheet to study it carefully to become aware of the hazards, if any, of the product involved. In the interest of safety, you should notify your employees, agents, and contractors of the information on this sheet.

SECTION I

MANUFACTURER'S NAME
IPS Corporation

ADDRESS
17109 S. Main St., P.O. Box 379, Gardena, CA 90248

Transportation Emergencies:
CHEMTREC: (800) 424-9300
Medical Emergencies: (213) 484-5151
(L.A. Poison Center 24 Hour No.)
Business: (213) 321-4615

CHEMICAL NAME and FAMILY
Solvent Cement for PVC Plastic
Mixture of PVC Resin and Organic Solvents

TRADE NAME
WELD-ON #3121-M for PVC

FORMULA: Proprietary

SECTION II - HAZARDOUS INGREDIENTS

None of the ingredients below are listed as carcinogens by IARC, NTP or OSHA	CAS #	APPROX. %	ACGIH-TLV	ACGIH-STEL	OSHA-PEL	OSHA-STEL
Polyvinyl Chloride Resin (PVC)	NON/HAZ		N/A		N/A	
Tetrahydrofuran (THF)	109-99-9	40 - 55	200 PPM	250 PPM	200 PPM	250 PPM
Methyl Ethyl Ketone (MEK)	78-93-3	20*	200 PPM	300 PPM	200 PPM	300 PPM
Cyclohexanone	108-94-1	10 - 20	25 PPM Skin		25 PPM Skin	

*Title III Section 313 Supplier Notification: This product contains toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40CFR372. This information must be included in all MSDS's that are copied and distributed for this material.

SHIPPING INFORMATION
DOT Hazard Class: Flammable Liquid
DOT Shipping Name: Adhesive
Identification Number: NA 1133

SPECIAL HAZARD DESIGNATIONS

	HMIS	NFPA
HEALTH	2	2
FLAMMABILITY:	3	3
REACTIVITY:	0	1
PROTECTIVE EQUIPMENT:	H	

HAZARD RATING
0 - MINIMAL
1 - SLIGHT
2 - MODERATE
3 - SERIOUS
4 - SEVERE

SECTION III - PHYSICAL DATA

APPEARANCE Clear, heavy syrupy liquid	ODOR Ethereal	BOILING POINT (°F/°C) 151°F Based on first boiling component: THF
SPECIFIC GRAVITY @ 73 +/- 2°F Typical 0.960 +/- 0.040	VAPOR PRESSURE (mm Hg.) 143 mm Hg. Based on first boiling component. THF @ 20°C	PERCENT VOLATILE BY VOLUME (%) Approx: 70 - 85%
VAPOR DENSITY (Air = 1) 2.49	EVAPORATION RATE (BUAC = 1) Approx. 6 - 8	SOLUBILITY IN WATER Solvent portion completely soluble in water - Resin portion separates out.

VOC STATEMENT: This cement contains 760 grams of VOC per liter as manufactured. More than 60 percent of the VOC acts as a reactive diluent and remains in the joint.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE LIMITS (Percent by Volume)	LEL	UEL
6°F T.O.C. Based on THF		1.8	11.8

FIRE EXTINGUISHING MEDIA
Ansul "Purple K" potassium bicarbonate dry chemical, carbon dioxide, National Aer-O-Foam universal alcohol resistant foam, water spray.

SPECIAL FIRE FIGHTING PROCEDURES
Evacuate enclosed areas, stay upwind. Close or confined quarters require self-contained breathing apparatus, positive pressure hose masks or airline masks. Use water spray to cool containers, to flush spills from source of ignition and to disperse vapors.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Fire hazard because of low flash point and high volatility. Vapors are heavier than air and may travel to source of ignition.

MATERIAL SAFETY DATA SHEETS

III. STORAGE COATINGS

4/23/96

MATERIAL SAFETY DATA SHEET

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Revised 1/23/9
Replaces 1/23/9
Printed 4/02/9

ACRYL 60
THORO SYSTEM PRODUCTS

ACRYL 60

Section I - General Information

Manufacturer:

Thoro System Products Inc
A Division of
Harris Specialty Chemicals, Inc.
8570 Philips Highway
Jacksonville, Fl 32256-8208

Emergency Phone: Chemtrec 1-800-424-9300

Material Name: ACRYL 60

Section II - Hazardous Ingredients/Identity Information

HAZARDOUS COMPONENTS (Specific Chemical ID)	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED	%
ACRYLIC polymer (Non-hazardous , no CAS #)	None	none		20-30
Ammonia (7664-41-7)	35ppm	25ppm		<0.15
Water (7732-18-5)				70 - 8

Section III - Physical/Chemical Characteristics

BOILING POINT: 212 F freezing point: 32 F

VAPOR PRESSURE(mm Hg): 17

VAPOR DENSITY (AIR = 1): heavier

SPECIFIC GRAVITY (H2O=1): 1.02
pH: 9.2 - 10.0
SOLUBILITY IN WATER: dilutable
% Volatile by volume: ca 72%
APPEARANCE AND ODOR: milky white liquid . Water - like consistency. Slight ammonia odor.

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): NA (Non-combustible)

FLAMMABLE LIMITS: NA
LEL:
UEL:

Section IV - Fire and Explosion Hazard Data (Cont.)

EXTINGUISHING MEDIA: NA

SPECIAL FIRE FIGHTING PROCEDURES:
A self-contained breathing apparatus and full protective clothing should be worn when fighting fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Acyrlic emulsions will not burn. They may splatter if temperature exceeds boiling point (212 F). Dried polymer films are capable of burning.

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(X) STABLE

CONDITIONS TO AVOID: NA

INCOMPATABILITY (MATERIALS TO AVOID): NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Thermal decomposition may yield oxides of carbon.
HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(X) WILL NOT OCCUR

CONDITIONS TO AVOID: NA

Section VI - Health Hazard Data

ROUTE(S) OF ENTRY: INHALATION? no SKIN? yes INGESTION? yes

HEALTH HAZARDS (ACUTE AND CHRONIC):
General: No toxicity information is available on this specific preparation; this health hazard assessment is based on information that is avail on its components.
Ingestion: Relative to other materials, a single dose of this product is practically non-toxic by ingestion. Based on acute toxicity studies for a number of compositionally similar acrylic emulsions the typical oral LD50 (rats): > 5.0g/kg. This product is approved for incorporation into coatings in contact with potable water (U.S. EPA).
Eye Contact: Direct contact with emulsion may irritate human eyes. In studies of compositionally similar acrylic emulsions, rated as inconsequentially irritating to eyes (rabbit).
Skin Contact: Prolonged or repeated contact may irritate humna skin. In skin studies (rabbit) of compositionally similar acrylic emulsions, rated as practically non-irritating.
Skin absorption: No systemically toxic effects are known to occur in man via absorption of this material through skin. The LD50 dermal (rabbits) is > 5.0g/kg for compositionally similar acrylic emulsions.

Section VI - Health Hazard Data (Cont.)

Inhalation: Inhalation of vapor or mist can cause headache, nausea, and may irritate the nose, throat, or lungs. Monomer vapors may be generated if product is heated during processing operations. See section 9.
Other effects of overexposure: No other adverse clinical effects are known to be associated with exposures to this mixture.

EMERGENCY AND FIRST AID PROCEDURES:
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen. Consult a physician.
Ingestion:
Get medical attention
Eye Contact:
Flush with water for at least 15 minutes. Obtain medical attention
Skin Contact:
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Surfaces may be slippery, use caution. Dike and contain spill with inert material (sand, absorbent, earth, etc.). Transfer liquid to containers for recovery or disposal. Transfer solid diking/absorbent material to separate containers for disposal. Keep spills and runoff out of sewers and bodies of water.

WASTE DISPOSAL METHOD:
Discarded product is a non-hazardous waste under RCRA criteria (40 CFR, Part 261). However, even small amounts of emulsion will discolor bodies of water. Reuse uncontaminated material when possible. Landfill or incinerate solids and contaminated diking material in accordance with local, state and federal regulations.
Container disposal: Drain containers completely. Empty containers may retain small amounts of residual product. Observe all hazard precautions when handling empty containers. Puncture or otherwise destroy container and dispose of as non-hazardous waste in accordance with local, state and federal regulations.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
Keep from freezing - product may coagulate. If frozen, thaw at room temperature. If solids are coagulated or "crystallized" product is unusable.
Keep out of direct sunlight.
Residual monomer content present no problem under normal conditions of use, however high levels of monomer vapors can be released into work areas when emulsions are heat dried or cured (ovens, infrared lamp, etc.) if good ventilation is not used.

Section VIII - Control Measures

RESPIRATORY PROTECTION (SPECIFY TYPE):
Not required if good ventilation is maintained. Use appropriate MSHA/NIOSH respirator when dusts or mists are generated for the types and concentrations of air contaminants encountered.

VENTILATION:

LOCAL EXHAUST: Suggested
MECHANICAL (GENERAL):
SPECIAL:
OTHER:

PROTECTIVE GLOVES:
Rubber or neoprene
EYE PROTECTION:
Safety glasses or chemical splash goggles
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
Long trousers, longsleeved shirt, and appropriate footwear recommended to avoid skin contact.
WORK/HYGIENIC PRACTICES:
Wash after handling.
Footnote:
This product is formulated for use as an admixture (additive) to cement-based coatings, plasters, mortars, patching materials, etc., either as supplied or further diluted with water. Its primary function is to enhance the chemical and physical characteristics of the material it is added (eg. adhesion, compressive, tensile and flexurel strengths, chemical resistance, etc.). Read and follow label directions and technical bulletin number 67 for this product.
The information herein is given in good faith but no warranty, expressed or implied, is made.

N/A = Not Available
NA = Not applicable

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: MOPOXY HS-50 WHITE
PRODUCT CODE: 40BW005

HMIS CODES: H 2 F 3 R 0 P

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: MOBILE PAINT MANUFACTURING CO. INC.
ADDRESS: P.O. BOX 717, THEODORE, AL 36582
EMERGENCY PHONE: 1-800-255-3924
INFORMATION PHONE: (334) 443-6110
DATE REVISED : 11-22-94
NAME OF PREPARER :
REASON REVISED : REVISED RESPIRATORY PROTECTION (SECTION VIII)

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
*METHYL ISOBUTYL KETONE	108-10-1	100 PPM	50 PPM	205 MG/M3	20.0	68F	22
*XYLENE	1330-20-7	100 PPM	100 PPM	435 MG/M3	6.0	68F	4
TITANIUM DIOXIDE	13463-67-7	10 MG/M3	10 MG/M3		N/A		10
SILICON DIOXIDE	14808-60-7	20 MPPCF	10 MG/M3		N/A		15
BARIUM SULFATE	7727-43-7	10 MG/M3	10 MG/M3		N/A		15
MICA	12001-26-2	20 MPPCF	3 MG/M3		N/A		10

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE: 237 to 280 Deg F
SPECIFIC GRAVITY (H2O=1): 1.4
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHE
COATING V.O.C. : 3.11 LB/GL (372 G/L)
SOLUBILITY IN WATER: NEGLIGIBLE
APPEARANCE AND ODOR: TYPICAL PAINT SOLVENT ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 73-79 F
METHOD USED: SETAFLASH
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0% UPPER: 8.0%

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL

SPECIAL FIREFIGHTING PROCEDURES
DURING EMERGENCY CONDITIONS OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION. KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAME.

UNUSUAL FIRE AND EXPLOSION HAZARDS
CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. APPLICATION TO HOT SURFACES REQUIRES SPECIAL PRECAUTIONS. FULL PROTECTIVE EQUIPMENT INCLUDING SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED. WATER SPRAY MAY BE INEFFECTIVE. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID
HIGH TEMPERATURES

INCOMPATIBILITY (MATERIALS TO AVOID)
OXIDIZING MATERIALS

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
MAY PRODUCE HAZARDOUS FUMES WHEN HEATED TO DECOMPOSITION AS IN WELDING.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
ANESTHETIC. EXCESSIVE INHALATION CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS, COMA AND EVEN ASPHYXIATION.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
SKIN: MODERATE IRRITATION, DEFATTING, DERMATITIS. MAY BE A SENSITIZER IN SOME INDIVIDUALS.
EYES: SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION. MAY BE A SENSITIZER IN SOME INDIVIDUALS.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
LIQUID CAN BE ABSORBED THROUGH THE SKIN RESULTING IN SYMPTOMS SIMILAR TO THE INHALATION EFFECTS ABOVE.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING AND DIARRHEA. ASPIRATION INTO THE LUNGS DURING INGESTION OR VOMITING MAY CAUSE MILD TO SEVERE PULMONARY INJURY AND POSSIBLY EVEN DEATH.

HEALTH HAZARDS (ACUTE AND CHRONIC)
REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
EXPOSURE TO PETROLEUM SOLVENTS MAY AGGRAVATE PREEXISTING DERMATITIS.

EMERGENCY AND FIRST AID PROCEDURES
INHALATION: REMOVE TO FRESH AIR. ADMINISTER OXYGEN IF BREATHING IS DIFFICULT. RESTORE BREATHING IF NECESSARY. TREAT SYMPTOMATICALLY. CONSULT A PHYSICIAN.
SKIN: WASH AFFECTED AREAS WITH SOAP AND WATER. REMOVE AND LAUNDER CONTAMINATED CLOTHING. CONSULT A PHYSICIAN IF NEEDED.
EYES: FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. TAKE TO A PHYSICIAN FOR MEDICAL TREATMENT.
INGESTION: DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. GET MEDICAL HELP IMMEDIATELY.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
REMOVE ALL SOURCES OF IGNITION (FLAME, HOT SURFACES, AND ELECTRICAL, STATIC, OR FRICTIONAL SPARKS). AVOID BREATHING VAPORS. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS.

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. INCINERATE IN APPROVED FACILITY. DO NOT INCINERATE CLOSED CONTAINERS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
DO NOT STORE ABOVE 120 F. STORE LARGE QUANTITIES ONLY IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. KEEP CLOSURES TIGHT AND CONTAINER UPRIGHT TO PREVENT LEAKAGE. DO NOT STORE OR USE NEAR HEAT, SPARKS OR FLAME. NEVER USE PRESSURE TO EMPTY. DRUM MUST NOT BE WASHED OUT OR USED FOR OTHER PURPOSES. DRUMS OF THIS MATERIAL SHOULD BE GROUNDED WHEN POURING.

OTHER PRECAUTIONS
DO NOT GET IN EYES. AVOID SKIN CONTACT. CAN CAUSE ALLERGIC RESPIRATORY REACTION. CAN CAUSE ALLERGIC SKIN REACTION. PREVENT PROLONGED OR REPEATED BREATHING OF VAPORS OR SPRAY MIST. AVOID BREATHING OF SANDING DUST. WASH CONTAMINATED CLOTHING THOROUGHLY. WASH SKIN THOROUGHLY WITH SOAP AND WATER AFTER HANDLING. CLOSE CONTAINER AFTER EACH USE. DO NOT TRANSFER THIS PRODUCT TO UNLABELED CONTAINERS. DO NOT HANDLE UNTIL THE MANUFACTURERS SAFETY PRECAUTIONS HAVE BEEN READ AND UNDERSTOOD. KEEP OUT OF REACH OF CHILDREN.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION
USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE, WHEN EXPOSURE EXCEEDS OCCUPAITONAL EXPOSURE LIMITS (SECTION II). USE EITHER AN ATMOSPHERE-SUPPLYING REPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS IN COMPLIANCE WITH 29 CFR 1910.134, WITH PROVISION FOR MIST REMOVAL IF CONDITIONS SO INDICATE.

VENTILATION
ALL APPLICATION AREAS SHOULD BE VENTILATED IN ACCORDANCE TO OSHA REGULATION 29 CFR 1910.94, 1910.107, 1910.108. REMOVE DECOMPOSITION PRODUCTS FORMED DURING WELDING OR FLAME CUTTING ON SURFACE COATED WITH THIS PRODUCT. IF BAKING VENT FUMES.

PROTECTIVE GLOVES
RECOMMENDED.

EYE PROTECTION
SAFETY EYEWEAR INCLUDING SPLASH GUARDS OR SIDE SHIELDS RECOMMENDED.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
USE PROTECTIVE OUTER-WEAR AND PREVENT PROLONGED SKIN CONTACT WITH CONTAMINATED CLOTHING.

WORK/HYGIENIC PRACTICES
AVOID BREATHING VAPORS AND CONTACT WITH SKIN. WASH SKIN THOROUGHLY BEFORE BREAKS AND MEALS AND AT END OF WORK PERIOD.

SECTION IX - DISCLAIMER

DISCLAIMER
THE INFORMATION PROVIDED IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE AND RELIABLE. IT IS FURNISHED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. RECIPIENTS SHOULD DETERMINE THAT THE INFORMATION IS CURRENT AND SUITABLE FOR THE PROTECTION OF THE ENVIRONMENT AND THE HEALTH AND SAFETY OF YOUR EMPLOYEES AND USERS OF THIS PRODUCT.

7/23/96

MATERIAL SAFETY DATA SHEET

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Revised 8/24/94
Replaces 8/16/94
Printed 4/02/96

THOROBOND
THORO SYSTEM PRODUCTS

THOROBOND

Section I - General Information

Harris Specialty Chemicals
PCR Inc. - Thoro Systems, Inc.
P.O. Box 1466
Gainesville, Florida 32602
Phone: (904) - 376-8246

Material Name: Thorobond

This form covers Smooth, Fine and Coarse Thorobond, all standard colors and tinting bases.

HMIS:
Health 1
Fire 0
Reactivity 0
Personal Protection x

Section II - Ingredients/Identity Information

HAZARDOUS COMPONENTS Chemical ID	% Wgt	ACGIH TLV	STEL	OSHA PEL
Diethyleneglycol ethyl) ether (111-90-0)	1 - 5	none		none
Ethylene Glycol (107-21-1)	1 - 5	50 ppm (c)		50 ppm
Dibutyl phthlate (84-74-2)	1 - 5	5 mg/m3 10 mg/m3 STEL		5 mg/m3
Polyvinylacetate aqueous emulsion	60 - 80	N.E.		N.E.

Ingredients not precisely identified are proprietary or nonhazardous Values are not product specifications. gt=greater than; lt=less than, ca=approximately, NE=not established, C=Ceiling

Section III - Physical/Chemical Characteristics

BOILING POINT: no data available about 212 for water
VAPOR PRESSURE(mm Hg): Not applicable - solid at all service temperatures
VAPOR DENSITY (AIR = 1): not applicable
pH: no data available
SPECIFIC GRAVITY (H2O=1): about 1.1
% Volatile by volume: about 50
APPEARANCE AND ODOR: Pink opaque liquid. Slight Vinegar odor.
Solubility in Water: Soluble

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): none

FLAMMABLE LIMITS: not applicable
LEL:
UEL:

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES:
A self-contained breathing apparatus and full protective gear should be used when fighting fires involving this material.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
If heated to thermal decomposition acrid fumes including oxides of carbon will be evolved.

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(x) STABLE

CONDITIONS TO AVOID: Not applicable

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: CO, CO2

HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(x) WILL NOT OCCUR

CONDITIONS TO AVOID: not applicable

Section VI - Health Hazard Assessment

General: No toxicity information is available on this specific preparation; this health hazard assment is based on information that is available on its—components.

Ingestion: The principal toxic effect will likely be due to ethylene glycol which causes kidney damage. Symptoms of ingestion may include abdominal discomfort and pain, dizziness,malaise, lumbar pain, CNS depression and other symptoms related to ethylene glycol ingestion. Severe kidney damage accompanies gross overexposure.
Dibutyl phthalate is an irritant and a possible teratogen. Overexposures may cause reproductive disorders. Exposures can cause nausea, dizziness and headache.
Eye Contact: This material can irritate human eyes following contact.

Section VI - Health Hazard Assessment (Cont.)

Skin Contact: May cause skin irritation
This material is not absorbed through the skin.
Inhalation: Toxic concentrations of vapors is unlikely. High vapor concentrations from heating and/or use in a confined area may be irritating and may cause headache, dizziness, nausea nad vomiting.

Other Effects of overexposure: Ethylene glycol can be absorbed through the skin. During normal use and handling no hazard should exist.
EMERGENCY FIRST AID PROCEDURES:
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen.
Consult a physician.
Ingestion:
Seek medical attention immediately.

Eye Contact:
Flush with water for at least 15 minutes. Obtain medical attention
Consult medical personnel.
Skin Contact:
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Follow personal protection procedures when cleaning spills. Dike and contain spill with inert material. Transfer liquid to containers for recovery and disposal. Transfer solid diking/absorbent to seperate containers for disposal. Keep runoff and spills out of sewers and bodies of water. Caution: Spill area may be slippery. Use caution to avoid falls.
WASTE DISPOSAL METHOD:
Reuse contaminated material if possible. Landfill or incinerate solids and contaminated material in accordance with all local, state and federal regulations.
Container Disposal:
Empty containers may retain small amounts of residual product. Observe all hazard precautions and personal protection recommendations when handling empty containers. Dispose of waste in accordance with all appplicable regulations.

Section VIII - Special Protection Information

TLV or Suggested Control Value: No TLV has been assigned to this mixture. Minimize exposures in accordance with good hygiene practices.

Ventilation:
Use local exhaust to keep exposures at a minimum.

Section VIII - Special Protection Information (Cont.)

RESPIRATORY PROTECTION (SPECIFY TYPE):
None required under normal conditions. If OSHA PEL standards are exceeded then use an appropriate MSHA-NIOSH approved respirator for the hazard.

Protective clothing:
Gloves and protective clothing are recommended.

EYE PROTECTION: Chemical tight goggles; full face shield if splashing is possible.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Eyewash, safety showers
SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors, mists or aerosols of thos product. Keep product from freezing.

SECTION X MISCELLANEOUS INFORMATION

none

Prepared By: Lawrence Templin date: June 28th 1994

7/25/96

MATERIAL SAFETY DATA SHEET

Page 1 of -
Revised 1/23/9
Replaces (None)
Printed 4/02/9

THOROFLEX RC
THORO SYSTEM PRODUCTS

THOROFLEX

Section I - General Information

Manufacturer:

Thoro System Products Inc
A Division of
Harris Specialty Chemicals, Inc.
8570 Philips Highway
Jacksonville, Fl 32256-8208

Emergency Phone: Chemtrec 1-800-424-9300

Material Name: Thoroflex RC

HMIS:
Health 1
Fire 0
Reactivity 0
Personal Protection x

Section II - Ingredients/Identity Information

HAZARDOUS COMPONENTS Chemical ID	% Wgt	ACGIH TLV	STEL	OSHA PEL
Calcium carbonate (1317-65-3)	30 - 40	10 mg/m3	none	10 mg/m3 (total dust)
Acrylic Emulsion	35 - 40	none	none	none
Ethylene Glycol	0 - 1	50 ppm	none	50 ppm

Ingredients not precisely identified are proprietary or nonhazardous
Values are not product specifications. gt=greater than; lt=less than,
ca=approximately, NE=not established, C=Ceiling

Section III - Physical/Chemical Characteristics

BOILING POINT: High - 389 Low- 212 F
VAPOR PRESSURE(mm Hg): No data available
VAPOR DENSITY (AIR = 1): > 1
pH: 9.2 - 10
SPECIFIC GRAVITY (H2O=1): No data available
% Volatile by volume: No data available
APPEARANCE AND ODOR: White liquid with a slight ammonia odor
Solubility in Water: Soluble

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): none

FLAMMABLE LIMITS: not applicable
LEL:
UEL:

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES:
A self-contained breathing apparatus and full protective gear should be used when fighting fires involving this material.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Monomer vapors may be evolved at elevated temperatures. Dried polymer films are capable of burning yielding oxides of carbon.

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(x) STABLE

CONDITIONS TO AVOID: Not applicable

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents acids, ammonium salts

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(x) WILL NOT OCCUR

CONDITIONS TO AVOID: not applicable

Section VI - Health Hazard Assessment

General: No toxicity information is available on this specific preparation; this health hazard assment is based on information that is available on its components.

Ingestion: The principle toxic effect of this product, when swallowed, is likely to be due to the ethylene glycol content which causes kidney damage. Symptoms of ingestion may include abdominal discomfort, malaise, central nervous system depression and other symptoms related to ethylene glycol ingestion. Severe kidney damage accompanies severe overexposure. Pre-existing blood or kidney disorders can be aggrevated.
Eye Contact: This material can cause sever eye irritation following contact.

Section VI - Health Hazard Assessment (Cont.)

Skin Contact: Can cause moderate skin irritation. This material will probably not be absorbed through the skin.

Inhalation: Inhalation of vapors and mists of this product may cause irritation of the nose and throat, headache, nausea and central nervous system depression. Prolonged exposure may cause kidney damage.

Other Effects of overexposure: None

EMERGENCY FIRST AID PROCEDURES:
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen. Consult a physician.
Ingestion:
Give one or two glasses of water to drink and seek medical attention.

Eye Contact:
Flush with water for at least 15 minutes. Obtain medical attention Consult medical personnel.
Skin Contact:
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Follow personal protection procedures when cleaning spills. Dike and contain spill with inert material. Transfer liquid to containers for recovery and disposal. Transfer solid diking/absorbent to seperate containers for disposal. Keep runoff and spills out of sewers and bodies of water. Caution: Spill area may be slippery. Use caution to avoid falls.
WASTE DISPOSAL METHOD:
Discarded product is a non-hazardous waste under RCRA criteria (40 CFR, part 261). However, even small amounts of emulsion will discolor bodies of water. Reuse contaminated material if possible. Landfill or incinerate solids and contaminated material in accordance with all local, state and federal regulations.
Container Disposal:
Empty containers may retain small amounts of residual product. Observe all hazard precautions and personal protection recommendations when handling empty containers. Dispose of as a non-hazardous waste in accordance with all appplicable regulations.

Section VIII - Special Protection Information

TLV or Suggested Control Value: No TLV has been assigned to this mixture. Minimize exposures in accordance with good hygiene practices.

Ventilation:
Use local exhaust to keep exposures at a minimum.

RESPIRATORY PROTECTION (SPECIFY TYPE):
None required under normal conditions. If OSHA PEL standards are exceeded then use an appropriate MSHA-NIOSH approved respirator for the hazard.

Protective clothing:
Impervious gloves, long trousers, longsleeved shirt and appropriate footwaer recommended to avoid skin contact.
EYE PROTECTION: Chemical tight goggles; full face shield if splashing is possible.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Eyewash, safety showers
SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors, mists or aerosols of thos product. Keep product from freezing.

SECTION X MISCELLANEOUS INFORMATION

Workplace Classification: Non-hazardous under OSHA Hazardous Communication Standard (29 CFR 1910.1200)
Transportation Classification: DOT Hazard Class: None (non-hazardous)
IATA - None
No UN or NA numbers required.
SARA Title III : Non-hazardous.
This product does not contain a chemical which is listed in Section 313 above the de minimis concentration.
Prop 65: This product is non-hazardous under Proposition 65 in the state of California.
CERCLA: Releases of this product to the air, land, or water are not reportable to the National Response Center under CERCLA or state and local governments under SARA Title III.
RCRA: This product is non-hazardous under RCRA.

7/23/96

MATERIAL SAFETY DATA SHEET

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Revised 6/28/94
Replaces (None)
Printed 4/02/96

THOROPATCH
THORO SYSTEM PRODUCTS

THOROPATCH

Section I - General Information

Harris Specialty Chemicals
PCR Inc. - Thoro Systems, Inc.
P.O. Box 1466
Gainesville, Florida 32602
Phone: (904) - 376-8246

Material Name: Thoropatch

HMIS:
Health 2
Fire 0
Reactivity 0
Personal Protection x

Section II - Ingredients/Identity Information

HAZARDOUS COMPONENTS Chemical ID	% Wgt	ACGIH TLV	STEL	OSHA PEL
Silica, crystalline quartz (CAS 14808-60-7)	70 -80	0.1 mg/m3 (respirable)		
Portland cement (CAS 65997-15-1)	20 - 30	10 mg/m3 total dust		10 mg/m3 total dust, 5 mg/m3 respirable
Calcium hydroxide (CAS 1305-62-0)	1 - 5	5 mg/m3 Respirable		5 mg/m3 (Respirable)

Ingredients not precisely identified are proprietary or nonhazardous Values are not product specifications. gt=greater than; lt=less than, ca=approximately, NE=not established, C=Ceiling

Section III - Physical/Chemical Characteristics

VAPOR PRESSURE(mm Hg): Not applicable - soli
Vi... = 1): not applicable
pH: no data available - strongly basic when mixed
SPECIFIC GRAVITY (H2O=1): no data
% Volatile by volume: negligible
APPEARANCE AND ODOR: gray powdered solid. No odor
Solubility in Water: Slight

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): none

FLAMMABLE LIMITS: not applicable
LEL:
UEL:

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None known

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(x) STABLE

CONDITIONS TO AVOID: Products hydrates at a slow, controlled rate when mixed with water releasing minimal heat.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents such as organic and inorganic acids. Acids will react with cement, lime and cabonate.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(x) WILL NOT OCCUR

CONDITIONS TO AVOID: not applicable

Section VI - Health Hazard Assessment

General: No toxicity information is available on this specific preparation; this health hazard assment is based on information that is available on its components.

Ingestion: No known toxic effects. May cause digestive tract irritation.

Eye Contact: This material can irritate and burn human eyes following contact. The aggregate particles may cause corneal abrasions.

Skin Contact: Dryness, itching, rashes and burns can develop following contact with the skin. Skin abrasions can occur if material is rubbed against the skin. Dermatitis and skin sensitization can develop after repeated or prolonged exposure.
This material is not absorbed through the skin.

Section VI - Health Hazard Assessment (Cont.)

Inhalation: Repeated inhalation of silica in excess of the TLV over extended periods can result in irreversible fibrosis of the lungs (silicosis). Overexposure to dusts can irritate the respiratory tract and cause damage to the mucous membranes of the upper respiratory tract. IARC has associated high exposures to crystalline silica with cancer in laboratory animals.

Other Effects of overexposure: No other clinical effects are known to be associated with this material.

EMERGENCY FIRST AID PROCEDURES:

Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen. Consult a physician.

Ingestion:
Give one or two glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. Never give anything by mouth to an unconscious person.

Eye Contact: Do not rub eyes.
Flush with water for at least 15 minutes. Obtain medical attention Consult medical personnel.

Skin Contact: Do not rub skin.
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Follow personal protection procedures when cleaning spills. Collect spilled powder by dustless methods and place in a container. If necessary, dike spills of mixed materials, mix with absorbent material and shovel into waste containers. Avoid generating dust. Wet material may be slippery - Use caution to avoid falls.

WASTE DISPOSAL METHOD:
Reuse powder or mixed material if uncontaminated. Discarded product and hardened mortar are non-hazardous under RCRA (40 CFR, part 261). Dispose of non-hazardous waste in compliance with applicable regulations.

Container Disposal:
Empty containers may retain small amounts of residual product. Observe all hazard precautions and personal protection recommendations when handling empty containers. Dispose of as a non-hazardous waste in accordance with all appplicable regulations.

Section VIII - Special Protection Information

TLV or Suggested Control Value: No TLV has been assigned to this mixture. Minimize exposures in accordance with good hygiene practices.

Ventilation:
Use local exhaust to keep exposures below limits set for silica,

Section VIII - Special Protection Information (Cont.)

Portland cement and nuisance dusts.
RESPIRATORY PROTECTION (SPECIFY TYPE):
Where exposures to dusts from this product may exceed the exposure limits an MSHA-NIOSH approved dust respirator for the dust should be used.

Protective clothing:
Gloves and protective clothing are recommended.

EYE PROTECTION: Chemical tight goggles; full face shield if splashing is possible. Safety glasses if grinding, cutting, etc. of hardened material is required.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Eyewash, safety showers
SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing dusts. Sensitized individuals should not be exposed to the product which caused sensitization.
Store in a cool, dry area off the ground. Minimize generation of dust.

SECTION X MISCELLANEOUS INFORMATION

PEL for silica, crystallile quartz:

For respirable dust in mg/m3 : $\frac{10 mg/m3}{\% SiO2 + 2}$

For total dust in mg/m3: $\frac{30 mg/m3}{\% SiO2 + 2}$

Prepared By: Lawrence Templin date: June 28th 1994

7/23/96

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THORO SYSTEM PRODUCTS		Printed	3/14/9

Section I - General Information

Manufacturer:

Thoro System Products Inc
A Division of
Harris Specialty Chemicals, Inc.
8570 Philips Highway
Jacksonville, Fl 32256-8208

Emergency Phone: Chemtrec 1-800-424-9300

Material Name: Thoroseal This form covers all colors

HMIS:
Health 3
Fire 0
Reactivity 0
Personal Protection x

Section II - Ingredients/Identity Information

HAZARDOUS COMPONENTS

Chemical ID	% Wgt	ACGIH TLV	STEL	OSHA PEL
Silica, crystalline quartz (CAS 14808-60-7)	40 - 50	0.1 mg/m3 (respirable)		
Portland cement (CAS 65997-15-1)	40 - 60	10 mg/m3 total dust		10 mg/m3 total dust, 5 mg/m3 respirable
Calcium hydroxide (CAS 1305-62-0)	1 - 5	5 mg/m3		none
Titanium dioxide (CAS 13463-67-7)	1 - 5	5 mg/m3 respirable 10 mg/m3 total		5 mg/m3 respirable 10mg/m3 total
Salt	1 -5	none		none

Ingredients not precisely identified are proprietary or nonhazardous Values are not product specifications. gt=greater than; lt=less than, ca=approximately, NE=not established, C=Ceiling

Section III - Physical/Chemical Characteristics

BOILING POINT: no data available
VAPOR PRESSURE(mm Hg): Not applicable - solid at all service temperatures
VAPOR DENSITY (AIR = 1): not applicable
pH: no data available - strongly basic when mixed with water
SPECIFIC GRAVITY (H2O=1): no data
% Volatile by volume: negligible
APPEARANCE AND ODOR: White, gray or pastel powder.
Solubility in Water: Slight

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): none

FLAMMABLE LIMITS: not applicable
LEL:
UEL:

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None known

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(x) STABLE

CONDITIONS TO AVOID: Products hydrates at a slow, controlled rate when mixed with water releasing minimal heat.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents such as organic and inorganic acids. Acids will react with cement, lime and cabonate.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(x) WILL NOT OCCUR

CONDITIONS TO AVOID: not applicable

Section VI - Health Hazard Assessment

General: No toxicity information is available on this specific preparation; this health hazard assment is based on information that is available on its components.

Ingestion: No known toxic effects. May cause digestive tract irritation.

Eye Contact: This material can irritate and burn human eyes following contact. The aggregate particles may cause corneal abrasions.

Skin Contact: Dryness, itching, rashes and burns can develop following contact with the skin. Skin abrasions can occur if material is rubbed against the skin. Dermatitis and skin sensitization can develop after repeated or prolonged exposure.
This material is not absorbed through the skin.
Inhalation: Repeated inhalation of silica in excess of the TLV over extended periods can result in irreversible fibrosis of the lungs (silicosis). Overexposure to dusts can irritate the respiratory tract and cause damage to the mucous membranes of the upper respiratory tract. IARC has associated high exposures to crystalline silica with cancer in laboratory animals.

Other Effects of overexposure: No other clinical effects are known to be associated with this material.
EMERGENCY FIRST AID PROCEDURES:
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen. Consult a physician.
Ingestion:
Give one or two glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. Never give anything by mouth to an unconscious person.
Eye Contact: Do not rub eyes.
Flush with water for at least 15 minutes. Obtain medical attention Consult medical personnel.
Skin Contact: Do not rub skin.
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Follow personal protection procedures when cleaning spills. Collect spilled powder by dustless methods and place in a container. If necessary, dike spills of mixed materials, mix with absorbent material and shovel into waste containers. Avoid generating dust. Wet material may be slippery - Use caution to avoid falls.
WASTE DISPOSAL METHOD:
Reuse powder or mixed material if uncontaminated. Discarded product and hardened mortar are non-hazardous under RCRA (40 CFR, part 261). Dispose of non-hazardous waste in compliance with applicable regulations.

Section VII - Precautions for Safe Handling and Use (Cont.)

Container Disposal:
Empty containers may retain small amounts of residual product. Observe all hazard precautions and personal protection recommendations when handling empty containers. Dispose of as a non-hazardous waste in accordance with all appplicable regulations.

Section VIII - Special Protection Information

TLV or Suggested Control Value: No TLV has been assigned to this mixture. Minimize exposures in accordance with good hygiene practices.

Ventilation:
Use local exhaust to keep exposures below limits set for silica, Portland cement and nuisance dusts.
RESPIRATORY PROTECTION (SPECIFY TYPE):
Where exposures to dusts from this product may exceed the exposure limits an MSHA-NIOSH approved dust respirator for the dust should be used.

Protective clothing:
Gloves and protective clothing are recommended.

EYE PROTECTION: Chemical tight goggles; full face shield if splashing is possible. Safety glasses if grinding, cutting, etc. of hardened material is required.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Eyewash, safety showers
SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing dusts. Sensitized individuals should not be exposed to the product which caused sensitization.
Store in a cool, dry area off the ground. Minimize generation of dust.

SECTION X MISCELLANEOUS INFORMATION

PEL for silica, crystallile quartz:

- For respirable dust in mg/m3 : $\frac{10\text{mg/m3}}{\%\ SiO2 + 2}$

For total dust in mg/m3: $\frac{30\ \text{mg/m3}}{\%\ SiO2 + 2}$

Prepared By: Lawrence Templin date: June 28th 1994

7/23/96

MATERIAL SAFETY DATA SHEET

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Replaces	8/30/95	
Printed	3/14/96	

WATERPLUG
THORO SYSTEM PRODUCTS

WATERPLUG

Section I - General Information

Manufacturer:

Watson Bowman
a Division of:
Harris Specialty Chemicals, Inc.
8570 Philips Highway
Jacksonville, Fl 32256-8208
904-828-4996

Emergency Contact: Chemtrec 1-800-424-9300

Material Name: Waterplug

HMIS:
Health 3
Fire 0
Reactivity 0
Personal Protection x

Section II - Ingredients/Identity Information

HAZARDOUS COMPONENTS Chemical ID	% Wgt	ACGIH TLV	STEL	OSHA PEL
Silica, crystalline quartz (CAS 14808-60-7)	25 - 30	0.1 mg/m3 (respirable)		
Portland cement (CAS 65997-15-1)	70 - 75	10 mg/m3 total dust		10 mg/m3 total dust, 5 mg/m3 respirable
Calcium hydroxide (CAS 1305-62-0)	0 - 5	5 mg/m3		none
Calciumcarbonate (CAS 1317-65-3)	0 - 1	10 mg/m3 total		10mg/m3 total

Ingredients not precisely identified are proprietary or nonhazardous Values are not product specifications. gt=greater than; lt=less than, ca=approximately, NE=not established, C=Ceiling

Section III - Physical/Chemical Characteristics

BOILING POINT: no data available
VAPOR PRESSURE(mm Hg): Not applicable - solid at all service temperatures
VAPOR DENSITY (AIR = 1): not applicable
pH: no data available - strongly basic when mixed with water
SPECIFIC GRAVITY (H2O=1): no data
% Volatile by volume: negligible
APPEARANCE AND ODOR: Medium to dark-gray powdered solid. No odor
Solubility in Water: Slight

Section IV - Fire and Explosion Hazard Data

FLASH POINT (METHOD USED): none

FLAMMABLE LIMITS: not applicable
LEL:
UEL:

EXTINGUISHING MEDIA: Not applicable

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None known

Section V - Reactivity Data

STABILITY (CHOOSE ONE): ( ) UNSTABLE
(x) STABLE

CONDITIONS TO AVOID: Products hydrates at a slow, controlled rate when mixed with water releasing minimal heat.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents such as organic and inorganic acids. Acids will react with cement, lime and caponate.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION (CHOOSE ONE): ( ) MAY OCCUR
(x) WILL NOT OCCUR

CONDITIONS TO AVOID: not applicable

Section VI - Health Hazard Assessment

General: No toxicity information is available on this specific preparation; this health hazard assment is based on information that is available on its components.

Ingestion: No known toxic effects. May cause digestive tract irritation.

Eye Contact: This material can irritate and burn human eyes following contact. The aggregate particles may cause corneal abrasions.

Skin Contact: Dryness, itching, rashes and burns can develop following contact with the skin. Skin abrasions can occur if material is rubbed against the skin. Dermatitis and skin sensitization can develop after repeated or prolonged exposure.
This material is not absorbed through the skin.
Inhalation: Repeated inhalation of silica in excess of the TLV over extended periods can result in irreversible fibrosis of the lungs (silicosis). Overexposure to dusts can irritate the respiratory tract and cause damage to the mucous membranes of the upper respiratory tract. IARC has associated high exposures to crystalline silica with cancer in laboratory animals.

Other Effects of overexposure: No other clinical effects are known to be associated with this material.
EMERGENCY FIRST AID PROCEDURES:
Inhalation:
Remove victim to fresh air. If breathing is difficult administer oxygen.
Consult a physician.
Ingestion:
Give one or two glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. Never give anything by mouth to an unconscious person.
Eye Contact: Do not rub eyes.
Flush with water for at least 15 minutes. Obtain medical attention
Consult medical personnel.
Skin Contact: Do not rub skin.
Wash with soap.Flush with water for at least 15 minutes

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep unnecessary people away. Follow personal protection procedures when cleaning spills. Collect spilled powder by dustless methods and place in a container. If necessary, dike spills of mixed materials, mix with absorbent material and shovel into waste containers. Avoid generating dust. Wet material may be slippery - Use caution to avoid falls.
WASTE DISPOSAL METHOD:
Reuse powder or mixed material if uncontaminated. Discarded product and hardened mortar are non-hazardous under RCRA (40 CFR, part 261). Dispose of non-hazardous waste in compliance with applicable regulations.

Section VII - Precautions for Safe Handling and Use (Cont.)

Container Disposal:
Empty containers may retain small amounts of residual product. Observe all hazard precautions and personal protection recommendations when handling empty containers. Dispose of as a non-hazardous waste in accordance with all appplicable regulations.

Section VIII - Special Protection Information

TLV or Suggested Control Value: No TLV has been assigned to this mixture. Minimize exposures in accordance with good hygiene practices.

Ventilation:
Use local exhaust to keep exposures below limits set for silica, Portland cement and nuisance dusts.
RESPIRATORY PROTECTION (SPECIFY TYPE):
Where exposures to dusts from this product may exceed the exposure limits an MSHA-NIOSH approved dust respirator for the dust should be used.

Protective clothing:
Gloves and protective clothing are recommended.

EYE PROTECTION: Chemical tight goggles; full face shield if splashing is possible. Safety glasses if grinding, cutting, etc. of hardened material is required.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Eyewash, safety showers
SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing dusts. Sensitized individuals should not be exposed to the product which caused sensitization.
Store in a cool, dry area off the ground. Minimize generation of dust.

SECTION X MISCELLANEOUS INFORMATION

PEL for silica, crystallile quartz:

- For respirable dust in mg/m3 : $\frac{10 mg/m3}{\% SiO2 + 2}$

For total dust in mg/m3: $\frac{30 mg/m3}{\% SiO2 + 2}$

This product contains crystalline silica, a material that is known to the State of California to cause cancer.

Section VIII - Special Protection Information (Cont.)

Prepared By: Lawrence Templin date: June 28th 1994

APPENDIX B

SPECIFICATION DATA

CONTENTS OF APPENDIX B

I. Roof Coatings

II. Storage Coatings

SPECIFICATION DATA

I. ROOF COATINGS

PRODUCT DESCRIPTION

Carib Coat is a 100% acrylic and non-toxic seamless elastomeric roof membrane coating. It is a proven top weather-beaten in high build textured applications. It forms a durable, watertight, seamless coating. Can be applied to galvanized, aluminum, properly primed steel, iron, cement, wood.

ADHESION

Carib Coat roof coating adheres stubbornly to concrete, asphalt shingles, roofing paper, tile, slate, wood, steel cement, galvanized, aluminum. (180°F peel to ceramic tile. Passes cup test — no cracking or pulling away from cup.)

RESISTANCE TO PONDING WATER

Carib Coat offers especially high resistance to ponding water. (3.1 mg/24 hrs/25 cm2).

SETTLING

No settling or separation. No stirring or mixing required.

SOLIDS

Percent solids by
Weight 71.9%
Volume 56.0%
Weight per gallon 13.03 lbs.

ELONGATION AND TENSILE STRENGTH

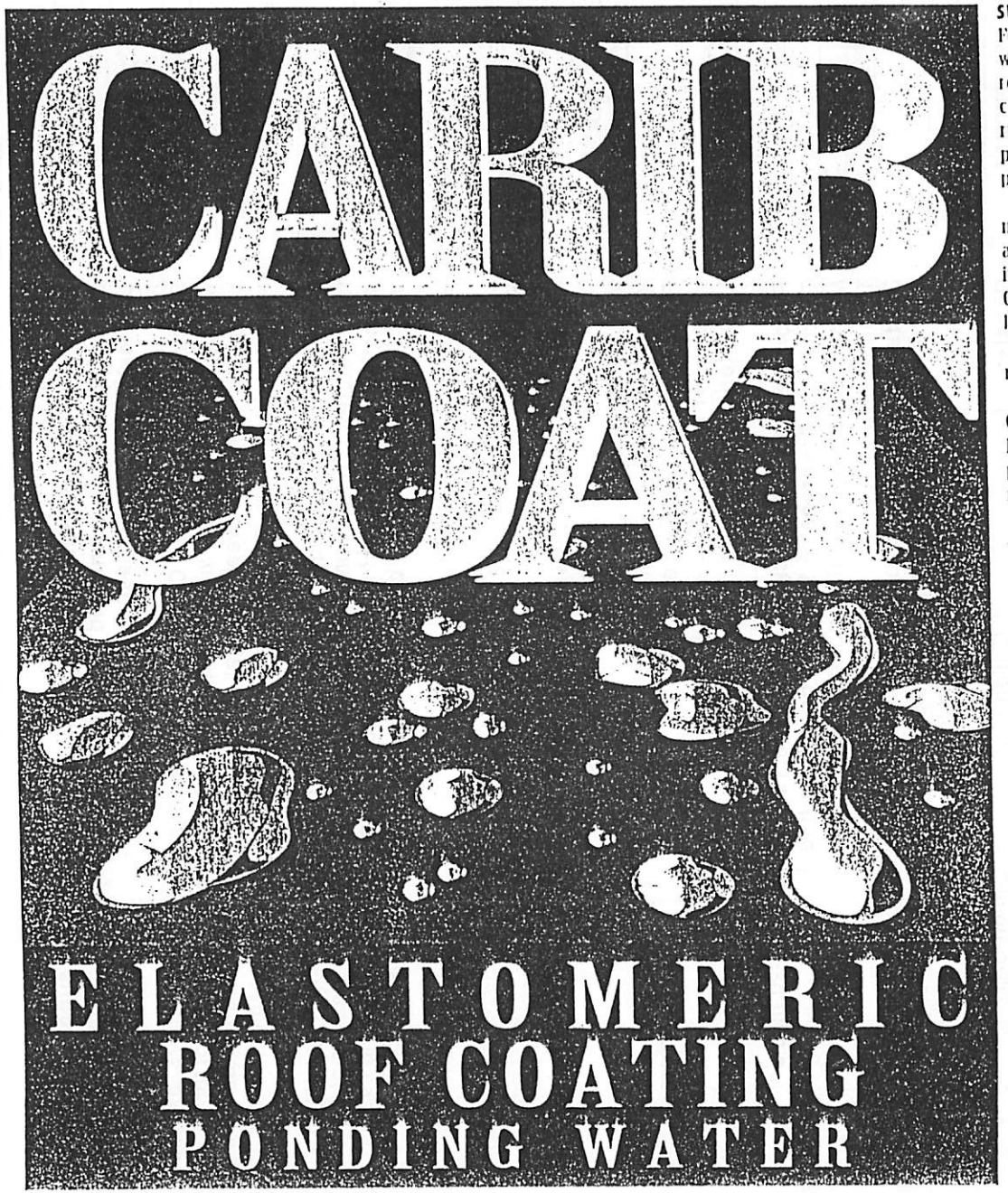
Excellent elongation and tensile strength allows Carib Coat to expand and contract with the surface to which applied without wrinkling or cracking. (Tensile strength: 288 psi, Elongation: 360°F.)

PERMEABILITY @ 25 MILS DRY

0.72 perms

COVERAGE

On smooth surfaces, 100 sq. ft. per gallon. Two coats are recommended to achieve a dry mil thickness of 18 to 20.



SURFACE PREPARATION AND APPLICATION

For maximum adhesion, use a pressure washer (2,000 psi or higher). This will remove any loose dirt, paint and other contaminants on the surface. If there is any rust present, wire brush the area and spot prime with a quality rust inhibitive alkyd paint and allow to dry.

No re-enforcing mesh required when a minimum 25 to 30 mils dry is used otherwise at seams, brush a thick coat of Carib Coat and imbed ester tape in it. Apply a top coating of Carib Coat over that. Allow to dry overnight before applying finish coats.

Carib Coat may be applied with an airless, roller or brush.

QUESTIONS?

If you have any questions on application or preparation of your roof, you may call the manufacturer direct.

All technical advice, recommendations and services are rendered by the Seller gratis. They are based on technical data which the seller believes to be reliable and are intended for use by persons having skill and know how, at their discretion and risk. Seller assumes no responsibility for results obtained or damages incurred from their use by Buyer whether or not recommended herein or otherwise. Such recommendations, technical advice or services are not to be taken as a license to operate under or intended to suggested infringement of any existing patent. January, 1992. Supersedes all previous data sheets printed on this product.

Keep away from heat and open flame. Keep out of reach of children. Avoid breathing vapors or spray mist and prolonged contact with skin.

Technical Coatings Industries
P.O. Box 7350
Christiansted, St. Croix USVI 00823
Tel: (809)773-2018
Fax: (809) 773-0575
Manufacturers of superior quality coatings for industrial, commercial and residential markets.

Manufacturers of *TropiCoat*

BLP MOBILE PAINTS

PRODUCT DATA

CARIBBEAN CUSTOM ELASTOMERIC
Roof Coating Reflective White 22-DW-76

100% Acrylic Emulsion

PRODUCT DESCRIPTION

An elastomeric smooth-textured acrylic roof coating with superior flexibility and elongation to expand and contract with roof surfaces. Non-toxic - Lead, chromate, mercury and asbestos free. Low VOC.

TYPICAL USES

Specially formulate for Caribbean homes using cisterns. Offers excellent waterproofing protection with a thick, rubber-like coating to most types of roofs. Can be used on aluminum, weathered galvanized metal, wood, asphalt shingles, built-up roofs, urethane foam, concrete, well bonded gravel roofs and cement tiles.

PRODUCT ADVANTAGES

This product is formulated to offer superior weatherability and durability even in cold temperatures. The extreme brightness of the coating reflects the rays of the sun, dramatically reducing roof temperatures and saving on air conditioning cost. Low VOC. Lead, mercury and chromate free. Contains no asbestos.

COLORS

Reflective White

GLOSS

Low sheen

PHYSICAL CONSTANTS

Nonvolatile - By weight - 65.7 ± 1.0%
By volume - 50.7 ± 1.0%
VOC (Calculated) - 0.7 lbs./gal.
(excluding water) 78 grams/liter
Flash Point - > 250°F (Setaflash)
Weight per gallon - 12.2 ± 0.2 lbs.
Light Reflectance Value - 92

APPLICATION

Recommended Film Thickness - Two coats for a total of 15-20 mils dry.
Theoretical Coverage @ 15.0 mils dry- 50 sq.ft./gal
Method - Brush, roll or airless spray.
Thinner - Water
Dry time @ 75°F - To touch - 1 hour
To handle -3-4 hours
To recoat - 24 hours

SHIPPING & STORAGE

Consists of -	1 Gallon Unit	5 Gallon Unit
Unit Shipping Weight	13 lbs.	63 lbs.

Shelf Life - 12 months minimum from date of manufacture when maintained in protected storage @ 40-100°F (subject to reinspection thereafter).

P.O. BOX 717 • THEODORE, ALABAMA 36590-0717 • PHONE (205) 443-6110

APPLICATION INSTRUCTIONS

Consult your Mobile Paint Representative for the protective coating system best suited for your requirements.

Limitations - Apply in good weather when air and surface temperature are above 50 F and surface temperature is at least 5 F above the dew point. For optimum application properties, material should be between 70 to 100 F prior to mixing and application. Maintain unmixed material in closed containers in protected storage at 40 - 100 F.

Surface Preparation - Good surface preparation is essential to a satisfactory coating system. Surfaces to be coated should be clean and dry. Remove all oil, grease, mildew or other contamination by solvent or detergent cleaning or other effective means.

Steel - Apply to abrasive blasted steel. "Commercial Blast Cleaning" (SSPC SP6) is recommended as the minimum. For immersion service "Near White Blast Cleaning" (SSPC-SP10) is considered minimum. Proper blast media and blasting equipment shall be used to produce an average profile depth of 2.5 mils minimum. Do not reuse abrasive media. Remove blasting dust and grit from surfaces before painting. Blasted surfaces should be coated within 8 hours after blasting or before rusting or other contamination of the surface occurs. For severe service except for potable water tank lining, prime with MoPoxY HB High Build Epoxy Primer 40-DR-5 or Mo-Zinc 3 Inorganic Zinc Primer.

Concrete - Must be clean, dry, properly cured and free from all surface contaminants. "Brush off Blast" (SSPC-SP7) to provide an etched surface and to remove contaminants and laitance. Remove dust before coating. A prime coat of MoPoxY HB will penetrate concrete and is highly recommended to provide a good base coat prior to application of MoPoxY HB. When applying as a prime coat thin material up to 20% by volume (75 ounces per gallon).

Previously Finished Surfaces - Repair all damaged areas. Remove gloss from previous paint by sanding or "Brush Blasting" (SSPC-SP7). Remove rust, corrosion products, heavy chalk and loose or peeling paint by "Hand or Power Tool Cleaning" (SSPC-SP2 or -SP3). Spot prime any bare areas as in new work above. If doubt exists concerning compatibility of this coating with the previous system, apply coating to a representative area (25 square feet minimum) and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting or staining or any other sign of incompatibility. If there are none, coating work can proceed.

Mixing - MoPoxY HB is supplied as a 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with power agitator. (2) Combine entire contents of Part A and Part B and mix thoroughly with power agitator. Allow to stand for 30 minutes and remix before application. Useable pot life depends on the temperature of the material. Refer to Pot Life chart on front page.

Thinning - Material is supplied at airless spray viscosity and should not require thinning. If thinning is necessary, thin with up to 1/2 pint MoPoxY Spraying Thinner 75-37 per gallon.

Application - Spray application is preferred for proper film build and best performance. Brush application is acceptable for touch up. Roller application may require special care to prevent bubbling and may require more than one coat to attain proper film thickness. Apply at 12.5 mils wet film thickness to achieve 6.0 mils dry film thickness.

Note: When applying over Inorganic Zinc Primer it may be desirable to apply a thinned 'mist coat' and allow tiny bubbles to form. Follow with a full wet coat after bubbles disappear.

Equipment - Conventional spray - DeVilbiss MBC gun with E tip and 30 air cap or equal at 50 - 90 psi atomizing pressure and 10 - 35 psi pot pressure. 3/8" ID product hose double regulated pressure pot with oil and moisture separator. Airless Spray - Minimum of 30:1 ratio pump. .017" - .027" tip. 3/8" ID Teflon material hose.

Note: During lunch breaks or any period of work stoppage, material should be removed from hoses and equipment. Release pressure from equipment and flush hoses and equipment with 75-35, 75-37 or acetone solvents. Do not repressurize equipment until ready to resume work.

Cleanup - Clean all equipment immediately after use with MoPoxY Thinner 75-37 or MIBK. Completely flush all spray equipment with either of these solvents. Occasional flushing of spray equipment during the course of the working day helps prevent buildup and possible clogging.

Safety - Safe storage, handling and use dictate that adequate health and safety precautions be observed with this product and any recommended thinners. User is specifically directed to consult the current Material Safety Data Sheet for this product as well as precautions contained on product labeling.

Notice - The technical data contained herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Mobile Paint Manufacturing Company's Standard Conditions of Sale. Published technical data and instructions are subject to change without prior notice.

CEST-WPC

WHITE PIGMENTED, RESIN BASED CURING COMPOUND

APPLICATION & SAFETY INFORMATION

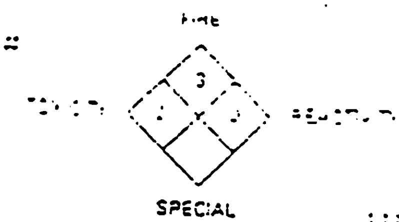
Vexcon MSDS #VM817 is an integral part of the safety and application of our pro[illegible] short synopsis is included in this product Data and Safety Sheet. Before using any product, it is advisable to get a copy of VM817 from your distributor or by calling [illegible] Chemicals at 800-856-2828 or Puerto Rico [illegible] Products, Inc. at 809-751-8080

COMMON NAME: Hydrocarbon and/or Wax Solution Polymer Emulsion With Pig[illegible]

D.O.T. SHIPPING NAME:
Curing Compound,
Paint Related Material
Combustible Liquid

D.O.T. N.A. #1263

HMIS #

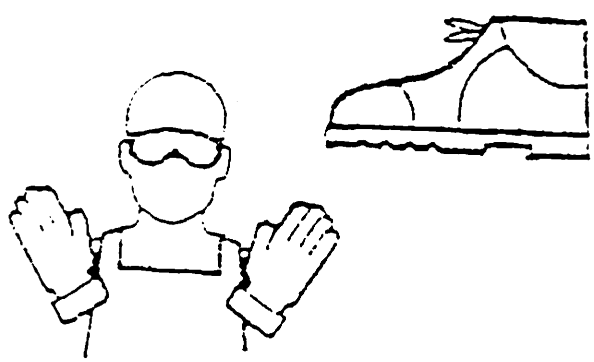


MATERIAL OF COMPONENTS	CAS NO	HAZA[RD] LIMITS
Pigments:		
1. Titanium dioxide	13463-67-7	NO
2. Calcium carbonate	1317-65-3	NO
Hydrocarbon polymer	68430-34-8	NO
and/or		
Wax polymer	8002-74-2	NO
and/or		
Sodium silicate	1344-09-8	N/A
Mineral spirits	64741-[illegible]	TLV-500
Emulsifiers additives		N/A
Water	N/A	

HEALTH SAFETY ALERT

This product is a solvent - H2O emulsion. All precautions provided are for the solvent portion, of which this product contains less than 7%.

- Combustible Liquid
- Use only with adequate ventilation
- If swallowed, do not induce vomiting
- Use of gloves, goggles, and other protective clothing is advised when using this product.



VITAL STATISTICS

- Flash Point, 200º F, TCC
- Boiling Point, Azeotrope MS — water, 200º F, 760 mm Hg
- Autoignition Temperature, ND
- Extinguishing media, Foam, Wa[ter] Fog or Spray.

[illegible]

PHYSICAL PROPERTIES

CEST-WPC	
Color	White
Dry Time	0.75-2.0 hours
Flash Point (Tag open cup)	105° minimum
Moisture retention (typical) ASTM-C-309-81	0.42 Kg/M2
AASHTO-148-83 Type II	
ASTM-C-156-80	
Solvent type	Water solvent emulsion
Wt/Gal.	9.00 - 9.3 lbs./gal
Gardner 45% degree reflectance, standard to 85.0 test panel	64% minimum
Clean Up	When wet, flush with water. When dry, use mineral spirits to clean application equipment.

SPECIFICATIONS

CEST-WPC meets or exceeds AASHTO M-148-83 Type II, ASTM-C-309-81, Type II CEST-WPC is also available to meet U.S. Army Corps of Engineers CRD-C-300-70 and U.S. Bureaus of Reclamatin-sealing compounds for curing concrete and Federal Specification TT-C-800A type II Wax resin base is availabe to meet the above specifications

KEEP FROM FREEZING

CEST-WPC is supplied as a water emulsion. Not recommended for use at temperatures below 40ºF. (4ºC.)

COVERAGE

200 sq. ft. per gallon or less, depending upon method of application

TOPCOATS AND ADHESIVES

CEST WPC will slowly flake off after exposure to sunlight and weathering. Topcoats or adhesives are not normaly used with curing compounds and are not recommended for use over CEST-WPC. If CEST-WPC must be removed, wire brushing is recommended. For alternative methods of removal contact the manufacturer.

PACKING

55 gallon drums

5 gallon pails

CEST™ MEANS "CERTIFIED PERFORMANCE"

CEST-WPC
WHITE PIGMENTED, RESIN BASED CURING COMPOUND

PRODUCT & SAFETY DATA

NON SETTLING - SPRAYABLE - UNIFORM

A hydrocarbon resin emulsion curing compound. Penetrates concrete surface and forms a tough continuous protective membrane sealing the concrete to develop maximum strength during its early hardening stage.

Used primarily on engineering projects such as highways, airport runways, concrete lined canals, and concrete ramps.

When properly applied CEST-WPC provides complete development of concrete's wear resistance and strength properties while lowering concrete temperatures.

BENEFITS

Low moisture transmission rates.
Water borne for environmental concerns and low flammability
Seals surface, reducing clean-up and construction stains
Prevents efflorescence, dusting and spalling
Excellent toughness and chemical resistance
Economical

APPLICATION

Thoroughly mix before using or pouring in spraying equipment or reservoir. Apply as soon as possible after the concrete has reached initial set, just as the water sheen disappears. If application is delayed concrete must be kept wet (preferably by water spray-mist) until CEST-WPC can be applied.

TOPCOATS AND ADHESIVES

CEST WPC will slowly flake off after exposure to sunlight and weathering. Topcoats or adhesives are not normally used over white pigmented curing compounds and are not recommended for use over CEST-WPC. If CEST-WPC must be removed, wire brushing is recommended. For alternative methods of removal, contact the manufacturer.

PACKING

55 gallon drums 5 gallon pails

BLP MOBILE PAINTS

COOL COTE NOT-TOXIC ROOF PAINT
Government Red 22-DR-9
Acrylic Emulsion

PRODUCT DESCRIPTION	A high quality 100% acrylic latex coating for roofs. Lead and chromate free.
TYPICAL USES	For industrial, commercial and residential use on weather exposed roof surfaces of masonry, unrusted galvanized metal or aluminum. For homes, condominiums, apartments, warehouses, commercial buildings, factories and chemical plants. Not for application to flat roofs.
PRODUCT ADVANTAGES	COOL COTE LATEX ROOF PAINT offers excellent protection in exposures including mild industrial and marine environments. Excellent adhesion and flexibility. Excellent color retention, blister resistance and alkali resistance. Easy to apply, low odor and fast drying. Lead and chromate free. Low VOC.
COLORS	Government Red 22-DR-9. Special colors available subject to minimum order.
GLOSS	Flat
PHYSICAL CONSTANTS	Nonvolatile - By weight - 54.3 ± 1.0% By volume - 41.0 ± 1.0% VOC (Calculated) - 1.44 lbs./gal. (excluding water) 172 grams/liter Flash Point - >250 F (Setaflash) Weight per gallon - 10.6 ± 0.2 lbs.
APPLICATION	Recommended Film Thickness - 2.0 mils dry, 4.9 mils wet Theoretical Coverage @ 2.0 mils dry - 329 sq. ft./gal. Method - Brush, roll, conventional and airless spray. Thinner - Water Dry time @ 75 F - To touch - 30 minutes To handle - 1 hours To recoat - 2 hours
SHIPPING & STORAGE	Consists of - 1 Gallon Unit 5 Gallon Unit Unit Shipping Weight 12 lbs. 56 lbs. Shelf Life - 12 months minimum from date of manufacture when maintained in protected storage @ 40-100 F (subject to reinspection thereafter).

BLP MOBILE PAINTS

PRODUCT DATA

SPECIFICATION GALVANIZING REPAIR COATING
DOD-P-21035A (0080166)

Modified Synthetic Rubber

PRODUCT DESCRIPTION

A fast drying coating with a high zinc dust content. Meets the requirements of Military Specification DOD-P-21035A.

TYPICAL USES

For repair of damaged areas of galvanized metal such as weld seams and abrasions.

PRODUCT ADVANTAGES

Galvanizing Repair Coating is formulated to provide a protective zinc coating tc damaged areas of galvanized metal surfaces. Provides excellent protection tc welded or abraded areas where the protective galvanizing has been removed from the metal surface. Meets the requirements of Military Specification MIL-P-21035A.

COLORS

Gray only

GLOSS

Matte

PHYSICAL CONSTANTS

Nonvolatile - By weight - 74.4 ± 2.0%
By volume - 30.8 ± 1.0%
VOC (Calculated) - 4.49 lbs./gal.
537 grams/liter
Flash Point - 100°F (Setaflash)
Weight per gallon- 17.6 ± 0.2 lbs.

APPLICATION

Recommended Film Thickness - 2.0 mils dry, 6.5 mils wet
Theoretical Coverage @ 2.0 mils dry - 247 sq. ft./gal.
Method - Brush or conventional or airless spray.
Thinner - Tec Thinner 75-11 or XYLENE 75-15
Dry time @ 75°F - To touch - 2 hours max.
Dry hard - 8 hours max.
To recoat - 8 hours

SHIPPING & STORAGE

Consists of -	1 Gallon Unit	5 Gallon Unit
Base	1 Gallon (SF)	5 Gallon (SF)
Zinc Dust	1 Quart (SF)	1 Gallon (SF)
(SF=short filled)		
Unit Shipping Weight	19 lbs.	91 lbs.

Shelf Life - 6 months minimum from date of manufacture when maintained in protected storage @ 40-100°F (subject to reinspection thereafter).

P.O BOX 717 • THEODORE. ALABAMA 36590-0717 • PHONE (334) 443-6110

APPLICATION INSTRUCTIONS

Consult your Mobile Paint Representative for the protective coating system best suited for your requirements.

Limitations: Apply in good weather when air and surface temperature are above 50°F and the surface temperature must be at least 5°F above the dew point. For optimum application properties, material should be between 70 to 100°F prior to mixing and application. Maintain unmixed material in closed containers in protected storage at 40-100°F.

Surface Preparation: Good surface preparation is essential to a satisfactory coating system. Surfaces to be coated should be clean and dry. Remove all oil, grease, mildew of other contamination by solvent or detergent cleaning or other effective means. **Galvanized Steel** - For application to abraded or damaged areas on galvanized metal. Sandblasting (see below) is recommended for best performance. If blasting is not feasible, clean and abrade surface by "Hand or Power Tool Cleaning" (SSPC-SP2 or SP3). **Steel** - Although this product is designed primarily as a primer for abraded or damaged areas on galvanized metal, it may be used as a touch up primer on bare steel. For best results, apply only to abrasive blasted steel. For best performance "Near White Blast Cleaning" SSPC-SP10 is recommended as proper preparation. "Commercial Blast Cleaning" SSPC-SP6 is acceptable for less severe exposures. Proper blast media and blasting equipment shall be used to produce an average profile depth of 1.5 mils minimum. Do not reuse sand abrasive media. Shot abrasives must be thoroughly clean of contamination before reuse. Remove blasting dust and grit from surfaces before painting. Blasted surfaces should be coated within 8 hours after blasting or before rusting or other contamination of the surface occurs.

Mixing: This is a single component coating. (1) Mix thoroughly with a power agitator to a uniform consistency before use. (2) Agitate at slow speed during use to keep zinc dust in suspension. (3) Keep system tightly closed and free from moisture.

Thinning: This product is supplied at normal spraying viscosity. If thinning is necessary thin with up to 1/2 pint 75-11 Tec Thinner or 75-15 Xylene.

Application: Apply by conventional or airless spray. Brush application is acceptable for touch up. Keep the material pressure pot at or near the level of the gun. Keep material hoses as short as possible (25 feet maximum recommended). Apply at 6.5 mils wet film thickness which will yield 2.0 mils dry film thickness.

Equipment: Brush - Use a good quality bristle brush. Conventional spray - For pressure feed, use DeVilbiss MBC gun with E tip and needle and 704 air cap or equivalent at 40-45 psi atomizing pressure and 10-15 psi fluid pressure, 3/8" ID material hose, double regulated pressure tank with oil and moisture separator. Airless spray - Minimum of 30:1 ratio pump, .023"-.027" orifice tip, 3/8" ID Teflon material hose. Special packings may be necessary due to the abrasive nature of the zinc dust in this product.

NOTE: During lunch, breaks or any period of work stoppage, material should be removed from hoses. Release pressure from equipment and flush hoses and equipment with Tec Thinner 75-11 or Xylene 75-15. Do not repressurize equipment until ready to resume work.

Cleanup: Clean all equipment immediately after use with Tec Thinner 75-11 or Xylene 75-15. Completely flush all spray equipment with either of these solvents. Occasional flushing of spray equipment during the course of the working day helps prevent buildup and possible clogging.

Topcoating: Recoat time will vary according to curing conditions. Allow a minimum of 8 hours at 75°F and 50% relative humidity before applying any topcoats. Many topcoats will require that a "mist" coat be applied prior to application of a full coat so that bubbling is minimized.

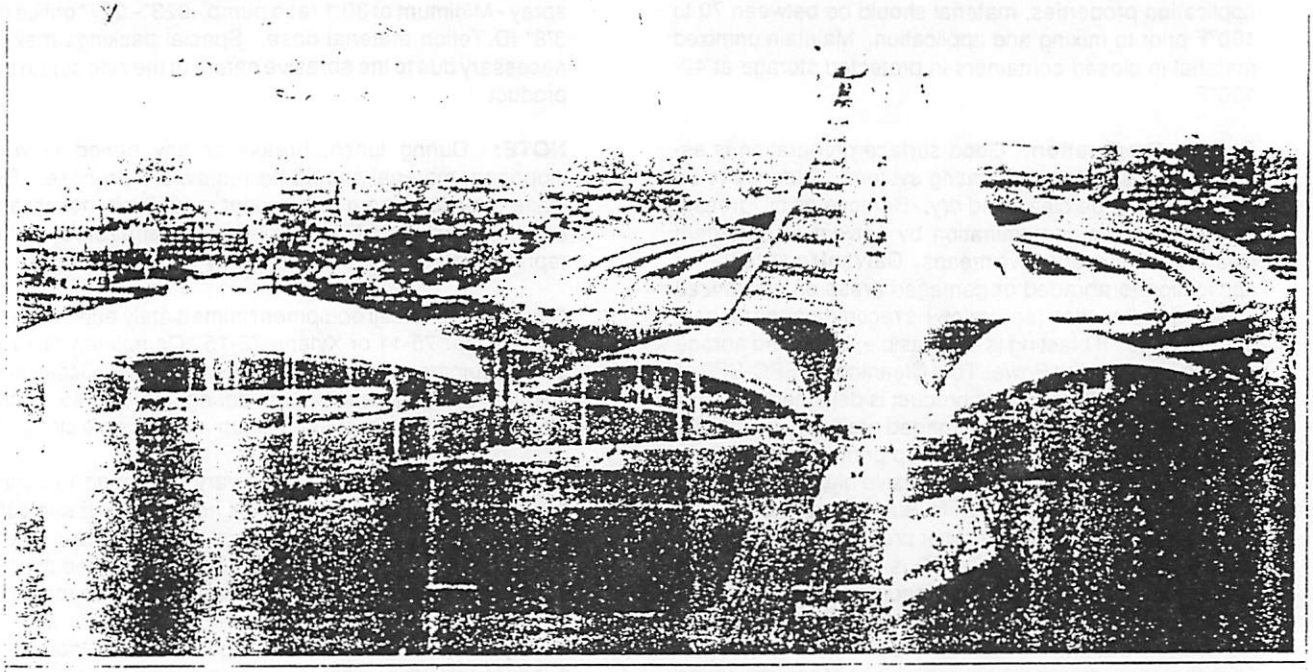
Safety: Safe storage, handling and use dictate that adequate health and safety precautions be observed with this product and any recommended thinners. User is specifically directed to consult the current Material Safety Data Sheet for this product as well as precautions contained on product labeling.

Notice: The technical data contained herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Mobile Paint Manufacturing Company's Standard Conditions of Sale. Published technical data and instructions are subject to change without prior notice.

21035(10/92)

Mameco
Vulkem 450/451 System

Specification Data



Product Description:
The Vulkem 450/451 System combines a fluid applied urethane base coat (Vulkem 450) with an ultraviolet and ozone resistant topcoat (Vulkem 451) to yield an elastomeric and waterproof seamless coating. The flexibility and elasticity of the Vulkem 450/451 System allows for normal movement without surface cracking. The one-part base coat and topcoat offer ease of application and substantial labor savings over conventional two-component products.

Basic Uses:
The Vulkem 450/451 System is ideal for waterproofing and protection of roof decks, exposed panels and walk decks of metal, concrete and plywood. The system will withstand ponding water which may occur in such areas. Vulkem 450/451 offers excellent skid resistance at specified coverage rates and is ideal for both horizontal and vertical surfaces.

TECHNICAL DATA
Vulkem 450/451 System provides tremendous weather, chemical and mechanical damage resistance. The high build-high solids system forms a durable barrier to most airborne pollutants, residual factory emissions and other chemicals which will break down inferior systems. In addition, the Vulkem 450/451 System is resistant to mold, mildew and microbiological attack which is a by-product of ponding water.

Flexibility at all temperatures is assured by the well documented performance of Vulkem Urethanes. Sealant, Membrane and Coating Systems worldwide.

SUBSTRATES & PREPARATION

Concrete:
Concrete surface shall be clean dry, free of laitance and other contaminants.

New concrete decks shall be water cured or treated with Vulkem 2100 Dissipating Curing Compound and be in place a minimum of 14 days, preferably 28 days prior to application of the Vulkem 450/451 System.

Structural design shall allow positive draining slope to drain shall be minimum 1/8 inch (3mm) per running foot. Spalled areas shall be resurfaced with Vulkem 2300 series Patching Compound.

Hairline cracks less than 1/16 inch (1.5mm) shall be pretreated with a 60 mil (1.5mm) coating of Vulkem 450 six inches (15cm) wide centered over the crack.

Moving structural cracks greater than 1/16 inch (1.5mm) shall be routed out, filled with Vulkem 116 Sealant, stripped with bond breaker tape and coated with a 60 mil (1.5mm) detail coat of Vulkem 450.

Wood:
Exterior grade plywood is a suitable substrate after proper preparation. Surfaces shall be dry, smooth and free of dirt and oil. Wood surfaces shall be primed with Vulkem 171 Primer prior to system application. All joints between plywood sheets shall have a 1/16 inch (1.5mm) gap filled with Vulkem 116 sealant. Plywood shall be glued and firmly nailed with ring shanked nails.

Metal:
Metal surfaces shall be clean and free of any rust, dirt and grease. Rusted surfaces must be wire-brushed or sandblasted to bright metal. The use of Vulkem 171 Primer over bare metal is recommended.

APPLICATION
The Vulkem 450/451 System may be applied using roller, squeegee or spray equipment.

Airless spray equipment will give best results and Vulkem 450 may be thinned one quart per five gallons with Xylol or Toluol prior to spraying. Vulkem 451 shall be applied after Vulkem 450 has cured to a rubbery set (24-36 hours at 70°F or 21°C).

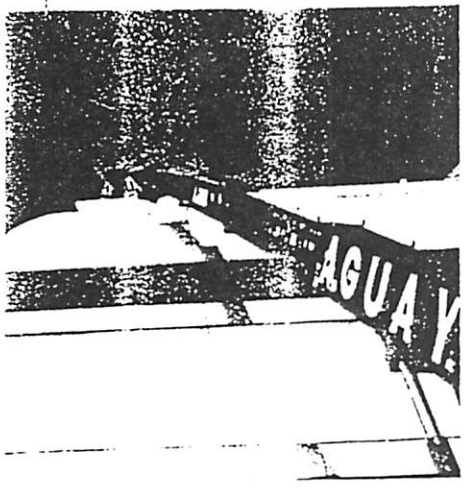
Coverage:
Apply Vulkem 450 at 60 mils (1.5mm) thickness, which is 25 square feet per gallon (0.65 square meters/liter).

Apply Vulkem 451 at 5 mils (0.1mm) thickness, which is 300 square feet per gallon (10 square meters/liter).

Above coverage rate yields a total system thickness of 65 mils (1.6mm).

Limitations:
Vulkem 451 must be applied over Vulkem 450 for all exposed applications.

Vulkem 450/451 System is not recommended for use over asphalt surfaces.



Use in well ventilated areas.

Container contents must be used within 48 hours of opening.

Packaging:
2 gallon pails (7.6 liter), 5 gallon pails (19 liter), 55 gallon drums (208 liter).

Colors:
White, Limestone, Gray

WARRANTY
MAMECO warrants its Vulkem Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on site conditions are beyond our control and can affect performance, MAMECO makes no other warranty, express or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE with respect to Vulkem Sealants. MAMECO's sole obligation shall be, at its option, to replace, or to refund the purchase price of the quantity of Vulkem Sealant proved to be defective and MAMECO shall not be liable for any loss or damage.

Typical Physical Properties

Property	Test Method	Vulkem 450	Vulkem 451
Specific Gravity	ASTM D1475	1.32	1.06
Weight per Gallon	ASTM D1475	11 lbs. (5.0kgs)	8.87 lbs. (4.0kgs)
Weight	ASTM D 1353	83%	79%
Viscosity, CPS	Brookfield #4 Spindle @ 20 rpm	20,000	1,500
Dry Time	ASTM D 1640	Tack free - 24 hrs. Rubbery Cure-48 hrs.	Tack free - 16 hrs. Cure-24 hrs.
Flash Point	ASTM D1310	101°F (38°C)	82°F (28°C)
Hardness, Shore A	ASTM D 2240	37	80
Tensile Strength	ASTM D 412	320 psi (2.2MPa)	3480 psi (24.0MPa)
Elongation	ASTM D 412	450%	250%
Adhesion in Peel	ASTM D 903	29 lb./in. (129N)	100% cohesive to Vulkem 450
MVT	ASTM E 96, B	1.58 m.p.	.5 m.p.
Weather Resistance	ASTM D 822	N.A.	Excellent
Salt Spray	ASTM B 117	N.A.	No Effect
Abrasion Resistance	ASTM C 501 20 REV., CS 17 wheel 1000 gm. wt.	N.A.	.5 mg loss
Tear Resistance	ASTM D 1004	200 pli (889N)	225 pli (1001N)
Fire Resistance	ASTM E 108	System is rated class A over noncombustible substrate	

MAMECO INTERNATIONAL, INC.

4475 East 175th Street • Cleveland, Ohio 44128-3599

Telephone: (216) 752-4400 • (800) 321-6412 • FAX (216) 752-5005

MOPOXY HB HIGH BUILD Epoxy Coating
40-AW-13, 40-AH-50, 40-AK-103

Polyamide / Epoxy

PRODUCT DESCRIPTION

A two component high performance polyamide epoxy coating which offers high build application characteristics for reduced application costs and improved performance.

TYPICAL USES

For industrial and commercial use as a protective maintenance coating for industrial plants, pulp and paper mills, textiles mills, chemical processing plants, waste water plants refineries, food processing plants, commercial buildings and marine structures. For coating and protecting storage tanks, piping, roofs and roof decks, water towers, structural steel, machinery, plant equipment, marine vessels, offshore structures and other surfaces exposed to humidity, chemicals and corrosive environments. Excellent over inorganic zinc-rich coatings and as an intermediate coat under polyurethane finishes. Excellent potable water tank lining system.

PRODUCT ADVANTAGES

MOPOXY HB HIGH BUILD Epoxy Coating offers excellent protection in exposures including moderate to severe industrial and marine environments. *Excellent resistance to fresh and salt water, detergents and most chemicals. *Very good resistance to fumes and spillage of most organic solvents, acids and alkalies. *Excellent abrasion and moisture resistance. *USDA approved for direct food contact surfaces and EPA approved for potable water tank lining. *Meets AWWA d-102-78 Inside System #1.

Heat resistant to 200°F.

COLORS

White 40-AW-13; Gray 40-AH-50: Tan 40-AK-103

GLOSS

Semi-gloss

PHYSICAL CONSTANTS

Nonvolatile - By weight - 65.1 ± 1.0%
By volume - 48.0 ± 1.0%
VOC (Calculated) - 3.58 lbs./gal.
429 grams/liter
Flash Point - (A) 77°F; (B) 92 F (Setaflash)
Mixing ratio - 4:1 by volume
Weight per gallon - A) 11.0 ± 0.2 lbs.; B) 7.8 ± 0.2 lbs.

APPLICATION

Recommended Film Thickness - 6.0 mils dry, 12.5 mils wet
Theoretical Coverage @ 6.0 mils dry - 128 sq. ft./gal.
Method - Conventional or airless spray.
Thinner - MoPoxY Brushing Thinner 75-35; MoPoxY Spraying Thinner 75-37
Cure time @ 75 F - To touch - 2 hours
To handle - 8 hours
To recoat - 24 hours
Pot Life @ 75°F - 8 hours minimum.
Induction Time - 30 minutes

SHIPPING & STORAGE

Consists of -	1 Gallon Unit	5 Gallon Unit
Part (A) 40-AW-13	1 Gallon (SF)	5 Gallon (SF)
Part (B) 35-EF-36	1 Quart (SF)	1 Gallon
Unit Shipping Weight-	12 lbs.	59 lbs.

(SF) - Short Filled
Shelf Life - 12 months minimum from date of manufacture when maintained in protected storage @ 40-100°F (subject to reinspection thereafter).

P.O. BOX 717 • THEODORE, ALABAMA 36590-0717 • TELEX

Physical / Performance Properties

Trade Name: SNOW ROOF®

Appearance (cured)	Rubberized Plastic Coating
Appearance (as liquid)	Thick, White, Liquid
Color	Bright White. (Snow Roof may be tinted to pastel colors using Universal latex colorants. For darker tones, see Roof Guardian®.)
Solar Reflectance	93%
Mildew Resistance	Excellent
Weight	Approx. 11 Pounds/Gallon
Solids Content / Volume	Approx. 58%
Solvent	Water
Odor	Odorless
Permeability	Less than one perm with 30 mils/min. of coating.
Elongation	300%-500%
Strength	250 PSI
Viscosity	cps 1.63 spdl #4 RPM 5
pH as Shipped	9.5 - 10
Specific Gravity	1.05
Freeze / Thaw Stability Test of Dried Material	At -34° degrees F. Snow Roof passes 180 degree bend test. If frozen while in liquid form, the product may be rendered unusable.
Setting Time	30 min.-1 hour at 50°-100° F. At less than 30% humidity.
Cure Time	Approximately 2 to 8 hours at 50°-100° degrees F. At less than 30% humidity
Material Composition	Waterbase Elastomeric Rubberized Plastic
Toxicity	Non-toxic when dry.
Flash Point	1800 degrees C. Zero ignition.
Fire Rating	Class 'A' ASTM E-108. Zero ignition over AC. ASTM E-84 Zero Smoke
Coverage Rate	Approx. 100 square feet per gallon.

IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

HMIS

Trade Name: SNOW ROOF® SPRAYABLE GRADE*

Appearance (cured)	Rubberized Plastic Coating
Appearance (as liquid)	Medium Thick, White, Liquid
Color	Bright White. (Snow Roof may be tinted to pastel colors using universal latex colorants. For darker tones, see Roof Guardian®.)
Solar Reflectance	93%
Mildew Resistance	Excellent
Weight	Approx. 11 Pounds/Gallon
Solids Content / Volume	Approx. 58%
Solvent	Water
Odor	Odorless
Permeability	Less than one perm with 30 mils/min. of coating.
Elongation	300%-500%
Strength	250 PSI
Viscosity	cps 1.63 spdl #4 RPM 5
pH as Shipped	9.5 - 10
Specific Gravity	1.05
Freeze / Thaw Stability Test of Dried Material	At -34° degrees F. Snow Roof passes 180 degree bend test. If frozen while in liquid form, the product may be rendered unusable.
Setting Time	30 min.-1 hour at 50°-100° F. At less than 30% humidity.
Cure Time	Approximately 2 to 8 hours at 50°-100° degrees F. At less than 30% humidity.
Material Composition	Waterbase Elastomeric Rubberized Plastic
Toxicity	Non-toxic when dry
Flash Point	1800 degrees C. Zero ignition.
Fire Rating	Class 'A' ASTM E-108. Zero ignition over AC. ASTM E-84 Zero Smoke.
Coverage Rate	Approx. 100 square feet per gallon.

HMIS

*Specially thinned medium thick white roof coating designed to be sprayed on with commercial sprayer with tip size of .035 to .055. Coating application is best done with reversible tip for easy cleaning. Spray fan size: 1-2 feet / 12 inch fan. (Fan is the width of the spray.) Available in 55 gallon drums. Five gallon pails by special order.

IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

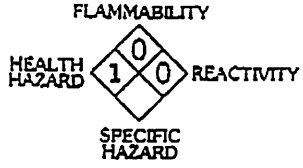
Updated - 5/25/95

Physical / Performance Properties

Trade Name: ROOF GUARDIAN®

Appearance (cured)	Rubberized Plastic Coating
Appearance (as liquid)	Thick, Creamy
Color	Tintable White, Light Gray, Dark Gray, Tan, Chocolate Brown, Colonial Red and Forest Green.
Mildew Resistance	Excellent
Weight	Approx. 11 Pounds / Gallon
Solids Content / Volume	Approx. 61%
Solvent	Water
Odor	Odorless
Permeability	Less than one perm at 30 mils.
Elongation	300%+500%
Strength	250 PSI Plus
Viscosity	190, plus or minus 10 Kreb
pH as Shipped	9.5 - 10
Specific Gravity	1.25
Freeze / Thaw Stability Test of Dried Material	At -34° degrees F., Roof Guardian passes 180 degree bend test. If frozen while in liquid form, the product may be rendered unusable
Setting Time	One to two hours at 50°-100° degrees F. At less than 30% humidity
Cure Time	Approximately 2 to 8 hours at 50°-100° degrees F at less than 30% humidity
Material Composition	Waterbase Rubberized Plastic
Toxicity	Non-toxic when dry
Flash Point	1600 degrees C. Zero ignition.
Fire Rating	Class A' ASTM E-108. Zero ignition over AC, ASTM E-84 Zero Smoke.
Tukon Hardness (KHN)	Less than one.
Coverage Rate	Approx. 50-100 sq. ft. per gallon per coat, depending upon surface. Recommend no less than three gallons per square/three coats.

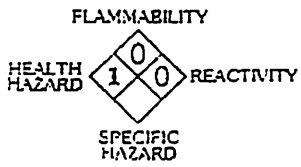
HMIS



SPECIAL COMMENTS: Roof Guardian should be primed with Snow Prime or Elasto Seal, on threeado, asphalt or 90 lb. rated roofing. The roof is then topcoated with Roof Guardian.
IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

Trade Name: KOTE A DECK®

HMIS



Appearance (cured)	Granulated Rubberized Plastic Coating
Appearance (as liquid)	Thick, granulated
Color	Rusty Red, Colonial Blue, Concrete Gray, Forest Green, Tan, Chocolate Brown, Tintable White (for pastel colors).
Mildew Resistance	Excellent
U.V. Resistance	Excellent
Weight	Approx. 11 Pounds/Gallon
Solids Content / Volume	Approx. 54%
Solvent	Water
Odor	Slight
Permeability	Less than one perm with a five-coat system.
Elongation	300%
Strength	200 PSI
Viscosity	150 Kreb
pH as Shipped	9.4 - 10
Specific Gravity	1.25
Freeze / Thaw Stability Test of Dried Material	Exhibits elastomeric qualities when cured product freezes. If frozen while in liquid form, the product may be rendered unusable.
Setting Time	One to two hours at 50°-100° degrees F at less than 30% humidity
Cure Time	Approximately 2 to 8 hours at 50°-100° degrees F at less than 30% humidity. Slight tack cured in one week.
Material Composition	Waterbase Elastomeric Plastic
Toxicity	Nontoxic when dry.
Tukon Hardness (KHN)	Approximately 1 to 1.5
Recommended Coverage Rate	Approx. 100 square feet per gallon

SPECIAL COMMENTS: A dry surface is an absolute necessity before applying Kote A Deck. Sun contact is best for drying, especially during wet months. Concrete surfaces should be thoroughly cleaned before applying Kote A Deck. Roof Decks: Use lightweight Seam Tape (ST-100) with Elasto Seal over all joints before applying Elastic Seal with Roofing Fabric (CMFB-250). Add a mil of three gallons per square minimum for reinforcement. Follow with two coats of Kote A Deck. Refer to container instructions for complete information.
IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

Updated - 5/25/95

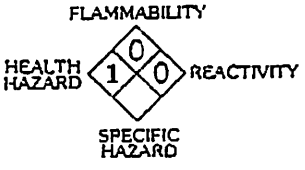
Physical / Performance Properties

Trade Name: CLEAR SEALER™

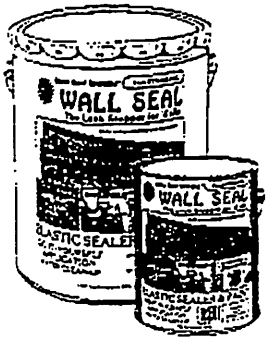
Appearance (cured)	Clear Satin Finish
Appearance (as liquid)	Thick Semi-Clear Plastic Coating
U.V. Resistance	Excellent
Mildew Resistance	Excellent
Weight	Approx. 8.5 - 9 Pounds/Gallon
Solids Content / Volume	25% Plus
Solvent	Water
Odor	Nearly Odorless
Water Resistance	Excellent
Elongation	100% to 300%
Strength	100 - 220 PSI
Viscosity	120 Kreb
ph as Shipped	8.5 - 9
Specific Gravity	1.05
Freeze / Thaw Stability Test of Dried Material	Flexible at -35 degrees F and exhibits some elastomeric qualities. Clear Sealer, if frozen while in liquid form, may be damaged or solidify. Protect from freezing.
Setting Time	One to two hours at 60 - 80 degrees F on warm, clear, sunny days, at 30% Humidity
Cure Time	Dries in approx. two to eight hours with a slight tack.
Material Composition	Waterbase Elastomeric Resin
Toxicity	Non-toxic upon curing
Tukon Hardness (KHN)	Less than one.
Shelf Life	In excess of one year.
Coverage Rate	Approx. 200 square feet per gallon per coat over smooth surface

SPECIAL COMMENTS: Best applied on wood and concrete vertical surfaces. Sometimes used on metal and fiberglass
IMPORTANT: Always run a test patch first in an inconspicuous area, to ensure that proper adhesion and drying occur and the performance is to your satisfaction.

HMIS



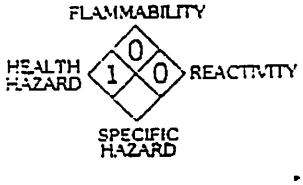
Trade Name: WALL SEAL™



Appearance (cured)	Rubberized Plastic Protective Membrane and Coating
Appearance (as liquid)	Thick Creamy Liquid
Color	Bright White (available in light tones), Gray or Tan.
Mildew Resistance	Excellent
Weight	Approx. 10.75 - 11 Pounds/Gallon
Solids Content / Volume	Approx. 54%
Solvent	Water
Odor	Nearly Odorless
Permeability	Less than one perm with 30 mils/min. of coating. Does not "breathe."
Elongation	500% Plus
Strength	250 PSI (Good Memory)
Viscosity	Approximately 1600 cps scan #2 RPM 5
ph as Shipped	8 - 9
Specific Gravity	1.10
Freeze / Thaw Stability Test of Dried Material	At -35° degrees F. Wall Seal passes 180 degree bend test. If frozen while in liquid form, the product may be damaged or solidify. Protect from freezing.
Setting Time	1 to 2 Hours at 60°-80° F on 4 to 6 hours at 50-70 degrees F. at less than 30% humidity.
Cure Time	Approximately 2 to 8 hours at 60°-80° degrees F. At less than 30% Humidity.
Material Composition	Waterbase Elastomeric Rubberized Plastic
Toxicity	Non-toxic upon curing.
Fire Rating	ASTM E-84 Zero Smoke, Six Foot Flame Spread, Class "A" rated
Tukon Hardness (KHN)	Less than one.
Shelf Life	In excess of one year.
Minimum Coverage Rate	Approx. 100 square feet per gallon per coat over smooth surface.

IMPORTANT: Always run a test patch first in an inconspicuous area, to ensure that proper adhesion and drying occur and the performance is to your satisfaction.

HMIS



Updated - 5/25/95

Physical / Performance Properties

Trade Name: ELASTO SEAL®

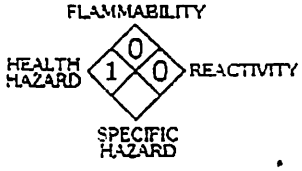
Appearance (cured)	Rubberized Plastic Protective Membrane and Coating
Appearance (as liquid)	Thick Creamy
Color	Black
Mildew Resistance	Excellent
Weight	Approx. 11 Pounds / Gallon
Solids Content / Volume	Approx. 51%
Solvent	Water
Odor	Mild
Permeability	Less than one perm in one coat.
Elongation	300 to 1,200%
Strength	250 plus PSI and 1,000 PSI when Heavy Duty Contouring Fabric is used.
Viscosity	4050 cps
pH as Shipped	10.4 - 11
Specific Gravity	1.10
Bonding	Bonds to most surfaces including tar, metal and rolled roofing. Does not bond to wax base surfaces.
Freeze / Thaw Stability Test of Dried Material	At -35° degrees F. Elasto Seal passes 150 degree bend test. Elasto Seal, if frozen while in liquid form, may be damaged or solidify. Protect from freezing.
Setting Time	15 min-1 hour at 40°-80° degrees F. and 30% humidity.
Cure Time	At 40-80 degrees F. 2 to 8 hours. When roofing fabric is embedded allow 24 hours for total curing.
Material Composition	A solvent-based copolymer/polymer based on rubber chemistry.
Toxicity	Non-toxic after curing.
Flash Point	1500 degrees F (estimated).
Fire Rating	ASTM E-108 Class "A" Zero ignition over AC. ASTM E-84 Zero Smoke.
Tuken Hardness (KHN)	Less than one.
Coverage Rate	Approx. 100 square feet per gallon per coat

HMIS

SPECIAL COMMENTS: Do not thin with water more than 2%. Excessive thinning will solidify product.
APPLICATIONS: Tar and metal roofs, basement walls, below and above grade water protection over plywood and concrete.
IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

Trade Name: MOBILE COAT®

HMIS



Appearance (cured)	Rubberized Plastic Coating
Appearance (as liquid)	Thick Creamy Liquid
Color	Bright White (mixable to pastel tones using universal colorant. Dark Gray, or Light Gray
Solar Reflectance	90%
Mildew Resistance	Excellent
Weight	Approx. 11 Pounds / Gallon
Solids Content / Volume	Approx. 53%
Solvent	Water
Odor	Odorless
Permeability	Less than one perm in 30 mils
Elongation	500%
Strength	350 PSI
Viscosity	150, plus or minus 5 krebs
pH as Shipped	9.5 - 10
Specific Gravity	1.35
Freeze / Thaw Stability Test of Dried Material	At -35° degrees F., Mobile Coat passes 180 degree bend test. If frozen while in liquid form, the product may be rendered unusable.
Setting Time	1 to 2 hours at 50°-100° F. At less than 30% humidity.
Cure Time	Approximately 2 to 8 hours at 50°-100° degrees F. At less than 30% humidity.
Material Composition	Waterbase Rubberized Plastic
Toxicity	Non-toxic when dry.
Flash Point	1900 degrees C. Zero ignition.
Fire Rating	Class "A" ASTM E-108. Zero Ignition over AC. ASTM E-84 Zero Smoke.
Tuken Hardness (KHN	Less than one.
Coverage Rate	Approx. 100 square feet per gallon per coat.

SPECIAL COMMENTS: Mobile Coat has a builtin primer and bonding agent. On mobile homes use Snow Prime or Elasto Seal with Seam Tape over all seams and around vents before applying Mobile Coat. Use only Snow roof Systems Contouring Seam Tape (CST-100) or Lightweight Seam tape (ST-1001). Refer to application suggestions.
IMPORTANT: Apply a small amount to ensure the product performs satisfactorily.

Updated - 5/25/93

Consult your Mobile Paint Representative for the protective coating system best suited for your requirements.

Limitations: Apply in good weather when air and surface temperature are above 50°F and surface temperature is at least 5°F above the dew point. For optimum application properties, material should be between 70 to 100°F prior to mixing and application. Maintain unmixed material in closed containers in protected storage at 40 - 100°F. A dry film thickness of less than 10 mils will not offer maximum waterproofing protection. Not for use below grade or in areas where ponding water occurs. Allow elastomeric coatings to weather a minimum of one year before applying non-elastomeric coatings. Do not apply solvent base coatings over elastomeric coating. To achieve a waterproof system, the elastomeric film must be free of pinholes. PROTECT FROM FREEZING. FOR EXTERIOR USE ONLY. Do not apply to uncured wood. Do not apply late in the afternoon or when there is a threat of rain or moisture condensing on the uncured coating. Do not apply in direct sun or on hot surfaces.

Surface Preparation: Good surface preparation is essential to a satisfactory coating system. Surfaces to be coated should be clean and dry. Remove all dirt, dust, oil, grease, mildew, rust, loose or cracked paint or other contamination. Remove mildew by scrubbing with a solution of 3 tablespoons of non-ammoniated dry household laundry detergent and 1 quart hypochlorite bleach in 1 gallon of warm water. Protective gloves, clothing and goggles should be worn when using this solution to avoid skin and eye irritation. Quickly wash off any of the solution that touches your skin. After scrubbing, rinse thoroughly with water and allow to dry. Tighten or replace any loose screws or fasteners. Areas where ponding water may occur must be corrected by installing roof drains or other protective measures to eliminate water build up.

Metal Roofs - Remove rust and spot prime with BLP RUS-KILRust Inhibiting Primer. All exposed ferrous metals should be primed with RUS-KILRust Inhibiting Primer. Remove oils from galvanized metal and allow to weather 90 days. **Shingle Roofs** - Replace any loose or curling shingles. New shingles should age so that the adhesive tabs have set. **Urethane Foam** - Foam should be coated as soon as possible after installation to prevent deterioration of the surface. Remove any loosely adhering material. Repair cracks with ELASTOMERIC Patching Cement. **Built-Up Roofs** - Repair any cracks and blisters with ELASTOMERIC Patching Cement. Blisters should be cut open and allowed to dry out completely. Severe blistering may require repair before coating. **Concrete** - Small cracks should be filled with ELASTOMERIC Patching Cement. Larger cracks and deteriorated areas should be repaired with cement before coating. Chemical compounds, curing agents, surface hardeners, efflorescence or other contaminants should be removed by sand blasting or other effective means.

Previously Painted Surfaces: Repair all damaged areas. Remove loose and badly cracked paint by wire brushing, scraping, sanding or other method to provide a sound surface. Sand smooth all rough areas and feather edge areas of peeled coatings. Remove gloss from previous coatings by sanding. Spot prime all bare areas as in new work above. If doubt exists concerning compatibility of this coating with the previous system, apply coating to a representative area (25 square feet minimum) and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting, blistering or any other sign of incompatibility. If there are no signs, coating work can proceed.

Tinting: Pastel colors can be made by the addition of up to 4 ounces of Color Studio colorant per gallon of coating. Special colors can be made to order subject to minimum order. High speed shakers should be avoided when tinting to prevent air entrapment in the coating.

Mixing: This is a one component coating. Always mix thoroughly with a power agitator before application. Do not whip air into coating during mixing.

Thinning: This product is supplied at normal application viscosity and should not require thinning. Thinning is not recommended for proper film build and performance. If thinning is necessary to adjust for unusual conditions thin sparingly with water.

Application: Airless spray is the preferred method of application. Product may be rolled but multiple coats may be required to achieve recommended film thickness. Airless spray application to porous or rough surfaces may require backrolling to insure that the elastomeric coating contacts and wets out the substrate allowing for proper adhesion and waterproofing characteristics. Apply at 15 mils minimum wet film thickness which will yield 7.5 mils dry film thickness. Two coats are recommended for best performance.

Equipment: Brush - Use a good quality nylon brush. Roller - All purpose, good quality roller with 3/4" nap maximum. Airless Spray - Minimum of 28:1 ratio pump, .019"-.027" orifice tip, 1/4" ID Teflon material hose.

Cleanup: Clean all equipment immediately after use with warm, soapy water. Completely flush all spray equipment with this solution. Occasional flushing of spray equipment during the course of the working day helps prevent buildup and possible clogging. Final flushing of spray equipment with mineral spirits will prevent corrosion. Flush equipment with water prior to application of the product.

Safety: Safe storage, handling and use dictate that adequate health and safety precautions be observed with this product and any recommended thinners. User is specifically directed to consult the current Material Safety Data Sheet for this product as well as precautions contained on product labeling.

Notice: The technical data contained herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Mobile Paint Manufacturing Company's Standard Conditions of Sale. Published technical data and instructions are subject to change without prior notice.

22DW76(9/92)

TropiCoat

Elastomeric seamless roof coating.

KEY FEATURES
- Superior water resistance.
- Excellent elongation, tensile strength and adhesive qualities.
- Highly resistant to long ultraviolet exposure.
- No detergent additives
- Seamless, watertight

PRODUCT DESCRIPTION

TropiCoat is a 100% acrylic and non-toxic seamless elastomeric roof membrane coating. It is a proven top weather-beater in high-build textured applications. It forms a durable, water-tight, seamless coating. Can be applied to galvanized, aluminum, properly primed steel, iron, cement, wood.

ADHESION

TropiCoat roof coating adheres stubbornly to concrete, asphalt shingles, roofing paper, tile, slate, wood, steel cement, galvanized, aluminum.(180° peel to ceramic tile. Passes cup test - no cracking or pulling away from cup.)

ELONGATION AND TENSILE STRENGTH

Excellent elongation and tensile strength allows *TropiCoat* to expand and contract with the sufrace to which applied without wrinkling or cracking. (Tensile strength: 288 p.s.i.). (Elongation: 300% at 70° F.)

RESISTANCE TO PONDING WATER

TropiCoat offers especially high resistance to ponding water. (3.1 mg / 24 hours / 25cm²).

SETTLING

No settling or separation. No stirring or mixing required

SOLIDS

Percent solids by weight:	71.9%
volume	58.0%
Weight per gallon.	13.03 lbs

PERMEABILITY @ 25 MILS DRY

0.72 perms

COVERAGE

On smooth surfaces, 100 sq. ft. per gallon. Two coats are recommended to achieve a dry mil thickness of 19 to 20.

VOC

71 g/l - water

FLAMMABILITY

Low flame spread index (10.7). Federal Specification 0013A.

CLEAN UP

Use warm soapy water. If using an airless clean with mineral spirits after using water.

SURFACE PREPARATION AND APPLICATION

For maximum adhesion, use a pressure washer (2,000 psi or higher). This will remove any loose dirt, paint and other contaminants on the surface.

If there is any rust present, wire brush the area and spot prime with a quality rust-inhibitive alkyd paint and allow to dry.

No re-onforcing mesh required when a minimum 25 to 30 mils dry is used otherwise at seams, brush a thick coat of *TropiCoat flashing* and imbed ester tape in it. Apply a top coating of *TropiCoat* over that. Allow to dry overnight before applying finish coats.

TropiCoat may be applied with an airless, roller or brush.

QUESTIONS?

If you have any questions on application or preparation of your roof, you may call the manufacturer direct.

Technical Coatings Inc.
P.O. Box 7956, Christiansted,
St. Croix, USVI. 00823
Tel 800 773 2040
Fax: 809-773-0575

Manufacturers of superior quality coatings for the industrial, commercial and residential market.

SPECIFICATION DATA

II. STORAGE COATINGS

BLP MOBILE PAINTS

NSF

Certified to ANSI/NSF 61

PRODUCT DATA

MoPoxY HS-50 Epoxy Coating 40-BW-5 / 40-BH-11

Polyamide/Epoxy

PRODUCT DESCRIPTION

A two component high performance polyamide epoxy coating which offers high build application characteristics for reduced application costs and improved performance. NSF approved for potable water tank lining (Standard 61).

TYPICAL USES

For industrial and commercial use as a protective maintenance coating for industrial plants, pulp and paper mills, textiles mills, chemical processing plants, waste water plants, refineries, potable water storage tanks, commercial buildings and marine structures. For coating and protecting storage tanks, piping, roofs and roof decks, potable and fire water storage tanks, structural steel, machinery, plant equipment, marine vessels offshore structures and other surfaces exposed to humidity, chemicals and corrosive environments. Excellent over inorganic zinc-rich coatings and as an intermediate coat under polyurethane finishes.

PRODUCT ADVANTAGES

MoPoxY HS-50 Epoxy Coating offers excellent protection in exposures including moderate to severe industrial and marine environments. Excellent resistance to fresh and salt water, detergents and most chemicals. Very good resistance to fumes and spillage of most organic solvents, acids and alkalies. Excellent abrasion and moisture resistance. Heat resistant to 200°F (dry). **NSF approved for potable water tank lining (Standard 61).**

COLORS

White 40-BW-5, Gray 40-BH-11

GLOSS

Semi-gloss

PHYSICAL CONSTANTS

Nonvolatile -	By weight - 69.2 ± 1.0% By volume - 50.1 ± 1.0%
VOC (Calculated) -	3.40 lbs./gal. 408 grams/liter
Flash Point -	(A) 60°F (B) 80°F (Setaflash)
Mixing Ratio -	4:1 by volume
Weight per gallon-	(A)12.0 ± 0.2 lbs.;(B)7.3 ± 0.2 lbs.

APPLICATION

Recommended Film Thickness - 6.0 mils dry, 12.0 mils wet
Theoretical Coverage @ 6.0 mils dry - 134 sq.ft./gal.
Method - Conventional or airless spray
Thinner - MoPoxY Spraying Thinner 75-37

Cure time @ 75°F -	To touch - 2 hours To handle - 6 hours To recoat - 24 hours
Pot Life @ 75°F -	8 hours minimum
Induction time -	30 minutes

SHIPPING & STORAGE

Consists of -	1 Gallon Unit	5 Gallon Unit
Part (A) 40BW005, 40BH011	1 Gallon (SF)	5 Gallon (SF)
Part (B) 35EF062	1 Quart (SF)	1 Gallon
Unit Shipping Weight	12.5 lbs.	59 lbs.

(SF) - Short Filled
Shelf Life - 12 months minimum from date of manufacture when maintained in protected storage @ 40-100°F (subject to reinspection thereafter).

SPEC DATA®

This Spec-Data sheet conforms to editorial style prescribed by The Construction Specifications Institute. The manufacturer is responsible for technical accuracy.

1. PRODUCT NAME

THOROSEAL® and THOROSEAL® Foundation Coating

2. MANUFACTURER

Thoro System Products
A Part of ICI Specialties
World Headquarters
7800 NW 38th Street
Miami, FL 33166 (USA)
Phone: (305) 592-2081
FAX: (305) 592-9760

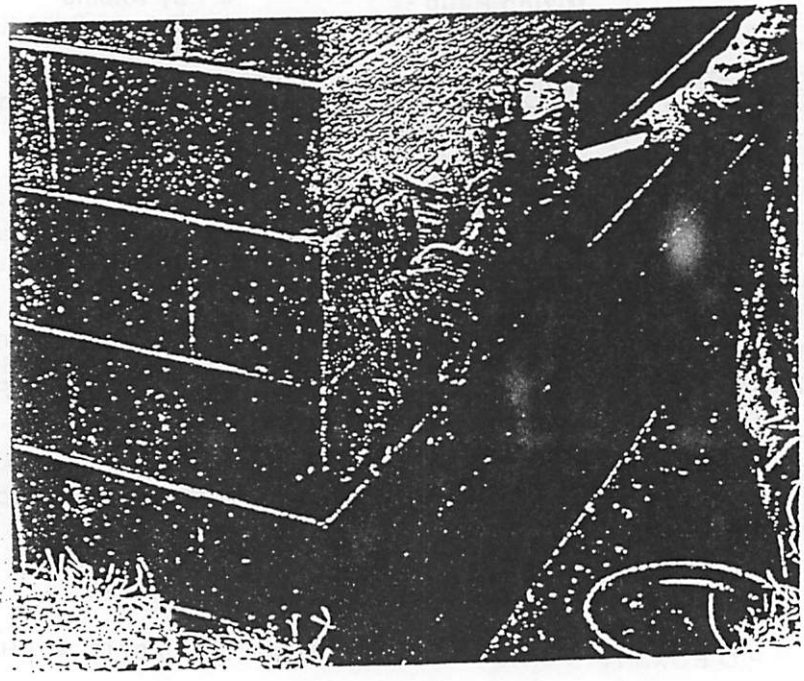
3. PRODUCT DESCRIPTION

Basic Uses: THOROSEAL modified with ACRYL 60® diluted with clean, potable water is used to fill, seal, waterproof and protect a variety of substrates including cast-in-place and pre-cast concrete, brick, common building and split-faced block, stucco, unglazed terra cotta, porous stone, gunite and other masonry substrates. It may be used on interior or exterior, above- or below-grade applications, such as mid-, low- and hi-rise buildings, parking garages, median barriers, bridges, water treatment plants, tunnels, silo exteriors, cooling towers, piers, retaining walls, locks, reservoirs, cisterns, basements and foundations.

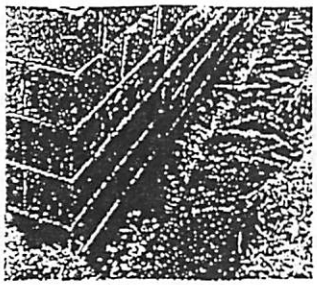
THOROSEAL modified with ACRYL 60 is used on vertical, overhead and non-traffic bearing horizontal surfaces where a waterproof, micro-porous (breathing), seamless coating is required. It is highly resistant to standing water, hydrostatic pressure and wind-driven rain and will not soften even when in prolonged contact with standing water. It can be used on new construction or in restoration and renovation applications. Used as an alternative to mechanical finishing or rubbing of concrete, it provides a means to hide minor surface defects and blemishes in architectural concrete. THOROSEAL serves as an ideal base coat for our water-based acrylic emulsion protective top coats, THOROCOAT®, THOROSHEEN® and THOROLASTIC® (exterior only). Use water-based acrylic emulsions for above-grade or below-grade interior only. THOROSEAL gives a low cost, low maintenance, highly durable finish that is resistant to impact damage and abrasion. It does not support fungus growth, is mildew-resistant, contains no lead and is non-toxic when put in contact with potable water. It is non-combustible and will not contribute to flame spread or smoke generation. It has a proven service life in excess of 20 years in tropical, arctic and desert conditions worldwide.

THOROSEAL cures to form a highly alkaline, fully bonded coating. This 1/16" (1.6mm) coating (cured thickness) is equivalent to 3/4" (19mm) of new concrete cover as a barrier to carbon dioxide gas. For steel reinforced concrete, a two coat application will add a significant degree of protection from the deleterious effects of carbonation, effectively returning the carbonation "front" to the coating system surface and adding years of protection to rebars that are still protected by the high alkalinity of the parent concrete. When used on concrete substrates, THOROSEAL modified with ACRYL 60 diluted with clean water is unaffected by the alkalinity of concrete substrates and will not saponify or soften like alkyds, oils such as linseed or oil-based paints.

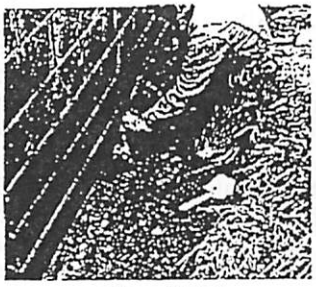
THOROSEAL can be used as a base coat and is compatible with loose-laid and certain adhesively bonded liners or membranes as added protection from water entry. Testing for compatibility is recommended prior to full placement. A



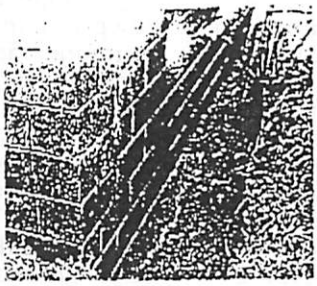
May 1992
(Supersedes November 1990)



Clean wall.

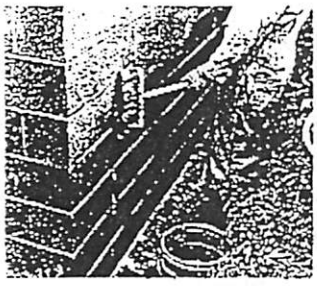


Clean footer.

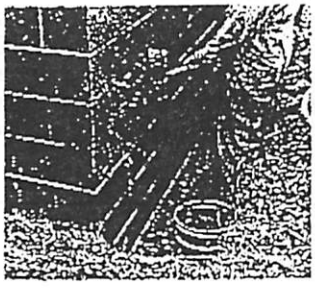


Dampen surface.

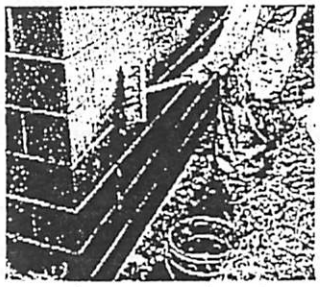
Mix to batter consistency.



Lay it on.



Level it out.



Apply second coat.

Sealed and waterproofed.

LIMITATIONS

Do not apply on frost covered masonry or frozen walls, or when temperature falls below 40°F (4.4°C), or is expected to within 24 hrs. Do not dampen walls excessively in fall, winter, or spring months for outside applications. If application is made during exceptionally hot or windy weather, finished surfaces should be fog sprayed several times during the day to prevent too rapid drying.

TEST DATA

Verified by Independent Test Labs Reports available upon request.

Washington Testing and Engineering Service - Conclusion: Thoroseal Foundation Coating withstands pressure of water in below grade masonry.

Water absorption by boiling (ASTM C67) 3.9% after 5 hours.

Water loss by boiling 0.42% after 5 hours.

Impact resistance (Federal Specification TT-P-0035, para 4.4.5): 24 lbs. passed.

Hardness (Federal Specification TT-P-0035, para 4.4.9 Army - CE): average at 21 days 47.
minimum required 30, maximum 60, passed.

Water Vapor Transmission (ASTM E96): 12 perms.

Compliances: FHA Minimum Property Standards.

COVERAGE

270 sq. ft. per 60 lbs. at 2 lbs. per sq. yd. (25 m^2 per 27.2 kg at 1 kg/m^2). Coverage figures are approximate. Sufficient material must be applied to completely fill and seal all holes, pores and voids.

PACKAGING

50 lb. (22.7 kg) sack and 60 lb. (27.2 kg) pails.

WARRANTY

Thoro System Products warrants that this product conforms to its applicable current specifications. Otherwise, Thoro System Products makes NO OTHER WARRANTIES EXPRESS OR IMPLIED WITH RESPECT TO THE PRODUCTS COVERED BY THIS WARRANTY AND SPECIFICALLY DISCLAIMS THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. Thoro System Products also disclaims for incidental or consequential damages, including lost profits, arising from a breach of this warranty.
In certain jurisdictions or countries, products of Thoro System Products may be eligible for extended warranties. Contact Thoro System Products for eligibility details. Approval prior to application is required.

THORO SYSTEM PRODUCTS

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CENTERVILLE, IN • BRISTOL, PA • NEWARK, CA • MOL, BELGIUM

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base coat of THOROSEAL can provide additional below-grade waterproofing protection and make it easier to isolate leaks due to membrane failure or damage.

THOROSEAL is a barrier layer that will provide protection against the deleterious effects of acid rain, nitrous oxide and chlorides (salt spray). It is easily cleaned with soap and water. THOROSEAL can, by keeping it dry, significantly reduce the thermal conductance of concrete or masonry and help it maintain its stated R-values. The THOROSEAL application does not usually change the location of the dewpoint in a wall assembly. However, the addition of insulation can change the location of the dewpoint in a wall assembly; therefore, vapor barriers may be necessary in certain assemblies. Calculations should be carried out for each individual project.

THOROSEAL has been shown to act as a barrier to the infiltration of radon gas. This suggests that THOROSEAL can be used on below-ground structures as a barrier coating in conjunction with other radon abatement systems. Contact Thoro System Products for further technical details.

Composition and Materials: THOROSEAL is a batch-blended powder formulation. All ingredients are checked against rigid specifications before the production of each batch of material. After the blending process, each batch is laboratory tested before being packaged. This process ensures precision and the uniformity of each batch. THOROSEAL is a blend of hydraulic cements, lime, pigments, plasticizers, dispersants and high specification aggregates. The aggregates meet exacting standards for size, purity and hardness and ensure that the cured THOROSEAL coating has a dense interlocking matrix with exceptional physical properties.

When mixed with ACRYL 60, an

4. TECHNICAL DATA

PHYSICAL or PERFORMANCE PROPERTY	TEST METHOD	RESULT (AVERAGES)
1. Compressive Strength	ASTM C 109-80	7 days = 4200 psi (29 N/mm^2) 28 days = 6030 psi (42N/mm^2)
2. Flexural Strength	ASTM C 348-80	7 days = 360 psi (2.5 N/mm^2) 28 days = 1027 psi (7 N/mm^2)
3. Tensile Strength	ASTM C 190-77	7 days = 250 psi (2 N/mm^2) 28 days = 440 psi (3 N/mm^2)
4. Modulus of Elasticity	ASTM C 469	28 days = 2.72 x10^6 psi (392 N/mm^2)
5. Coefficient of Thermal Exp.	ASTM C 531	28 days = 6.99 x 10^{-6} in/in°F (5 x 10^{-7} mm/mm°C)
6. Accelerated Weathering	ASTM G 26-77 (Xenon Arc) ASTM G 23-77 (Carbon Arc)	5000 hours = No failure 500 hours = No failure
7. Impact Strength (Gardner Impact Tester)	Fed. Spec. TT-P-0035 (Cement Paints para 3.4.8)	No chipping
8. Wind Driven Rain	(para 4.4.7)	8 hours = excellent
9. Accelerated Weathering	Atlas Type DMC Weatherometer	No cracking, loss of adhesion, checking or other defect
10. Hardness (Barber Coleman Impressor)	Fed. Spec. TT-P-0035 (para 4.4.9)	7 days = 35 14 days = 47 21 days = 52 requirement min. = 30, max. = 60
11. Fungus Resistance	Fed. Spec. TT-P-29B	21 days = No growth meets all requirements
12. Abrasion Resistance	Fed. Spec. TT-P-141b	3000 litre sand = Passed
13a. Surface Burning Characteristics	ASTM E 84-86	Flame Spread 0 Smoke Developed 5
13b. Fire Propagation	BS476:Part 6:1981 (British Standard)	Index = 1.5
13c. Flame Spread	BS476:Part 7:1971	Class 1
14. Permeance	ASTM E 96 (Water Vapor Transmission) Swedish Standard SS-02-15-82	Perms = 12 Metric Permeability = 0.10698 18 x 10^3 resistance
15. Freeze/Thaw Resistance	ASTM C 666 (Procedure B)	200 cycles = No change
16. Water Absorption	ASTM C 67 (Section 7.3)	Boiling water submersion at 24 hours = 3.6%
17. Reflectance	ASTM D 2244 Using Hunterlab D-25 Meter	GREY THOROSEAL: 64.2 WHITE THOROSEAL: 88.1
18. Salt Spray Resistance	ASTM B 117	300 hours = No defect
19. Adhesion Strength	Test by Tensile Bond	418 psi (2.9 N/mm^2)
20. Initial Set	Lab Value	10 minutes at 70°F (21°C), 50% RH
21. Final Set	Lab Value	90 minutes at 70°F (21°C), 50%RH
22. Shelf Life	Lab Value	Bags = 6 months Pail = 12 months
23. Density (Cured)	Lab Value	129 lbs/cu ft (2080 kg/m^3)
24. Potable Water (Direct Contact)	BS6920 (British Standard)	Suitable
25. Carbon Dioxide (CO_2)	Lab Value Diffusion	1/16" (1.6mm) Equivalent to 3/4" (19mm) new concrete

CHEMICAL RESISTANCE

REAGENT	EXPOSURE PERIOD	COATING INTEGRITY
Tap Water	35 days	Unaffected
Dissolved Methane Gas	35 days	Unaffected
20% Sulfuric Acid	15 days	Strong Attack
Blood	35 days	Unaffected—Surface Stain
Citric Acid	15 days	Strong Attack
White Wine	15 days	Unaffected—Light Stain
Milk	15 days	Unaffected—Light Stain
Ammonia	15 days	Unaffected
Raw Sewage	35 days	Unaffected

Resistance to Hydrostatic Pressure (Air Cured, 70°F (21°C), 50% RH)	**POSITIVE PRESSURE** 752 hours at 200 psi (1.4N/mm²) (461 head ft) 3 No Leakage, No Softening **NEGATIVE PRESSURE** 664 hours at 200 psi (1.4N/mm²) 3 Limited Dampness

CONDUCTANCE RESULTS FOR "K" VALUES

SUBSTRATE	UNCOATED	COATED WITH THOROSEAL
	Wet Condition	*Dry Condition*
Concrete	25	10
Expanded Shale Block	11	4
Pumice Block	5.5	2

APPROVALS:
Federal Highway Authority For Coatings used in Lieu of Rubbing Concrete—Approved

AGENCY	REPORT NUMBER	DATE
1. Alabama Highway Dept.	Spec. Section 501.03(L)3C	March 1986
2. State of Georgia, D.O.T.	Section 836	May 1982
3. Iowa State Highway Commission	#27	October 1969
4. Commonwealth of Kentucky, D.O.T.		July 1973
5. State of Louisiana, D.O.T.	Code 1410	January 1985
6. State of Maine, D.O.T.		December 1983
7. Minnesota, D.O.T.	Spec. 2401-3F2C	November 1983
8. New Mexico Highway D.O.T.	Section 509.037	
9. Ohio, D.O.T.	HNG-32	May 1974
10. State of Rhode Island		July 1985
11. South Carolina, Dept. of Highways		February 1982
12. South Dakota, D.O.T.		April 1981
13. West Virginia, Dept. of Highways		November 1983
14. Stockholm City Streets Materials Testing Laboratories		June 1988
15. London Underground Testing Laboratories		June 1989
16. British Board of Agrément (England and Wales) Reg. C4 & #7 (Scotland) Reg. B2 & G8 (Northern Ireland) Reg. B1, C3, C6	Agrément Cert. No. 89/2138/C	January 1989
17. NSF Rule 61	Pending	
18. Potable Water (Direct Contact) BS 6920	Approved for Cold Water Service	

integral acrylic polymer emulsion admixture, diluted with water, THOROSEAL becomes a thick, viscous suspension from which the solid matter will not segregate or settle out. Once activated by the mixing liquid, the THOROSEAL undergoes hydration and cures to a hammer-hard protective and waterproof barrier. ACRYL 60 forms a film around all the particles in the THOROSEAL powder. It aids the curing process and reduces the stresses on the bond line. It also increases the flexural and tensile strengths of the cured coating which increases its durability and performance.

THOROSEAL contains Portland cement. Care should be taken when handling, mixing or finishing to protect eyes, skin and respiratory systems. Use appropriate protective equipment and clothing that meets the most current ANSI 287 Standards.

THOROSEAL Foundation Coating contains identical ingredients to THOROSEAL; however, it is blended with cements and aggregates which may not be of uniform color, hence, the hydrated or cured material can be variable in color. It performs identically to THOROSEAL when used for exterior below-grade applications. Refer to technical bulletin 24.

Containers: THOROSEAL is packaged in 30 lb. (13.6 kg) and 50 lb. (22.7 kg) polyethylene-lined bags and 60 lb. (27.2 kg) rubber-gasketed metal pails.

ACRYL 60 is packaged in 1 qt. (.04 ℓ), 1 gal. (3.7 ℓ) bottles and 5 gal. (18.9 ℓ), 30 gal. (116 ℓ), and 55 gal. (213 ℓ) plastic pails.

THOROSEAL Foundation Coating is packaged in 50 lb. (22.7 kg) polyethylene lined bags and 60 lb. (27.2 kg) rubber-gasketed metal pails.

Colors: THOROSEAL is available in white, standard gray, pearl gray and 10 stock colors. THOROSEAL Foundation Coating is available in gray only. This product is not color uniform.

Safety, Health and Environmental Recommendations: Appropriate eye protection meeting the most current ANSI Z87 Standards should be worn when mixing or applying and during surface preparation. Refer to Thoro's Material Safety Data Sheet for additional information.

Limitations: Do not apply to surfaces that are not clean and completely free from any contaminants. Previously painted surfaces must be prepared such that virtually all existing paint films are removed.

If the substrate or ground water contains sulfates or nitrates, special application techniques and protective topcoats may be necessary.

Protect areas and surfaces such as metal, glass and wood, which must not be coated with suitable protective materials such as tape or paper.

Avoid application to substrates that have active water leakage. Relieve hydrostatic pressure by the use of weep holes. Patch all static cracks and joints with WATERPLUG® hydraulic cement first. All dynamic (moving) cracks or joints should be identified and treated appropriately.

Do not apply THOROSEAL in rain or when rain is expected before initial set has taken place.

Do not apply THOROSEAL to frozen surfaces or when the temperature is below 40°F (4.4°C) or expected to fall below 40°F (4.4°C) within 24 hours.

To ensure full and proper curing, adequate ventilation must be provided when applying THOROSEAL in enclosed areas such as tunnels or reservoirs.

Some water can be aggressive toward concrete substrates, and these waters may be harmful to THOROSEAL. When dealing with water-retaining structures, it is recommended that tests be carried out to determine water quality before drawing up a project specification.

Very soft water or sea water has the same effect on THOROSEAL as an acid. Avoid all environments such as tank interiors or cooling tower interiors where very soft water is used. Maintain appropriate water hardness (less than 140 ppm and above 7.2 pH) to avoid damage to a THOROSEAL application or provide for an additional protective top coat in areas at risk. Refer to Portland Cement Association; Effects of Substances on Concrete and Guide to Protective Treatments, IS001.07T, 1989.

All THOROSEAL applications in sewer lines or sewage treatment tank interiors will require an appropriate protective top coat.

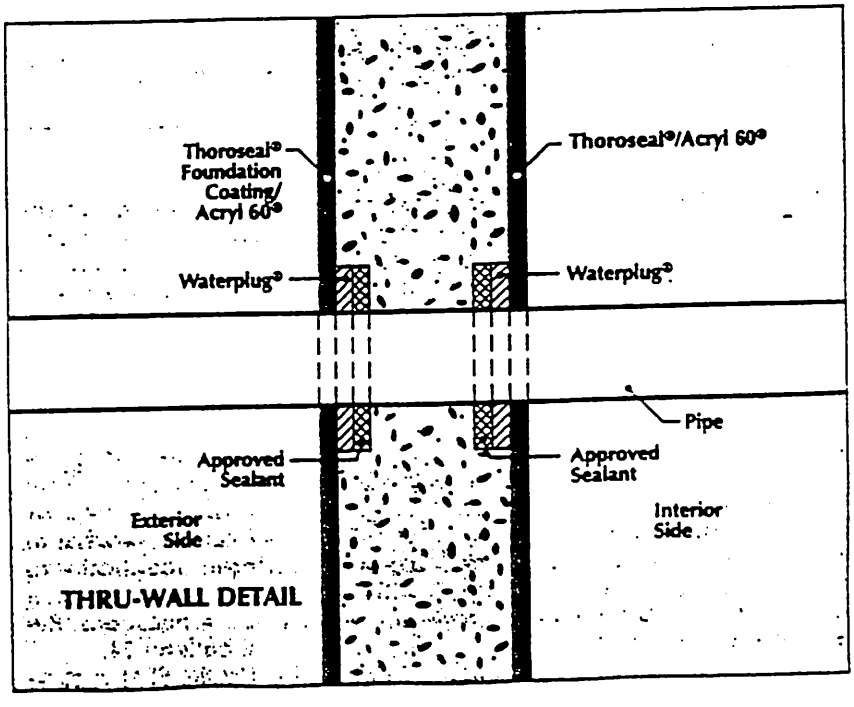
THOROSEAL can be used on horizontal surfaces such as tank bottoms, but it is not intended to be a wearing surface or exposed to any traffic without a protective top coat. Avoid using THOROSEAL in high humidity, below-grade areas such as waterproofing of interior basement walls, unless adequate ventilation is provided to alleviate dampness caused by condensation. Provide for air movement and/or slightly elevate the air temperature to effectively lower the relative humidity to reduce or eliminate condensation.

All above-grade water saturated substrates should be dried out before applying THOROSEAL. Repair all parapet cap flashings, roof flashings, roof leaks, wall leaks, window flashings, etc. prior to any application, especially on concrete masonry unit walls and brick walls. Avoid applying THOROSEAL to water-saturated brick walls wherein water is trapped in walls and leaks continue to allow water into the substrate. Application to water-saturated bricks or natural stones is particularly dangerous if a rapid freeze occurs. Rapid freezing of water-saturated brick may cause the brick face to spall and delaminate. Service temperatures: Immersion, up 140°F (60°C) cleaning water, up to 200°F (93°C), dry air, up to 220°F (104°C).

5. INSTALLATION

Storage: Transport and store THOROSEAL in original containers and keep in a dry condition protected from rain, dew and humidity. Do not stack bags more than two pallets high. If dry, on-site storage of bags is unavailable, or if project is located in a very wet, humid climate zone, then specify the THOROSEAL packaged in 60 lb. (27 kg) metal pails. Store ACRYL 60 in similar conditions. Do not allow ACRYL 60 to freeze.

Surface Preparation: Since THOROSEAL depends on chemical and mechanical bond to the substrate, proper surface preparation is necessary. All surfaces to be coated must be clean. Chip, sand or shot blast, wet blast or high-pressure water wash (4,000 to 10,000 psi) the substrate to remove all foreign matter, dust, dirt, paints, oils, grease, coatings, laitance or any other surface contaminants. All substrates that have been water blasted or water soa-



ked must be unsaturated and surface dry before beginning application. The surface glaze on tiles or other very dense substrates will require mechanical abrasion or acid etching to gain proper adhesion. Great care must be taken when using acid-etching or chemical cleaning methods to ensure complete neutralization and removal of the chemicals and salts before coating commences.

If the surface has a previous coat of THOROSEAL, this need not be removed if it is well bonded. The surface of the THOROSEAL must; however, be totally clean. If the substrate has been previously painted, virtually all of the existing paint film must be removed. Any paint residue must not be larger than ½" (12mm) in diameter. All mortar joints should be in sound condition and tooled. All static cracks or breaks, voids or honeycombing larger than 1/32" (0.8mm) should be cut out and repaired with WATERPLUG or a THORITE/ACRYL 60 mixture. Form ties and other metal fragments must be removed and the substrate patched with a THORITE/ ACRYL 60 mixture. All free surface water must be drained. Weep holes are recommended to drain walls before coating commences. Refer to Waterplug, Thorite and Thorite 200 Tech Bulletins 14, 20 and 20.1, respectively.

After the THOROSEAL has fully cured, all dynamic cracks should be routed out and filled with an appropriate sealant per the sealant manufacturer's printed directions.

Thru-wall penetrations should be fully encased in WATERPLUG before THOROSEAL is applied. Chisel or bore out an annular space around all thru-wall penetrations and apply an approved sealant between the penetration and the substrate per the sealant manufacturer's printed directions. Allow sealant to cure. Fill remaining annular space with WATERPLUG. All thru-wall pipes or elements should be properly prepared and precoated with a protective coating prior to application of WATERPLUG to avoid corrosion. Do not embed aluminum in steel-reinforced concrete which can cause dissimilar metal corrosion. For exposure to high hydrostatic pressure environments, use WATERPLUG in both exterior and interior annular spaces.

Several documents on cleaning and testing concrete have been published by the American Society of Testing and Materials (ASTM) and are listed below:

- ASTM D 4258-83 Practice for Surface Cleaning Concrete for Coating
- ASTM D 4259-88 Practice for Abrading Concrete
- ASTM D 4260 Practice for Acid-Etching Concrete
- ASTM D 4261 Practice for Surface Cleaning Concrete Unit Masonry for Coating
- ASTM D 4262-83 Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces
- ASTM D 4541 Standard Method for Pull Off Strength of Coatings Using Portable Adhesion Testers

Bond Test: New concrete should have gained sufficient strength for it to support a THOROSEAL application without damage or delamination. The time interval necessary to achieve this condition will vary greatly and is dependent on concrete quality and curing conditions. As a guide, this curing is likely to be 2 to 14 days.

If any doubt exists about the suitability of the substrate to receive THOROSEAL, then a bond test should be carried out. Clean and prepare the area or areas that are representative of the full site to be coated. Mix and apply THOROSEAL according to the labeled instructions. Allow to cure for at least seven days. Using a hammer and chisel, attempt to remove the coating. If coating cannot be readily removed without damage to itself and the substrate, then a full application should be possible. If the coating delaminates cleanly from the substrate, there may be clear contaminants in or on the substrate (such as clear sealers, silicones, form release agents, etc.). If the coating delaminates with substrate adhered, then the substrate may be weak or friable. In either case special cleaning and/or application techniques will be necessary (consult Thoro System Products Regional Technical Services department). To specify a minimum numerical value for adhesion, use a tensile bond value of 300 psi (2.1N/mm^2). For questionable surfaces, consult Thoro System Products Regional Technical Services department.

Mixing: THOROSEAL powder may be mixed by hand or by using a power mixer fitted with a THORO E-Z mixing paddle at 400 to 600 rpm. Power mixing is always preferable. Larger mixers are capable of mixing 2 to 3 bags per minute. This volume mixing is required to attain maximum efficiency of the high volume spray pumps.

THOROSEAL powder is mixed using a solution consisting of ACRYL 60 diluted with water, usually 1 part ACRYL 60 to 3 parts clean water. For stronger bonding capability on dense or questionable surfaces or to significantly improve the flexural and tensile strengths of the cured THOROSEAL, reduce dilution to 1:2, 1:1 or 2:1 (2 parts Acryl 60 to 1 part water). Mix one 50 lb. (22.7 kg) bag with approximately 6-8 qts. (5.6 to 7.5 ℓ) of mixing liquid, adding powder to liquid. Volume of mixing liquid is dependent on the ambient temperature, method of application, relative humidity and the characteristics of the spray pump. At a 1:3 dilution ratio each 50 lb. (22.7 kg) bag of THOROSEAL will require approximately 1.5 qts. (1.4 ℓ) of ACRYL 60 and 4.5 qts. (4.2 ℓ) of water. At a 1:2 dilution ratio use 2 qts. (1.8 ℓ) of ACRYL 60 and 4 qts. (3.7 ℓ) of water. At a 1:1 dilution ratio use 3 qts. (2.8 ℓ) of ACRYL 60 and 3 qts. (2.8 ℓ) of water.

When properly blended, the THOROSEAL will have the consistency of smooth, heavy batter. The mixed THOROSEAL/ACRYL 60 should be allowed to rest undisturbed for a minimum of 10 minutes to fully wet out all the powder. The wet mix should then be remixed and applied. A small amount of mixing liquid can be added to this remixing.

Once remixed, a batch can be remixed (or retempered) one additional time. Pot life is between 40 to 60 minutes at 70°F (21°C). At high temperatures and low relative humidity, pot life can be significantly less.

Application: THOROSEAL may be applied by spray, tampico fiber brush or 10" Thoro broom. Spray application is recommended for large projects generally using a plasterer's type spray gun, a dia-

phragm type or a rotor-stator type pump. Spray application is the most cost-effective application method to use and significantly reduces the in-place cost. Spray rates of 2 to 8 bags per minute are possible depending on equipment used, staging and crew experience. These spray rates are equivalent to 450 to 900 sq. ft. (41.8 to 83.7 M^2) of coverage per minute. THOROSEAL cannot be applied by roller or airless spray equipment.

Generally brooming the THOROSEAL after spraying (called backbrooming) will impart a slight texture to the basecoat and help to achieve uniformity of thickness and texture.

The substrate MUST be completely dampened before application starts. A damp surface will prevent surface drag on the material; keep the substrate cool and eliminate flash setting.

IT IS ESSENTIAL THAT THE FIRST COAT IS WELL BRUSHED INTO THE SUBSTRATE EVEN IF THE APPLICATION IS BY SPRAY-GUN. Lay the material on the substrate, filling all pores and voids. Finish the coat with smooth horizontal strokes. Allow to cure for 24 hours or overnight before applying second coat. On block or masonry walls, allow 5 to 7 days before applying second coat to eliminate joint read through. Always broom the second coat with vertical strokes to insure easy cleanability.

After this second coat has hardened, any weepholes should be plugged using WATERPLUG and then overcoated with THOROSEAL.

Recommendations on the types of spray gun to be used to place THOROSEAL are available from Thoro System Products.

Specific Applications:

- For above-grade interior or exterior applications in positive pressure situations, (direct contact with rain or standing water with a low head of pressure), a 50 lb. (22.7 kg) bag of THOROSEAL will provide the following coverage at the designated material usage.

Recommended Coverage: First Coat—2 lbs. per sq. yd. (0.9 kg/83m^2) = 225 ft^2 per 50 lb. bag at 1/16" (1.6mm) cured thickness.

Second Coat—1 lb. per yd^2 = 450 ft^2 per 50 lb. bag at 1/32" (0.8m) cured thickness. Total 3 lbs. per sq. yd., cured thickness 3/32" (2.3mm).

Coverage will vary depending on surface texture and porosity. A 3 lbs. per sq. yd. application rate does not eliminate surface irregularities such as struck mortar joints. To hide surface irregularities, a base coat of THOROSEAL at 2 lbs. per sq. yd. should be used and allowed to cure for 5 to 7 days. This should then be overlaid with a top coat of sprayed and back troweled THOROSEAL Plaster Mix at an application rate of 9 lbs. per sq. yd.

- For below-grade interior applications the standard application is 3 lbs. per sq. yd. For high hydrostatic pressure conditions (over 15 psi), increase application rate to 4 lbs. per sq. yd. Waterproof from the positive side wherever possible.
- For below-grade exterior applications, use THOROSEAL Foundation Coating. For high hydrostatic pressure conditions (over 15 psi), apply a base coat of THOROSEAL Foundation Coating at 2 lbs. per sq. yd. and allow to cure for 5 to 7 days. Then apply a top coat of THOROSEAL Plaster Mix at 12 lbs. per sq. yd. A steel trowel finish is recommended.

For both below-grade interior and below-grade exterior applications it is recommended to cut out and place a WATERPLUG cove at the wall/floor junction prior to the application of the THOROSEAL base coat.

- For applications in tunnels, reservoirs, dams, etc. where high hydrostatic pressure is encountered, consult Thoro System Products for application recommendations.
- THOROSEAL can be covered with extruded polystyrene insulation board for below-grade applications. The board must be fully coated with THOROSEAL and embedded into the still-wet coating already in place on the walls. Care must be exercised when placing the coated board since moving or sliding of the board is not possible. Once placed, do not move the board. After curing, the above-grade portion of the boards can be prepared by roughening or removal of the surface skin and then coating with THOROSEAL to protect them from U.V. light degradation for exterior exposures.
- Expansion or control joints must be maintained or placed as necessary in a structure to which THOROSEAL is to be applied. After the THOROSEAL has cured, these joints can be filled with an appropriate caulk or sealant.
- For waterproofing potable water tanks or reservoirs, completely wash down the fully cured THOROSEAL with saline solution (salt brine, 12.5% salts in water). Leave saline solution on the entire THOROSEAL surface for at least 24 hours. Rinse off saline solution completely. If needed, reapply saline solution until final rinse water is completely clean and clear.

Finish: A brush, spray textured or smooth sand finish can be achieved with THOROSEAL. For below-grade interior substrates or where a smoother surface texture is required, THOROSEAL can be topcoated with SUPER QUICKSEAL®. SUPER QUICKSEAL contains only ultra-fine constituents and can be applied by spray or brush. Refer to technical bulletin 15 or Tech Data unit 15-TD for further details.

Temperature: THOROSEAL should be applied when the ambient temperature is at least 40°F (4.4°C) and expected to remain so until initial set of the material is achieved. Do not apply to frozen or frost-filled substrates. If the weather is windy and/or hot and/or dry then the application should be frequently misted with water to prevent early dry-out.

Cold Weather Application: In cold weather the THOROSEAL application must be protected from cold or freezing until cured a minimum of 24 hours. The use of heated enclosures or heat blankets is recommended. Suggested heating devices are hot-air type units with the exhaust vented outside the enclosure. Avoid salamanders or heaters that emit oil residues or unburned hydrocarbons into the enclosure. All THOROSEAL powder, mixing water and ACRYL 60 should be stored in a heated area and should be conditioned to 50°F to 70°F (10° to 21°C) prior to mixing and placement. Heated enclosures should be kept heated until THOROSEAL is fully cured. Pro-

tect from freezing.

Hot Weather Application: In extremely hot weather, the materials, application equipment and substrates should be protected from direct sunlight and wind. Condition all powder, mixing water and ACRYL 60 to 50 to 70°F (10 to 21°C). Frequent water misting of the substrate will significantly lower its temperature due to evaporative cooling. Ice can be added to the mixing water. All ice must be completely melted prior to mixing the water and the ACRYL 60. In extremely hot conditions keep ice in plastic bags in the diluted mixture.

Application equipment including pumps, mixers, hose lines, spray wands, etc. should be kept covered or frequently cooled with water spray. In extremely hot, windy, arid environments, night application may prove the most effective.

Applied THOROSEAL should be protected from hot, drying winds by the use of 6 mil polyethylene enclosures or barriers. Such enclosures should be vented to keep interior temperatures as low as possible.

Under hot weather conditions, apply THOROSEAL during the coolest part of the day.

Color Uniformity: With any cementitious products, such as THOROSEAL, which undergo hydration, it is difficult to achieve color uniformity due to weather and substrate variability. For this reason it may be necessary to specify a colored topcoat of THOROCOAT, THOROLASTIC (exterior above-grade use only), or THOROSHEEN. A 2 lb. per sq. yd. base coat application of THOROSEAL followed by a color coat of one of the above will provide protection from wind-driven rain. THOROSEAL, THOROCOAT or THOROSHEEN can also be topcoated with clear THOROGLAZE, THOROGLAZE H or THOROSHIELD for added protection from staining, acid rain or atmospheric particulates. Refer to Tech Bulletins 26, 27 and 28, respectively.

Site Sample: On all projects, it is recommended that a sample panel be prepared on site and approved prior to the commencement of the work. The sample should act as a site example of the color, texture and workmanship required until the job is finished and accepted. Retain the sample until final approval is secured.

DANGER! INJURIOUS TO EYES. CAUSES SKIN IRRITATION. CONTAINS CEMENT, LIME AND CRYSTALLINE SILICA (SAND). Avoid eye contact. Avoid prolonged contact with skin. Wash thoroughly after handling. In case of eye contact, flush with copious amounts of water. If irritation persists, contact a physician. Goggles and gloves are recommended when using this product. There is limited evidence to suggest that crystalline silica may cause cancer in humans. Use local exhaust ventilation to keep exposure to a minimum. Where overexposure to this material is suspected, use a NIOSH/MSHA approved respirator for dusts. Refer to MSDS for handling instructions and additional information on this product. For help in chemical emergencies involving spill, leak, fire, or exposure, call toll-free CHEMTREC at 1-800-424-9300 DAY OR NIGHT. KEEP OUT OF REACH OF CHILDREN.

HMIS RATINGS	
Health	1
Flammability	0
Reactivity	0
Personal Protection	X

NEW JERSEY RIGHT TO KNOW	
Portland Cement	65997-15-1
Silicon Dioxide	14808-60-7
Calcium Hydroxide	1305-62-0

6. AVAILABILITY AND COST

THOROSEAL and all allied Thoro Products are available through a network of dealers and distributors throughout the world. Virtually all major metropolitan areas are serviced. In-place costs will vary depending on the size of the project, surface preparation and labor cost factors. Contact a local applicator for a cost estimate or contact the nearest Thoro System Products' Regional Office. Thoro System Products maintains a worldwide list of projects on which THOROSEAL modified with ACRYL 60 have been used. This list contains thousands of projects. Contact Thoro System Products for a reference for the particular type of structure or substrate required for the project.

7. WARRANTY

Commitment to Quality: Thoro System Products is dedicated to providing quality, value-added products and services. As a group and as individuals, Thoro System Products is striving to improve the quality of Thoro's activities and to do them correctly the first time. Thoro System Products welcomes input from customers and suppliers.

ICI Americas, Inc. warrants that this product conforms to its applicable current specifications. Otherwise ICI Americas, Inc. makes NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. The responsibility of ICI Americas, Inc. for claims arising out of breach of warranty, negligence, strict liability or otherwise is limited, at ICI Americas, Inc.'s option to replacement of defective materials or refund of the purchase price for defective materials. IN NO EVENT SHALL ICI AMERICAS BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFITS.

In certain jurisdictions or countries, products of Thoro System Products may be eligible for extended warranties for material only and material and labor for periods of up to ten years on projects with qualifying specifications. Prior approval, site inspections and a specification review are required for warranty eligibility. For further information contact Thoro System Products. APPROVAL PRIOR TO COATING APPLICATION IS REQUIRED.

8. MAINTENANCE

No special maintenance program is necessary to ensure that a THOROSEAL application remains waterproof and well adhered for many years. Occasional cleaning with soap and water of above-grade exposure will generally restore the coating to its original appearance. Flexible expansion and sealants joints should be in-

spected regularly to ensure their integrity as part of a waterproofing system.

9. TECHNICAL SERVICES

Thoro sales and technical staff are available worldwide to assist in job-site evaluations, equipment recommendations, specification writing, contractor training, job followups and warranty issuance. Contact a local or any office of Thoro System Products for any information or assistance required.

Thoro offices:

World Headquarters
Thoro System Products
(The Americas, including Canada and Mexico, the Caribbean and Pacific Rim Countries)
7800 NW 38th Street
Miami, FL 33166 (USA)
Phone: (305) 597-8100
FAX: (305) 592-9760

Eastern Regional Office
Route 13 at Beaver Dam Road
Bristol, PA 19007 (USA)
Phone: (215) 946-2350
(800) 277-8410 (National)
FAX: (215) 945-4368

Central Regional Office
8401 73 Avenue North, Suite E2
Brooklyn Park, MN 55428 (USA)
Phone: (612) 533-3103
FAX: (612) 533-0244

Western Regional Office
39366 Fremont Boulevard
Fremont, CA 94538 (USA)
Phone: (415) 796-3773
(800) 445-6182 (National)
FAX: (415) 796-0204

European Headquarters
(Scandinavia, Middle East, Germany and rest of Europe)
Thoro N.V.
Berkenbossenlaan 6
B-2400 Mol, Belgium
Phone: 014-81-12-71
FAX: 014-81-32-10

Thoro System Products, Ltd
19 Broad Ground Road
Lakeside Redditch
Worcestershire B98 8YP
United Kingdom
Phone: 0527-517-989
FAX: 0527-510-299

Thoro S.A.R.L.
45, Avenue de L'Europe
B.P. 34
78142 Velizy Villacoublay Cedex
Paris, France
Phone: 30-70-29-50
FAX: 30-70-29-51

Thoro System Products S.P.A.
Via F. Ili Rosselli, 10
20068 Canzo Di Peschiera Borromeo
Milan, Italy
Phone: 02-55-30-14-19
FAX: 02-55-30-14-99

10. FILING SYSTEMS

Electronic SPEC-DATA®
SPEC-DATA® II
Sweet's Catalog

Waterproof, cement-base coating for exterior below grade concrete and masonry.

THOROSEAL® FOUNDATION COATING

DESCRIPTION

Thoroseal Foundation Coating is specifically designed to waterproof the exterior surface of concrete and masonry below grade. Normally applied with a Thoro Push Broom or Thoroseal 6" (15.2 cm) Beaver Brush, it can also be mixed with clean washed sand and applied as a superior waterproofing parge (trowel applied) coating. Thoroseal Foundation Coating is not intended as a decorative finish coat.

USES

To waterproof foundations below grade or waterproof back coating between face brick and back-up units.

SURFACE PREPARATION

Surface to be coated must be clean and structurally sound. Remove all dirt, grease, oils, efflorescence, form treatments, mineral salts, form oil, laitance, film type curing agents, etc. Clean mortar droppings from top of footer; form cove at this point with Thoroseal Foundation Coating mixed to a mortar consistency. Point and fill all broken corners of block and breaks in surface. Cut the wires back at least ¾" (1.9 cm) and patch with Thorite (or Waterplug). Anchor in place with Waterplug all pipes, etc. that pierce foundation walls.

MIXING

Pour dry material into mixing container or mortar box, round out center and gradually add clean water to bring to consistency of heavy batter (approximately 2 gallons of water per 60 lbs. [7.5 liters per 27.2 kg]). (To improve bonding on smooth or dense concrete and masonry and for all trowel applications, prepare a mixing liquid consisting of 1 part Acryl 60 to 3 parts of clean water). When power mixing, add material to the water. Stir. Allow 10-15 minutes soaking time to flatten mix and dissolve waterproof pigments for a uniform batch. When ready to apply, a small amount of water may be added if necessary to bring mix to batter consistency.

Make sure all powder at bottom of container has been thoroughly mixed to secure a smooth batch. Stir just before placing. Thoroseal Foundation Coating sets slowly so that enough can be prepared to last for two hours under normal conditions.

APPLICATION

Thoroughly dampen masonry or concrete surface before applying Thoroseal Foundation Coating. Do not apply as a thin paint coat. Lay it on the wall and level it out. If wall becomes dry or mix starts to pull during application, dampen the wall again. Do not thin the material.

SPECIFIC APPLICATIONS

FOR ORDINARY WATER PRESSURE OR DAMPNESS IN BLOCK FOUNDATIONS: Apply two evenly distributed applications of Thoroseal Foundation Coating, each minimum 2 lbs. per sq. yd. (1 kg/m²) or a total of 4 lbs. per sq. yd. (2 kg/m²). Make sure both applications carry down to and over footer forming a 1½" (3.8 cm) cove at junction of walls and footer.

FOR ORDINARY WATER PRESSURE IN CONCRETE FOUNDATIONS: Apply one coat, minimum of 2 lbs. per sq. yd. (1 kg/m²). Use Acryl 60 in the mixing water.

FOR SEVERE WATER PRESSURE: Brush on coating using 2 lbs. per sq. yd. (1 kg/m²). After 12 hrs., apply trowel coat of minimum 12 lbs. per sq. yd. (5.4 kg/m²) or sufficient material to bring surface to true and level lines. For trowel applications add 30 lbs. (13.6 kg) clean silica sand to each 60 lbs. (27.2 kg) of Thoroseal Foundation Coating. Treat footer as described previously in all applications. Use Acryl 60 in the mixing water when application is over concrete.

PARGE COAT: For masonry walls where local codes require a parging coat. Excellent mix: 30 lbs. (13.6 kg) clean silica sand to each 60 lbs. (27.2 kg) of Thoroseal Foundation Coating. Upon completion of parging coat, brush on a coating of 2 lbs. per sq. yd. (1 kg/m²).

FOR FIRMEST BONDING QUALITIES: Add Acryl 60 to the mixing water. Proportions can vary depending on bonding requirements. Normal proportions are 1 part Acryl 60 to 3 parts clean water (approximately 2 qts. [1.8 liters] of Acryl 60 per 60 lbs. [27.2 kg]). For questionable applications, a test patch is recommended. Acryl 60 greatly improves mechanical properties and adhesion to smooth or dense concrete.

THORO

CKD RANGE OF EXPORT TANKS

(1) Manufactured of prime grade linear polyethylene, approved by the food and drug administration of the United States for food and water storage.

(2) Tapered design facilitates nesting, this feature reduces freight cost.

(3) Tanks are designed with a one piece molded 18 inch screw cover, this cover secures your water supply keeping out disease carrying insects and foreign particles.

(4) Tanks are available with a molded in water level gauge that lets you know your water level at a glance.

(5) Tanks are also available with a "cut-away" 4 inch water spouting inlet to facilitate rain water supply from the roof of your house.

(6) The top of the tank is firmly bolted to the base. This feature ensures protection from high winds and prevents insects and small animals from contaminating your water supply.

(7) All water tanks come complete with a manufacturers guarantee against defects.

(8) Tanks are also available in selected colours, to match your home decor.

INSTALLATION PROCEDURES:

- All tanks must be installed on FULLY SUPPORTING flat base.
- If tanks are to be elevated on a stand for gravity feeding, please ensure that a properly engineered stand is used, as one (1) gallon of water weighs approximately 10 lbs. For example a 400 Gallon tank will weigh 4,000 lbs., therefore it is essential to use a properly engineered stand that is capable of holding this weight.
- We recommend that the tank is thoroughly rinsed with water before installation as there may be traces of foreign particles in your tank.
- The base for the tank should be cleared of any stones or sharp objects before placement to prevent damage to your tank.
- The cover should be kept on at all times as algae tends to grow in sunlight. If your tank is equipped with a locking device, please use it to prevent tampering with your water supply.
- Tanks should be periodically cleaned as there tends to be material residue in the water supply. Over a period of time there will be a gradual build up of this sediment in your tank.

FOR FURTHER INFORMATION PLEASE WRITE TO OR CALL:

ROTOPLASTICS TRINIDAD LTD.,
P.O. Box 3109, St. James, Port of Spain, Trinidad, W.I.
Telephone: (809) 674-TANK (8265), 675-8756. Fax #: (809) 674-8339.

SPECIFICATIONS

MODEL	CAPACITY	DIAMETER TOP	DIAMETER BASE	HEIGHT	SHIPPING WEIGHT
CKD 600	600 GALS (2280 LITRES)	62 INS (157 CM)	48 INS (122 CM)	82 INS (208 CM)	110 LBS (50 KG)
CKD 400	400 GALS (1520 LITRES)	52 INS (132 CM)	40 INS (102 CM)	68 INS (173 CM)	65 LBS (29.5 KG)
CKD 200	200 GALS (760 LITRES)	42 INS (107 CM)	32 INS (81 CM)	61 INS (155 CM)	40 LBS (18.1 KG)

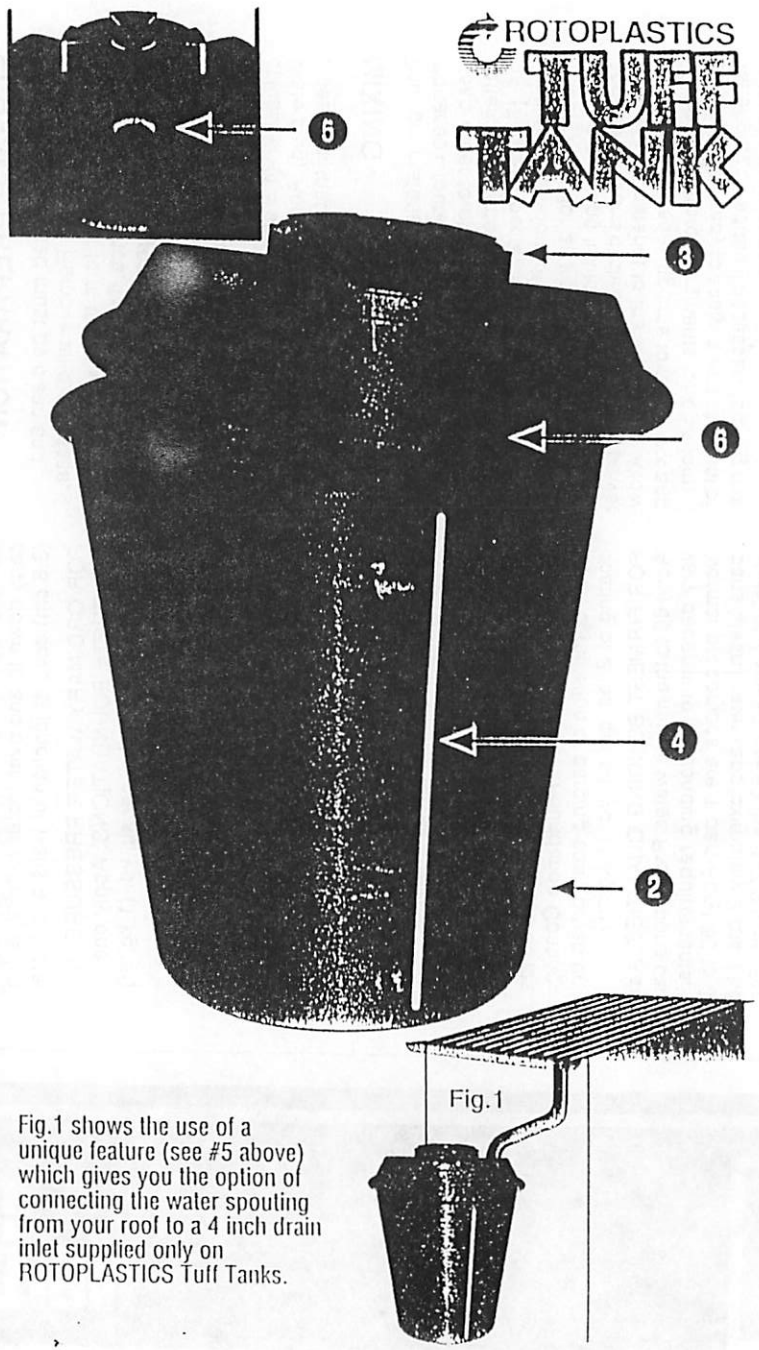


Fig.1

Fig.1 shows the use of a unique feature (see #5 above) which gives you the option of connecting the water spouting from your roof to a 4 inch drain inlet supplied only on ROTOPLASTICS Tuff Tanks.

APPENDIX C

MANUFACTURERS' ADDRESSES

Manufacturer	Manufacturer Address	Man. Number	Man. Fax
2001 Company	PO Box 2557, Waterbury, CO	1-800-537-7663	203-573-0781
AKZO Coatings	1313 Windsor Ave., Box 147 Columbus OH, 43216-0147		
American Saturated Felt, Inc	47 Maple Ave., P.O. Box 550, Thomaston, CT 06787	203-283-8239	203-283-0308
Anvil Paints/ Coating	Largo FL, 34641		
Atlas Roofing Corp.	100 Georgia Pacific Way Hampton, GA 30228		
B and B Manufacturing	PO Box 4937 St.Thomas VI 00803	809-775-1500	809-774-3170
Bansal	Box 241148, Charlotte NC 28224		
Benjamin Moore Co.	PO Box 37979, Jacksonville FL., 32250	1-800-327-1570	904-693-0994
Bethlehem Steel	Bethlehem, PA 18016		
Bird Vinyl Products, Inc.	PO Box 329 1010 Withrow Court, Bardstown, KY, 40004	502-348-9231	502-348-1037
Bonsoe	PO Box 651488 Charlotte, NC 28265-1488		
Bruning	601 South Haven St. Baltimore, MD 21224	1-410-342-3636	
Carlisle Engineering		1-800-735-9324	
Chemical Coatings	221 Brooke St., Media PA 19063	215-566-7470	
DAP Inc.	PO Box 277 Dayton OH, 45401-0277	1-800-543-3840	613-667-3331
		613-667-4461	
Dow Corning	Texas Plaza Suite 313, San Juan , PR. 00920-1705	809-783-8500	809-783-6566
Enco Manufac. Corp.	Cldra, PR	739-3751	739-2242
Englert Metals	5102 Causeway Blvd. Tampa FL 33619	813-248-2296	813-247-3290
Finnaren/Haley Paint	901 Washington St. Cunhohocker PA 19428	1-800-843-98001	--610-825-1184
Futra Coatings	9200 Latty Ave. Hazelwood, MO 63042	1-800-424-9300	813-351-9831
Gardener Asphalt Corp.	Tampa, FL 33675	1-800-237-1155	
GE Answer Center	Waterford NY, 12188	1-800-626-2000	
Geocel Corp.	Box 398, Elkhart, IN 46515	1-800-348-7615	219-264-3698
Gibson-Homans Co.	1766 Enterprise Parkway Twinssburg, OH 44087		
Harris Paints	25 C ST., Minillas, Industrial Park PR 00959		
Klean-Strip	Div.W.M. Barr, Inc., Memphis, TN 38101-1879		
Kool Seal	Twinsburg, OH 44087 Clearwater, FL 34622		
Kurfees Coatings, Inc.	Louisville, KY 40201		
Lanco	3851 NW 59th ST. Miami, FL 331421	305-638-5050	
Mameco International, Inc.	4475 East 175th Street, Cleveland, Ohio 44128-3599	216-752-4400	-5541
		800-321-6412	
Manufacturing Corp.	San Lorenzo, PR 00954	809-736-4221	809-790-1130
Master Choice	1700 Washington St. Jamestown, NY 14701	716-487-0007	
Masterchem Industries	PO Box 368, Barnhart, MO 63012		
Masters Choice	Jamestown NY, 14701	1-800-766-7622	1-800-474-6789
Mobile Paints	Box 3859, Carolina, PR 00987	787-257-2200	787-257-8030
Nichols Aluminum	1725 Rockingham Rd. Davenport IA 52802	319-324-2121	
Nordi Bitumi	Macon, GA 31208-3678	1-800-528-0179	912-788-0675
Oatey			
Ohio Sealents	Mentor, OH 44060	1-800-321-3578	
Olympia International	600 Grant ST. Pittsburgh, PA 15219	412-391-4777	412-391-4810
Oregon Res. and Dev. Corp.	1895 16th ST. SE Salem, OR 97302-1436	1-800-345-0809	
Parks Corp.	Sommerset, MA 02726		
Pittsburgh Paints	Pittsburgh, PA 15272	1-412-492-5555	
Plastmo Inc.	8246 Sandy Court Jessup, MD 20794	1-800-899-0992	410-742-8047
Reliance Caribbean	RD. 28 KMOS Bayamon , PR 00957		
Rooftops	Estate Friedenstahl, St. Croix VI, 00820-4707	778-8550	773-0409
Rooftops/Tech. Coating	Estate Friedenstahl, St.Croix		
Rust-Oleum Corp.	Vernon Hills, IL 60061		
Scott			
Scotts Paint Corp.	7839 Fruitville RD., Sarasota, FL 34240	813-371-0015	
Servistar Corp.	Bulter, PA 16003		
Snow Roof Systems		1-800-345-0809	1-503-588-2075
Southeastern Metals	11801 Industry Dr. Jacksonville FL, 32218	1-904-757-4200	1-904-751-2745
Stan's Leap	527 Main ST. Royers Ford, PA 19468	215-948-5644	215-948-5654
Sunnyside Corp.	Wheeling IL., 60090-6095	1-800-323-8611	
Technical Coatings	Box 7350, Christiansted, USVI 00823	809-773-2018	809-773-0575
Tech. Coatings	Industrial Park , St.Croix	773-2018	
Tech. Coatings	St. Croix USVI 00823	809-773-2018	809-773-0575
The Major Group	24 Industry RD., Valpine, MA 02081-1305	508-660-2471	
Thoro System Products Inc Prod.	Jacksonville FL, 32250-8208	1-800-327-1570	904-828-4991
Thoro System Products Inc Prod.	7800NW 38 ST., FL. 33166	(305)-592-2081	(305)-592-9760
Trident	PO Box 800515 Houston TX 77280-0515	1-713-468-4069	
True Value	Gary IL. 60013-0061	1-800-922-0061	
Tuff-Kote Co.	210 Semmary Ave. Woodstock, IL. 60098	815-338-2006	
USA	Orlando, FL 32808/ Sunter, SC. 29150		
Vandex Caribbean	Ave. Mexico Guaynabo PR. 00969-1390	1-809-731-0060	
William Zinsser and Co.	Somerset, NJ. 00875		
W. R. Bansal Company	Box 241148, Charlotte NC 28224		

APPENDIX D

SUPPORTING DOCUMENTS

CONTENTS OF APPENDIX D

I. Roof Coatings

II. Storage Coatings

SUPPORTING DOCUMENTS

I. ROOF COATINGS

Your Ref: O/No: 1911
Date received: 1st October 1993
Date: 31st January 1993
Page: 1 of 5

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 021 359 5951
Fax 021 359 7606

Topcoat,
24 Industrial Road,
P.O. Box 231,
Walpole,
Massachusetts,
02081-1305,
UNITED STATES OF AMERICA.

For the attention of Michael D. DeSouto

Dear Sirs,

Re: Suitability of non-metallic products for use in Contact with Water Intended for Human Consumption with Regard to their Effect on the Quality of Water
British Standard BS6920:1990

We have now completed tests on your sample in accordance with the above Standard.

Details of the sample material and results of the testing schedule are given below:

Trade name and reference:	Topcoat W.O.B.
General composition:	Water based elastomeric coating.
Manufactured by:	Topcoat, a division of Major Group Incorporated. U.S.A.
Submitted by:	Topcoat, U.S.A.
Organisation responsible for sample preparation:	Clayton Environmental Consultants Limited.
Description of Sample:	White viscous paint.
Surface area or dimensions of individual unit/item:	1 coated panel - 125mm x 60mm.
Number of units/items per test:	1 coated panel - 15,000mm².
Calibration mark of test container:	1 litre.
Proposed use of product:	Coating for roof tops and culverts, some of which may direct drinking water into holding tanks - not for holding tanks themselves. Cold water use only.

Wet film thickness of coatings:

580 microns

Description of preparation and application of product to test panels:

The paint was mixed well and applied to sand blasted glass panels. The panels were left to cure over two days, receiving approximately 14-16 hrs of daylight, and were then cured at 60%RH and 20°C for 3 days.
N.B. The panels were checked, before curing in the humidity cabinet, to see that the paint was tack-free.

Taste of Water (Part 2 : Section 2.2)

Extraction of the material in test water for 24 hours at 25°C produced an extract which, after a 1:1 dilution with test water, gave a slight dry after taste.

Continuation of the extraction process for six more occasions gave a seventh extract which, after a 1:1 dilution with test water, gave no detectable taste.

Extraction of the material in chlorinated water for 24 hours at 25°C produced an extract which, after a 1:1 dilution with test water, gave a slight dry/paint after taste.

Continuation of the extraction process for six more occasions gave a seventh extract which, after a 1:1 dilution with test water, gave no detectable taste.

These results comply with the requirements of clause 4 of Part 1 of BS6920:1990.

Appearance of Water (Part 2 : Section 2.3)

Extraction of the material in test water for 24 hours at 25°C gave, after subtraction of the blank, the following results:

	Colour Hazen units (Pt/Co)	Turbidity Formazine Nepheiometric Units (FNU)	Number of Samples Tested
1st Extract (24 hours)	<2.5	0.2	1

These results comply with the requirements of clause 5 of Part 1 of BS6920:1990.

Growth of Aquatic Micro-organisms (Part 2 : Section 2.4))

The mean dissolved oxygen differences expressed as mg/l were as follows:

Table 1

		Mean Dissolved Oxygen Difference (MDOD) mg/l	Number of Samples Tested
1.	Sample under test	0.5	1
2	Glass reference	0.1	1
3	Paraffin wax reference	5.3	1

The mean dissolved oxygen, in mg/l, of the negative control was 8.0.

The bacterial counts in the test containers were as follows:

Table 2

	Coliform organisms/100 ml.			Number of Samples Tested
	Week 5	Week 6	Week 7	
Sample under test	< 1	< 1	< 1	1
Glass reference	< 1	< 1	< 1	1

Table 3

	Pseudomonas aeruginosa/ml			Number of Samples Tested
	Week 5	Week 6	Week 7	
Sample under test	< 1	< 1	< 1	1
Glass reference	< 1	< 1	< 1	1

These results comply with the requirements of clause 6 of Part 1 of BS6920:1990.

The Extraction of Substances that may be of Concern to Public Health (Part 2 Section 2.5)

Confluent growth of Monkey Kidney Cell Line ACTT No. CCL81 was not observed in the 24 hour extract, which shows a cytotoxic response.

To comply with the requirements of clause 7 of Part 1 of BS6920:1990 two further fresh samples were tested.

Confluent growth of Monkey Kidney Cell Line ACTT No. CCL81 was observed in both 24 hour extracts, which shows a non-cytotoxic response in both.

Two of the three tests gave a pass result. This constitutes an overall pass of this section.

These results comply with clause 7 of Part 1 of BS6920:1990.

Extraction of Metals from Non-Metallic Products (Part 2 : Section 2.6)

Metal	Method of analysis and source of method	Limit of detection	Conc. of metal in final extracts		Conc. of metal in blank	Maximum admissible conc. in final extract	Number of Samples Tested	Number of Extracts Carried out
		µg/l	µg/l		µg/l	µg/l		
			Ex.1	Ex.2				
Aluminium	I.C.P.O.E.S.	20	90	< 20	< 20	200	1	1
Antimony	H.G.A.A.S.	1	< 1	< 1	< 1	10	1	1
Arsenic	H.G.A.A.S.	5	< 5	< 5	< 5	50	1	1
Barium	I.C.P.O.E.S.	20	< 20	< 20	< 20	1000	1	1
Cadmium	G.F.A.A.S.	0.5	< 0.5	< 0.5	< 0.5	5	1	1
Chromium	I.C.P.O.E.S.	5	< 5	< 5	< 5	50	1	1
Iron	I.C.P.O.E.S.	20	30	< 20	< 20	200	1	1
Lead	G.F.A.A.S.	5	< 5	< 5	< 5	50	1	1
Manganese	I.C.P.O.E.S.	5	< 5	< 5	< 5	50	1	1
Mercury	C.V.A.A.S.	0.1	< 0.1	< 0.1	< 0.1	1	1	1
Nickel	G.F.A.A.S.	5	< 5	< 5	< 5	50	1	1
Selenium	H.G.A.A.S.	1	< 1	< 1	< 1	10	1	1
Silver	G.F.A.A.S.	1	< 1	< 1	< 1	10	1	1

The above results show the material to conform to the requirement of clause 8 of Part 1 of BS6920 : 1990.

Note:

I.C.P.O.E.S. - Inductively coupled plasma optical emission spectroscopy.

H.G.A.A.S. - Hydride generation atomic absorption spectroscopy.

G.F.A.A.S. - Graphite furnace atomic absorption spectroscopy.

C.V.A.A.S. - Cold Vapour atomic absorption spectroscopy.

Conclusion

The samples of the product referred to in this report have been tested in accordance with the methods specified in BS6920 : Part 2 : 1990 "Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water : Methods of Test".

The product has satisfied the criteria set out in BS6920 : Part 1 : 1990, "Specification".

Please note that

1. The results specified in this report relate only to the sample(s) of this product submitted for testing. Any changes in the nature or source of ingredients and the process of manufacture or application could affect the suitability of this product for use in contact with potable water.

2. We would draw to your attention that reports issued by this test laboratory do not of themselves constitute approval by the Bermudan Authorities. Only a letter from them can be regarded as indicating approval.

Yours faithfully.

R.A. Stevens.
for: CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

N.B. A copy of this report has been sent to Ms. E. Harvey, Bermuda Ministry of Health and Social Services.

DEPARTMENT OF HEALTH

P.O. Box HM 1195, Hamilton HM EX
BERMUDA

March 1, 1994

Our Ref: 124/94

Topcoat
24 Industrial Road
P.O. Box 231
Walpole
Massachusetts, 02081-1305
U.S.A.

Attention: Mr. Michael D. DeCouto

Dear Sir,

RE: Potable Water Catchment Coating

This department is in receipt of the results on tests carried out by Clayton Environmental Consultants on the product Topcoat W.O.B.

We are pleased to include "Topcoat W.O.B." on the list of Approved Potable Water Catchment Coatings 1994. A retest of this product will be required by 1999.

Yours truly,

Estlyn Harvey
Chief Environmental Health Officer

EH/dkb

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
Washington DC 20204

July 16, 1992

Mr. Russell Clark
Major Group, Inc.
P.O. Box 231
Walpole, Massachusetts 02081-1205

Dear Mr. Clark:

This is in further regard to correspondence between your firm and Dr. Daniel Harrison and our telephone conversation of July 14, 1992, concerning the use of a coating for concrete culverts and roof tops that direct water into holding tanks.

We have reviewed the composition of as stated in your submission of June 9, 1992 and find that the ingredients of TOPCOAT W.O.B. are in compliance with FDA regulations for use in contact with food, including water. Therefore, we find that this coating would be suitable for use as a coating for culverts and rooftops that will direct rainwater into holding tanks for residential and retail facilities. Use of the coating in food processing plants will be addressed in a separate letter.

If we can be of further assistance in this matter, please feel free to call upon us.

Sincerely yours,

Thomas C. Brown
Indirect Additives Branch, HFF-335
Division of Food and Color Additives
Center for Food Safety
and Applied Nutrition

CHEMICAL COATINGS &
ENGINEERING CO., INC.
EST 1952
221 BROOKE ST., MEDIA, PENNSYLVANIA 19063
COATINGS
SEALANTS
ADHESIVES
(215) 566-7470

April 4,1989

Mr. Gregory Reimer
EPA
179 Altona & Welgust
St. Thomas, U.S. Virgin Islands

Dear Mr. Reimer,

To confirm our conversation today regarding our AF-103 neoprene and AF-107 Hypalon roof coatings. Neither of these products contain lead compounds. Hypalon coatings often contain lead curing agents, however our AF-107NL is especially formulated using epoxy as a replacement for lead.

When we first considered marketing our products in the Carribean we contacted the FDA regarding standards for roof coatings that are used in areas where water is collected from the roof. We were informed that there were no standards, but it would be prudent to use raw materials that are acceptable for use in potable water applications. Our AF-107NL was formulated with this in mind.

If there are standards regarding roof coatings in the Virgin Islands I would be most interested in receiving any information pertaining to them. In the meantime I am sending under seperate cover current Material Safety Data Sheets on these products. If you have any questions please feel free to call me at (215) 566-7470.

Sincerely,

Scott Bennung

Scott Bennung

cc. Craig Kirchoff- SEACHEST

PRODUCT NEWS

BULLETIN NUMBER

DESCRIPTION: The Neoprene component of the fluid applied roofing system. The AF-103 is suitable for sloped and well drained roofs. For ponded water use AF-133.

COLORS: Black, light and dark Grey (other colors available on special order).

PHYSICAL PROPERTIES: (cured film)

Tensile	1600 psi (min.)
Elongation at 75°F.	400% (min.)
at 20°F.	300% (min.)
at 0°F.	150% (min.)
Permanent set at break	50% (Max.)
Water absorption	3% by wt. (Max.)
Adhesion	20 lbs./lineal inch (min.)
Erosion rate per year.	0.5 mil. 45°F South, Florida
Percent solids	40% +or-1% by wt. 29% by volume
Temperature limitations	-40°F 185°F (250 F intermittent)

COVERAGE: 465 ft.^{2} per gallon per mil (two coats required) 1½ gal/100ft.^{2}/

DRYING TIME: 2-4 hours between coats

APPLICATION: Long nap roller, brush, or spray (special techniques have been developed for spray)

MATERIAL REQUIREMENTS: The usual minimum thickness for fluid applied neoprene roofing is 15 mils of neoprene top coated with 5 mils of Hypalon. Three gallons of AF-103 applied per 100 ft^2 will give a 15 mil membrane. Where surface is rough or porous, additional material will be required.

PRECAUTIONS: AF-103 is a solvent system. Do not use near open flame, pilot, welding, smoking, or other sources of ignition. Flammable liquids.

STORAGE STABILITY: One year minimum

USES AND MODIFICATIONS: AF-103 is a basic Neoprene formulation containing curing agents, antioxidants, and fillers. It also incorporates resin to give optimum adhesion. AF-103 is used in a variety of applications such as waterproofing, non-slip flooring, adhesives and corrosion control coatings. The cured coating is rubber-like and resists shock and vibration.

manufactured by CHEMICAL COATINGS and ENGINEERING CO., INC.
221 BROOKE STREET • MEDIA, PENNSYLVANIA 19063 • 215 566-7470

TOPCOAT

22 July 1996

Mr. Harry H. Smith, Ph. D.
University of the Virgin Islands
Water Resources Research Institute
#2 John Brewers Bay
St. Thomas, U.S. Virgin Islands 00802-9990

Dear Dr. Smith,

We would be happy to assist your group in developing regulations requirements for the use of coatings used on rainwater catchment systems. Although there is no current regulation regarding the use of these materials in the U.S. Virgin Islands, it is obvious that a need exists.

Initially, we looked to the government of Bermuda for assistance in ensuring that our product would not pose a risk to human health. Rainfall is a large source of drinking water for the Island of Bermuda, and a testing program for coatings is in place. I have enclosed a copy of a testing program that was performed by Clayton Environmental Consultants of the United Kingdom on our TOPCOAT W.O.B. This report includes a comprehensive extraction of metals, and a test for cytotoxic response in monkey kidney cells. I have also included a copy of our approval for use on water catchment surfaces by the Bermuda Board of Health.

Although the United States Food and Drug Administration does not officially regulate the use of coatings for this purpose, we submitted our formulation for their study. The United States F.D.A. examined the individual components of our formulation and determined that all ingredients were suitable for water catchment surfaces. A letter is enclosed.

Our standard material safety data sheets will be sent with this package as you requested.

We share in your concern for the health of the people of the U.S. Virgin Islands, and will be pleased to assist you in any way possible.

Very truly yours,

Michael DeSouto
Technical Director

Enclosures

/sb

cc: R. Clark • TOPCOAT

SUPPORTING DOCUMENTS

II. STORAGE COATINGS

Tuff Tanks

TYPE OF MATERIAL USED IN PRODUCTS

Virgin polyethylene is used in all products. Polyethylene is lightweight, durable, food safe (F.D.A. approved), easy to clean and very resistant to almost all chemicals making it ideal for storing various foods and corrosive chemicals safely. Chemical Tanks are produced in natural (clear) colour as well as black depending on the application. It is recommended that chemical tanks be made heavier than usual tanks to ensure safety where dangerous chemicals are used

All products can be made in Light, Medium and Heavy Duty. This means that the wall thickness can then be altered to fit the needs of the consumer. Most of the products are available in assorted colours.

Designed & printed by
Progressive Media Print Rd.

NSF International (NSF)
OFFICIAL LISTING

This is a Certification by NSF that these products conform to the requirements of NSF Standard 61 - Drinking Water System Components - Health Effects

This is your Official Listing as we have it on record at this time.

December 5, 1992 CC: 07 03

VANDEX INTERNATIONAL LTD.
SCHEIBENSTRASSE 3
P.O. BOX 1369
CH-8601 USTER,
SWITZERLAND

Plant At: HAMBURG, GERMANY

JOINING & SEALING MATERIALS

Trade Designation	Size	Water Contact Temp	Water Contact Material	Monitor Code
Patch Repair				
Vandex Plug		CLD 23	CMNT	C

* Patch size not to exceed 5% of total surface area of tanks with volume of 27,000 gal/or greater.

Not To Appear In Printed Listing
C = All products with this code are covered by the annual testing of Vandex Plug.

PROTECTIVE (BARRIER) MATERIALS

Trade Designation	Water Storage Tank Size	Water Contact Temp	Water Contact Material	Monitor Code
Potable Water Tank Coatings				
Vandex Quickbinder+	*	CLD 23	CMNT	A
Vandex Super	>27000 gal	CLD 23	CMNT	B
Vandex Mortar	*	CLD 23	CMNT	B

* Patch size not to exceed 5% of total surface area in tanks with volumes of 27,000 gal and greater.
+ Certified for use with Vandex Super with a ratio of 1 part Vandex Quickbinder to a minimum of 3 parts Vandex Super.

Not To Appear In Printed Listing
A = All products with this code are covered by the annual testing of Vandex Quickbinder.
B = All products with this code are covered by the annual testing of Vandex Super.

Continued on page 2

Additions Cannot Be Made To This Listing Without Prior Evaluation And Acceptance By NSF

48510

Plant At: LANDSDOWNE, PA

PROTECTIVE (BARRIER) MATERIALS

Trade Designation	Water Storage Tank Size	Water Contact Temp	Water Contact Material	Monitor Code
Potable Water Tank Coatings				
Vandex Super	>27,000 gal.	CLD 23	CMNT	A
Vandex Mortar	*	CLD 23	CMNT	A

* Patch size not to exceed 5% of total surface area in tanks with volumes of 27,000 gal. and greater.

Not To Appear In Printed Listing
A = All products with this code are covered by the annual testing of Vandex Super (Pre-blend Plant).