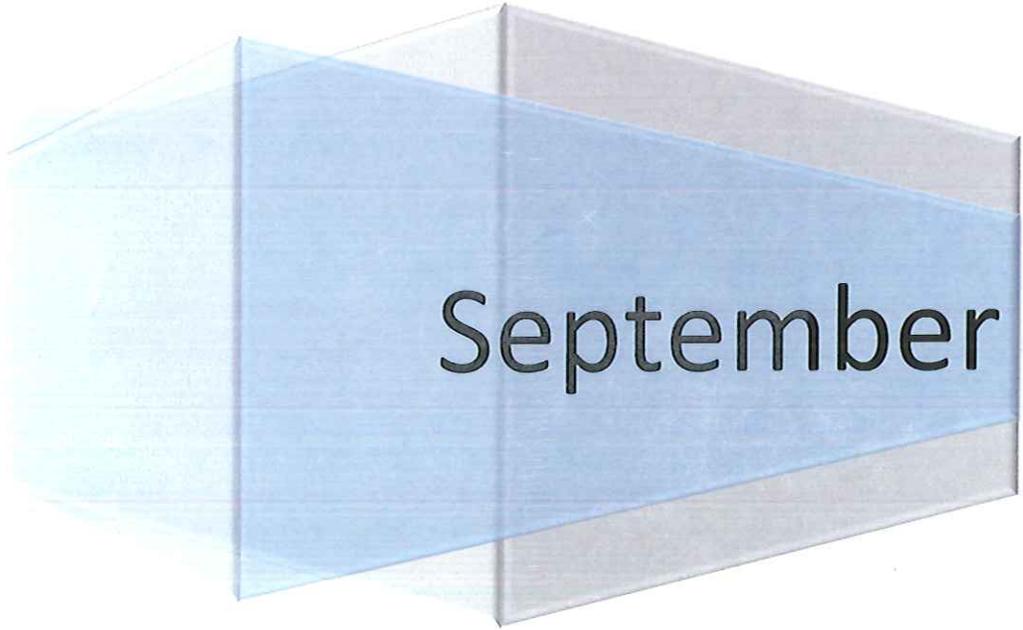


Marine Fluid Systems, Inc.

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DEPARTMENT OF ECOLOGY

**NPDES Permit
#WA0032174
Renewal Application**



September

22

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Introduction

Marine Fluid Systems, Inc. is a family owned and operated boat repair facility founded in 1990. We are located between Fremont and Ballard on the Lake Washington ship canal. Our physical address is: 801 NW 42nd St., Seattle, WA 98107. We provide services and repairs to all types of commercial & private vessels ranging from 58' to 130'. We have ranged from 7 to 12 production employees over the past few years and plan on continuing this level of employment for the foreseeable future.

Form 1 NPDES		U.S. Environmental Protection Agency Application for NPDES Permit to Discharge Wastewater GENERAL INFORMATION
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SECTION 1. ACTIVITIES REQUIRING AN NPDES PERMIT (40 CFR 122.21(f) and (f)(1))

Activities Requiring an NPDES Permit	1.1	Applicants Not Required to Submit Form 1		
	1.1.1	Is the facility a new or existing publicly owned treatment works? If yes, STOP. Do NOT complete Form 1. Complete Form 2A.	1.1.2	
		<input checked="" type="checkbox"/> No	Is the facility a new or existing treatment works treating domestic sewage? If yes, STOP. Do NOT complete Form 1. Complete Form 2S.	<input checked="" type="checkbox"/> No
	1.2	Applicants Required to Submit Form 1		
	1.2.1	Is the facility a concentrated animal feeding operation or a concentrated aquatic animal production facility? <input type="checkbox"/> Yes → Complete Form 1 and Form 2B.	1.2.2	Is the facility an existing manufacturing, commercial, mining, or silvicultural facility that is currently discharging process wastewater? <input type="checkbox"/> Yes → Complete Form 1 and Form 2C.
		<input checked="" type="checkbox"/> No	1.2.4	Is the facility a new or existing manufacturing, commercial, mining, or silvicultural facility that discharges only nonprocess wastewater? <input type="checkbox"/> Yes → Complete Form 1 and Form 2E.
1.2.3	Is the facility a new manufacturing, commercial, mining, or silvicultural facility that has not yet commenced to discharge? <input type="checkbox"/> Yes → Complete Form 1 and Form 2D.			
	<input checked="" type="checkbox"/> No	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="font-size: 1.2em; margin: 0;">RECEIVED</p> <p style="font-size: 1.2em; margin: 0;">SEP 22 2022</p> <p style="font-size: 1.2em; margin: 0;">DEPARTMENT OF ECOLOGY</p> </div>		
1.2.5	Is the facility a new or existing facility whose discharge is composed entirely of stormwater associated with industrial activity or whose discharge is composed of both stormwater and non-stormwater? <input checked="" type="checkbox"/> Yes → Complete Form 1 and Form 2F unless exempted by 40 CFR 122.26(b)(14)(x) or (b)(15).			

SECTION 2. NAME, MAILING ADDRESS, AND LOCATION (40 CFR 122.21(f)(2))

Name, Mailing Address, and Location	2.1	Facility Name		
		Marine Fluid Systems, Inc.		
	2.2	EPA Identification Number		
		110005364257		
	2.3	Facility Contact		
		Name (first and last) Gregory Bostwick	Title General Manager	Phone number (206) 706-0858
		Email address greg@marinefluid.com		
2.4	Facility Mailing Address			
	Street or P.O. box 801 NW 42nd St. Ste. 202			
	City or town Seattle	State Washington	ZIP code 98107	

Name, Mailing Address, and Location Continued	2.5	Facility Location		
	Street, route number, or other specific identifier 801 NW 42nd St. Ste. 202			
	County name King	County code (if known) 033		
	City or town Seattle	State Washington	ZIP code 98107	

SECTION 3. SIC AND NAICS CODES (40 CFR 122.21(f)(3))

SIC and NAICS Codes	3.1	SIC Code(s)	Description (optional)
		3730	Ship & Boat Building & Repairing
	3.2	NAICS Code(s)	Description (optional)
		336611	Ship Building & Repairing

SECTION 4. OPERATOR INFORMATION (40 CFR 122.21(f)(4))

Operator Information	4.1	Name of Operator		
		Marine Fluid Systems, Inc.		
	4.2	Is the name you listed in Item 4.1 also the owner? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	4.3	Operator Status <input type="checkbox"/> Public—federal <input type="checkbox"/> Public—state <input type="checkbox"/> Other public (specify) _____ <input checked="" type="checkbox"/> Private <input type="checkbox"/> Other (specify) _____		
	4.4	Phone Number of Operator		
		(206) 706-0858		
Operator Information Continued	4.5	Operator Address		
	Street or P.O. Box 801 NW 42nd St. Ste. 202			
	City or town Seattle	State Washington	ZIP code 98107	
	Email address of operator greg@marinefluid.com			

SECTION 5. INDIAN LAND (40 CFR 122.21(f)(5))

Indian Land	5.1	Is the facility located on Indian Land? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
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EPA Identification Number 110005364257	NPDES Permit Number WA0032174	Facility Name Marine Fluid Systems, Inc.
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Form Approved 03/05/19
OMB No. 2040-0004

SECTION 6. EXISTING ENVIRONMENTAL PERMITS (40 CFR 122.21(f)(6))

Existing Environmental Permits	6.1	Existing Environmental Permits (check all that apply and print or type the corresponding permit number for each)		
	<input checked="" type="checkbox"/>	NPDES (discharges to surface water) WA0032174	<input type="checkbox"/> RCRA (hazardous wastes)	<input type="checkbox"/> UIC (underground injection of fluids)
	<input type="checkbox"/>	PSD (air emissions)	<input type="checkbox"/> Nonattainment program (CAA)	<input type="checkbox"/> NESHAPs (CAA)
	<input type="checkbox"/>	Ocean dumping (MPRSA)	<input type="checkbox"/> Dredge or fill (CWA Section 404)	<input type="checkbox"/> Other (specify)

SECTION 7. MAP (40 CFR 122.21(f)(7))

Map	7.1	Have you attached a topographic map containing all required information to this application? (See instructions for specific requirements.)
		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> CAFO—Not Applicable (See requirements in Form 2B.)

SECTION 8. NATURE OF BUSINESS (40 CFR 122.21(f)(8))

Nature of Business	8.1	Describe the nature of your business. Shipyard: Haul-out, repair & maintenance of all types of marine vessels up to 600 tons gross weight.

SECTION 9. COOLING WATER INTAKE STRUCTURES (40 CFR 122.21(f)(9))

Cooling Water Intake Structures	9.1	Does your facility use cooling water? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 10.1.
	9.2	Identify the source of cooling water. (Note that facilities that use a cooling water intake structure as described at 40 CFR 125, Subparts I and J may have additional application requirements at 40 CFR 122.21(r). Consult with your NPDES permitting authority to determine what specific information needs to be submitted and when.)

SECTION 10. VARIANCE REQUESTS (40 CFR 122.21(f)(10))

Variance Requests	10.1	Do you intend to request or renew one or more of the variances authorized at 40 CFR 122.21(m)? (Check all that apply. Consult with your NPDES permitting authority to determine what information needs to be submitted and when.)
	<input type="checkbox"/>	Fundamentally different factors (CWA Section 301(n))
	<input type="checkbox"/>	Non-conventional pollutants (CWA Section 301(c) and (g))
	<input checked="" type="checkbox"/>	Not applicable
	<input type="checkbox"/>	Water quality related effluent limitations (CWA Section 302(b)(2))
	<input type="checkbox"/>	Thermal discharges (CWA Section 316(a))

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SECTION 11. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

11.1 In Column 1 below, mark the sections of Form 1 that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert the permitting authority. Note that not all applicants are required to provide attachments.

Column 1	Column 2
<input checked="" type="checkbox"/> Section 1: Activities Requiring an NPDES Permit	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 2: Name, Mailing Address, and Location	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 3: SIC Codes	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 4: Operator Information	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 5: Indian Land	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 6: Existing Environmental Permits	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 7: Map	<input checked="" type="checkbox"/> w/ topographic map <input type="checkbox"/> w/ additional attachments
<input checked="" type="checkbox"/> Section 8: Nature of Business	<input type="checkbox"/> w/ attachments
<input type="checkbox"/> Section 9: Cooling Water Intake Structures	<input type="checkbox"/> w/ attachments
<input type="checkbox"/> Section 10: Variance Requests	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 11: Checklist and Certification Statement	<input type="checkbox"/> w/ attachments

11.2 **Certification Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name)
Gregory Bostwick

Official title
General Manager

Signature



Date signed

9/19/2022

EPA Identification Number
110005364257

NPDES Permit Number
WA0032174

Facility Name
Marine Fluid Systems, Inc.

Form Approved 03/05/19
OMB No. 2040-0004

Form
2F
NPDES



U.S Environmental Protection Agency
Application for NPDES Permit to Discharge Wastewater

STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

SECTION 1. OUTFALL LOCATION (40 CFR 122.21(g)(1))

Outfall Location

1.1	Provide information on each of the facility's outfalls in the table below							
	Outfall Number	Receiving Water Name	Latitude			Longitude		
	1	Lake Washington Ship Canal	47°	39'	26"	122°	22'	03"
			°	'	"	°	'	"
			°	'	"	°	'	"
			°	'	"	°	'	"
			°	'	"	°	'	"
			°	'	"	°	'	"

SECTION 2. IMPROVEMENTS (40 CFR 122.21(g)(6))

Improvements

2.1	Are you presently required by any federal, state, or local authority to meet an implementation schedule for constructing, upgrading, or operating wastewater treatment equipment or practices or any other environmental programs that could affect the discharges described in this application?					
	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No → SKIP to Section 3.			
	2.2	Briefly identify each applicable project in the table below.				
		Brief Identification and Description of Project	Affected Outfalls (list outfall numbers)	Source(s) of Discharge	Final Compliance Dates	
					Required	Projected
2.3	Have you attached sheets describing any additional water pollution control programs (or other environmental projects that may affect your discharges) that you now have underway or planned? (Optional Item)					
<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No				

SECTION 3. SITE DRAINAGE MAP (40 CFR 122.26(c)(1)(i)(A))

Site Drainage Map	3.1	Have you attached a site drainage map containing all required information to this application? (See instructions for specific guidance.)
		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

SECTION 4. POLLUTANT SOURCES (40 CFR 122.26(c)(1)(i)(B))

Pollutant Sources	4.1	Provide information on the facility's pollutant sources in the table below.		
	N/A	Outfall Number	Impervious Surface Area (within a mile radius of the facility)	Total Surface Area Drained (within a mile radius of the facility)
			<i>specify units</i>	<i>specify units</i>
			<i>specify units</i>	<i>specify units</i>
			<i>specify units</i>	<i>specify units</i>
			<i>specify units</i>	<i>specify units</i>
			<i>specify units</i>	<i>specify units</i>
			<i>specify units</i>	<i>specify units</i>
	4.2	Provide a narrative description of the facility's significant material in the space below. (See instructions for content requirements.)		
		Please see attached narrative, Exhibit "A."		
4.3	Provide the location and a description of existing structural and non-structural control measures to reduce pollutants in stormwater runoff. (See instructions for specific guidance.)			
	Stormwater Treatment			
	Outfall Number	Control Measures and Treatment	Codes from Exhibit 2F-1 (list)	
		<i>see exhibit</i>		

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SECTION 5. NON STORMWATER DISCHARGES (40 CFR 122.26(c)(1)(i)(C))

Non-Stormwater Discharges

5.1 I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-stormwater discharges. Moreover, I certify that the outfalls identified as having non-stormwater discharges are described in either an accompanying NPDES Form 2C, 2D, or 2E application.

Name (print or type first and last name)	Official title
Gregory Bostwick	General Manager
Signature <i>Gregory Bostwick</i>	Date signed 9/19/2022

5.2 Provide the testing information requested in the table below.

Outfall Number	Description of Testing Method Used	Date(s) of Testing	Onsite Drainage Points Directly Observed During Test
N/A			

SECTION 6. SIGNIFICANT LEAKS OR SPILLS (40 CFR 122.26(c)(1)(i)(D))

Significant Leaks or Spills	6.1 Describe any significant leaks or spills of toxic or hazardous pollutants in the last three years. None.
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SECTION 7. DISCHARGE INFORMATION (40 CFR 122.26(c)(1)(i)(E))

Discharge Information	See the instructions to determine the pollutants and parameters you are required to monitor and, in turn, the tables you must complete. Not all applicants need to complete each table.	
	7.1 Is this a new source or new discharge?	<input type="checkbox"/> Yes → See instructions regarding submission of <i>estimated data.</i> <input checked="" type="checkbox"/> No → See instructions regarding submission of <i>actual data.</i>
	7.2 Have you completed Table A for each outfall?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>we have no discharge.</i>

Discharge Information Continued

7.3	Is the facility subject to an effluent limitation guideline (ELG) or effluent limitations in an NPDES permit for its process wastewater? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.5.
7.4	Have you completed Table B by providing quantitative data for those pollutants that are (1) limited either directly or indirectly in an ELG and/or (2) subject to effluent limitations in an NPDES permit for the facility's process wastewater? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.5	Do you know or have reason to believe any pollutants in Exhibit 2F-2 are present in the discharge? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.7. (no discharge)
7.6	Have you listed all pollutants in Exhibit 2F-2 that you know or have reason to believe are present in the discharge and provided quantitative data or an explanation for those pollutants in Table C? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.7	Do you qualify for a small business exemption under the criteria specified in the Instructions? <input type="checkbox"/> Yes → SKIP to Item 7.18. <input checked="" type="checkbox"/> No (no discharge)
7.8	Do you know or have reason to believe any pollutants in Exhibit 2F-3 are present in the discharge? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.10. (no discharge.)
7.9	Have you listed all pollutants in Exhibit 2F-3 that you know or have reason to believe are present in the discharge in Table C? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.10	Do you expect any of the pollutants in Exhibit 2F-3 to be discharged in concentrations of 10 ppb or greater? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.12. (no discharge)
7.11	Have you provided quantitative data in Table C for those pollutants in Exhibit 2F-3 that you expect to be discharged in concentrations of 10 ppb or greater? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.12	Do you expect acrolein, acrylonitrile, 2,4-dinitrophenol, or 2-methyl-4,6-dinitrophenol to be discharged in concentrations of 100 ppb or greater? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.14. (no discharge)
7.13	Have you provided quantitative data in Table C for the pollutants identified in Item 7.12 that you expect to be discharged in concentrations of 100 ppb or greater? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.14	Have you provided quantitative data or an explanation in Table C for pollutants you expect to be present in the discharge at concentrations less than 10 ppb (or less than 100 ppb for the pollutants identified in Item 7.12)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (no discharge)
7.15	Do you know or have reason to believe any pollutants in Exhibit 2F-4 are present in the discharge? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Item 7.17. (no discharge)
7.16	Have you listed pollutants in Exhibit 2F-4 that you know or believe to be present in the discharge and provided an explanation in Table C? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.17	Have you provided information for the storm event(s) sampled in Table D? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (no discharge)

Discharge Information Continued	Used or Manufactured Toxics		
	7.18	Is any pollutant listed on Exhibits 2F-2 through 2F-4 a substance or a component of a substance used or manufactured as an intermediate or final product or byproduct?	
		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Section 8. <i>(no discharge)</i>	
	7.19	List the pollutants below, including TCDD if applicable.	
	1.	4.	7.
	2.	5.	8.
	3.	6.	9.

SECTION 8. BIOLOGICAL TOXICITY TESTING DATA (40 CFR 122.21(g)(11))

Biological Toxicity Testing Data	8.1	Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last three years?		
		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Section 9. <i>(no discharge)</i>		
	8.2	Identify the tests and their purposes below.		
		Test(s)	Purpose of Test(s)	Submitted to NPDES Permitting Authority?
				<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	

SECTION 9. CONTRACT ANALYSIS INFORMATION (40 CFR 122.21(g)(12))

Contract Analysis Information	9.1	Were any of the analyses reported in Section 7 (on Tables A through C) performed by a contract laboratory or consulting firm?		
		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → SKIP to Section 10. <i>(no discharge.)</i>		
	9.2	Provide information for each contract laboratory or consulting firm below.		
			Laboratory Number 1	Laboratory Number 2
		Name of laboratory/firm		
		Laboratory address		
		Phone number		
	Pollutant(s) analyzed			

SECTION 10. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

10.1 In Column 1 below, mark the sections of Form 2F that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert the permitting authority. Note that not all applicants are required to complete all sections or provide attachments.

Column 1	Column 2
<input checked="" type="checkbox"/> Section 1	<input type="checkbox"/> w/ attachments (e.g., responses for additional outfalls)
<input type="checkbox"/> Section 2	<input type="checkbox"/> w/ attachments
<input checked="" type="checkbox"/> Section 3	<input type="checkbox"/> w/ site drainage map
<input checked="" type="checkbox"/> Section 4	<input checked="" type="checkbox"/> w/ attachments
<input type="checkbox"/> Section 5	<input type="checkbox"/> w/ attachments
<input type="checkbox"/> Section 6	<input type="checkbox"/> w/ attachments
<input type="checkbox"/> Section 7	<input type="checkbox"/> Table A <input type="checkbox"/> w/ small business exemption request <input type="checkbox"/> Table B <input type="checkbox"/> w/ analytical results as an attachment <input type="checkbox"/> Table C <input type="checkbox"/> Table D
<input type="checkbox"/> Section 8	<input type="checkbox"/> w/attachments
<input type="checkbox"/> Section 9	<input type="checkbox"/> w/attachments (e.g., responses for additional contact laboratories or firms)
<input type="checkbox"/> Section 10	<input type="checkbox"/>

10.2 **Certification Statement**
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name) Gregory Bostwick	Official title General Manager
Signature 	Date signed 9/19/2022

NDPES PERMIT APPLICATION QUESTIONNAIRE

SUPPLEMENTING FORM 2C

For Shipbuilding and Repair Facilities

I. GENERAL INFORMATION

- A. Name of Facility: Marine Fluid Systems, Inc.
- B. Address: 801 NW 42nd St. Ste. 202
- C. City: Seattle State: Washington Zip Code: 98107
- D. Phone No.: 206.706.0858
- E. Water Way: Lake Washington Ship Canal

II. SERVICES PROVIDED IN A TYPICAL YEAR

- A. Do you predominately provide new construction? Yes No
And/or repair? Yes No
- B. What types of vessels, i.e. tugs, fishing vessels, barges, factory ships, etc., do you provide services to?
Fishing-80%; Tugs-2%; Barges-8%; Cruise Boats-10%
- C. What hull materials do you work on?
 - Wood
 - Steel
 - Aluminum
 - Fiberglass
 - Other
- D. Estimate total number of vessels worked on in a typical year? 24
- E. Does the facility have:
 - 1. Drydock Yes No
 - 2. Graving dock Yes No
 - 3. Marineway Yes No
 - 4. Lift Yes No
 - 5. Travel haul Yes No
 - 6. Crane Yes No

III. YARD CAPACITY

- A. Capacity of the drydock, marine way, crane, etc., which remove vessels from the water for access to hull?
Code:
Tonnage: 600
Overall Length: 125'
Wingwall Length: N/A
Width: 36'
Wingwall Height: N/A
- B. Describe the location and construction of the drydock, marine way, crane, etc.
(In addition to a narrative, please attach a site plan of the shipbuilding and repair facility.)
Typical railway construction, steel rails on wood piles. Steel trolley

IV. HYDROBLASTING, SANDBLASTING PRACTICES

- A. Of the hulls your yard worked on in the last year, what percentage:
 - 1. Needed the complete hull sandblasted and repainted? 5%

2. Needed half the hull sandblasted and repainted: 10%
 3. Needed less than ¼ of the hull sandblasted and repainted? 70%
 4. What percentage of the hulls only needed a high pressure wash (hydroblasting)? 10%
 5. What percentage of the hulls only needed a low pressure wash? 5%
 6. How much of the paint removal consists of sanding and scraping? 15%
- B. For the sandblasting done in a typical year (the last year if that answer is easier to obtain), how many tons of abrasive material are used? 126
- C. If possible, estimate the percentage of sandblast grit used on drydocks:
1. In ship holds: 30%
 2. On ship superstructures: 50%
- D. Estimate the percent of grit used in a sandblast shed? 20%
- E. How do you store spent sandblast grit? Shrink wrapped in large bags.
- F. How, how often, and where is the spent sandblast grit disposed of? When new sand is delivered, the same truck removes spent sand.
- G. Where do you do hydroblasting (high pressure washing of hulls)? On railway.
- H. How far is the hydroblasting area from the nearest waterbody? 30'
- I. How and where do you discharge your hydroblasting water? King county combined sewer.
- J. Do you use an acid solution when hydroblasting? Yes No
If so, which product?
- K. Do you pretreat, i.e., filter, settle, centrifuge, etc., the hydroblasting wash water? Yes No
If so, how? Water is treated before discharge to city sewer. See attached water treatment diagram.

V. PAINTING PRACTICES

- A. What anticorrosive paints are commonly used at your yard? (You may attach manufacturer's data sheets.)
Attached.
- B. What antifouling paints are commonly used at your yard? (You may attach manufacturer's data sheets.)
Attached.
- C. Describe the location and construction of the paint storage building or area.
Paint storage locker is at head of railway. Wood construction.
- D. Describe the location and construction of the painting booth. Is the floor paved? Are there drains in the painting booth? If yes, where do they drain to?
No booth.
- E. Where is paint mixed?
Concrete slab along railway.
- F. Do you use drip pans or visquine to contain paint spills?
Yes.
- G. Do you or vessel owners/operators do touch-up painting or detail painting on vessels from floats?
 Yes No

- H. Do you have a still for recycling paint thinners?
 Yes No
- I. What are your procedures for minimizing waste paint disposal?
Mixing the min. amounts of what we will use.
- J. What waste disposal company disposes of your still bottoms and waste paint?
DSC Environmental Services.
- K. How often do you dispose of waste paint and still bottoms?
Once or twice a year.
- L. Where and how is waste paint stored prior to disposal?
In sealed drum in paintshed.

VI. ENGINE AND EQUIPMENT REPAIR SERVICES

- A. What is the estimated number of engine repairs made annually?
None.
- B. Describe the facility for storage of waste oil?
55 gallon drum in shop.
- C. How often is stored waste oil disposed of?
As accumulated.
- D. Is it recycled and if so, by whom? Yes No
- E. Do you drain engine filters before disposing of the filter?
 Yes No *N/A*
- F. Do you have steam cleaning facilities at your yard?
 Yes No *N/A*
- G. Do you use dip tanks for cleaning machine parts?
 Yes No *N/A*
 - 1. What type of degreasers do you use? *N/A*
 - 2. What type of recycle/disposal service to you use for solvents and degreasers? *N/A*
- H. How do you store and dispose of used hydraulic fluids? *N/A*
- I. How do you store and dispose of used antifreeze and coolants? Removed from vessels by independent contractor.
- J. What type of storage do you have for batteries? None.
- K. How often do you dispose of used batteries? Exchanged for core when we buy new.

VII. WASTE DISPOSAL SERVICES

- A. Do the services provided by your yard include?
 - 1. Pumping bilge water? Yes No
 - 2. If so, how frequently? *N/A*
 - 3. Pumping ballast water? Yes No
 - 4. If so, how frequently? *N/A*
 - 5. If so, how is bilge water or ballast water disposed of? *N/A*
 - 6. What facilities do you have for receiving sanitary wastes and gray water from docked vessels?
None

VIII. OTHER WASTE DISPOSAL OR RECYCLING

- A. Who, how, and where, if you know, are the following solid wastes disposed of?
1. Sandblast grit Kleen Industrial Services: Trucked out in sealed bags.
 2. Scrap metal Recycled to scrap yard by truck and trailer.
 3. Glass Recycled: Waste Management.
- B. Who, how, and where, if you know, are fiberglass resin and solvents disposed of? N/A

IX. OTHER SERVICES

- A. Do you supply cooling water to moored or drydocked vessels? Yes No
- B. If so, how often? N/A

X. MANAGEMENT PRACTICES

- A. Do you have a maintenance plan for preventing accidental loss of oil, fuel, paint, etc., due to equipment failures? Yes No
- B. Does the plan specifically identify who is responsible for what tasks and how often? Yes No
- C. Does the maintenance plan include routine cleaning, sweeping, and vacuuming of docks, paved work areas, and catch basins? Yes No
- D. Please provide a copy with the return of the permit application. *Attached.*
- E. Do you provide guidance to arriving vessels on pollution prevention practices you expect them to comply with? Yes No
- F. If so, please provide a copy with the return of the permit application. *Attached.*
- G. Do you have an employee training program which includes pollution prevention practices and worker right-to-know information? Yes No
If you would like that training program included or considered as part of the permit "Best Management Practices," please provide a copy with the return of the permit application.
- H. Do you have in effect a Spill Prevention and Counter-Measure Plan? Yes No
- I. If so, please provide a copy. *Attached.*

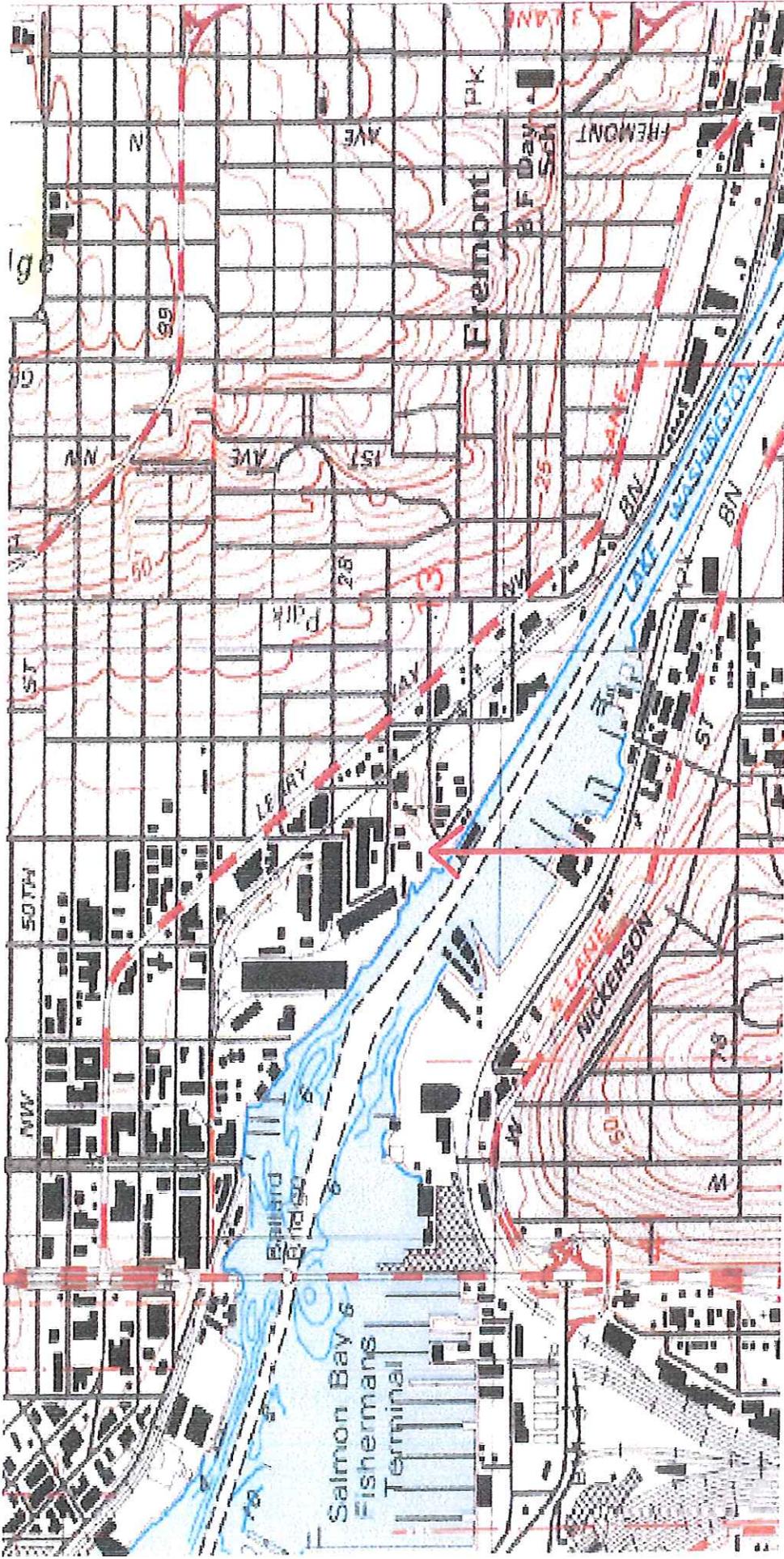
XI. SITE PLAN

Please provide a Site Plan locating storm drains, catch basins, oil and waste oil storage areas, paint storage area, paint booth, solvent still, work areas, etc. *Attached.*

Please provide a location map of the facility. It is sufficient to indicate the site location on a photocopy of a USGS quadrangle map. *Attached.*



Attachments



Marine Fluid Systems, Inc.
801 NW 42nd St. #202
Seattle, WA. 98107

Exhibit “A”

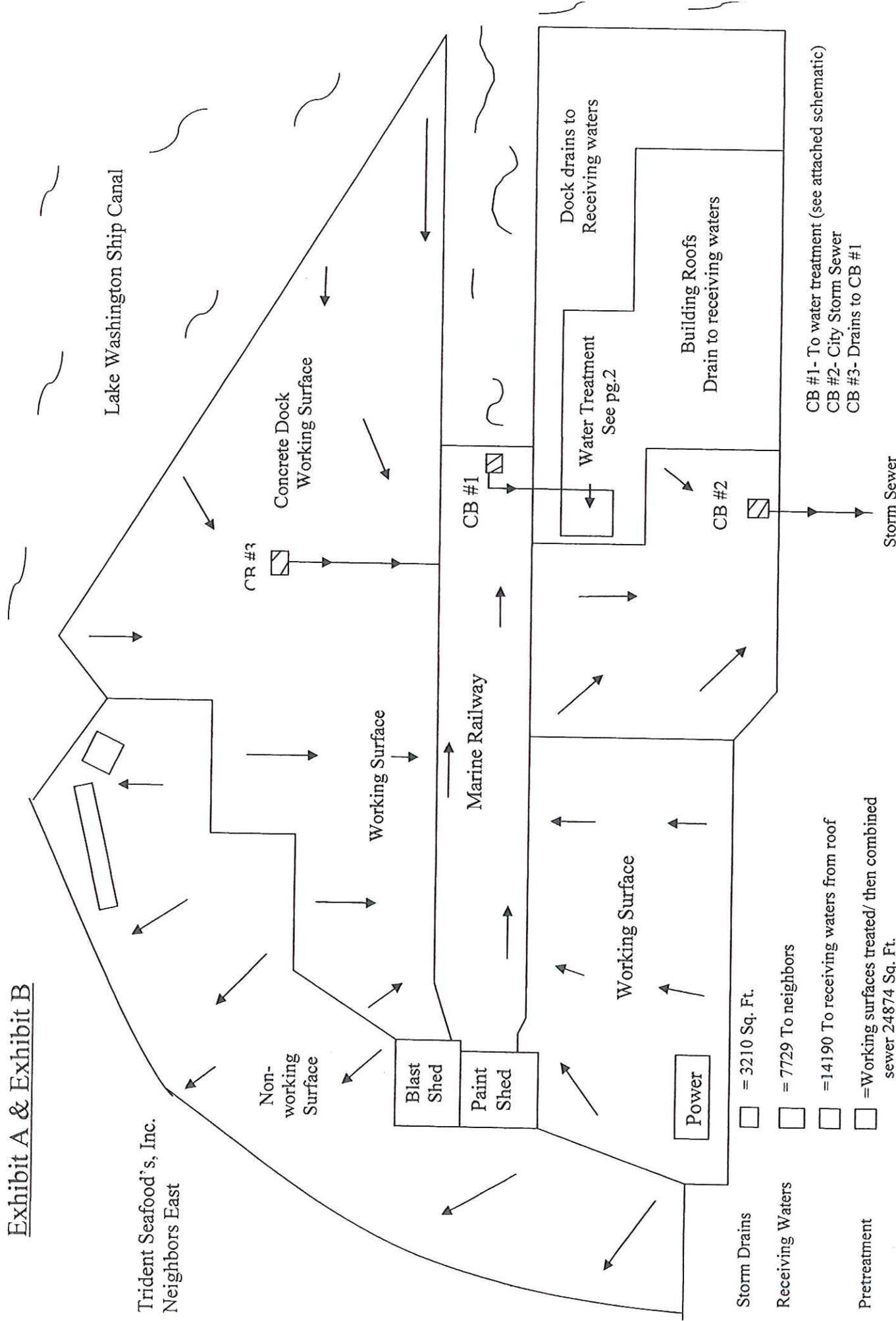
Narrative

Marine Fluid Systems, Inc. is a small boat yard which operates one marine railway. We haul boats under 130' in length and weighing less than 600 tons completely out of the water and onto dry land. We high pressure wash and blast the outer hull in preparation for paint. 100% of the water used in this process is captured, treated, and discharged to King County Metro under discharge permit # 518-06. Storm water from the boat yards' working surfaces is also captured, treated, and discharged to Metro.

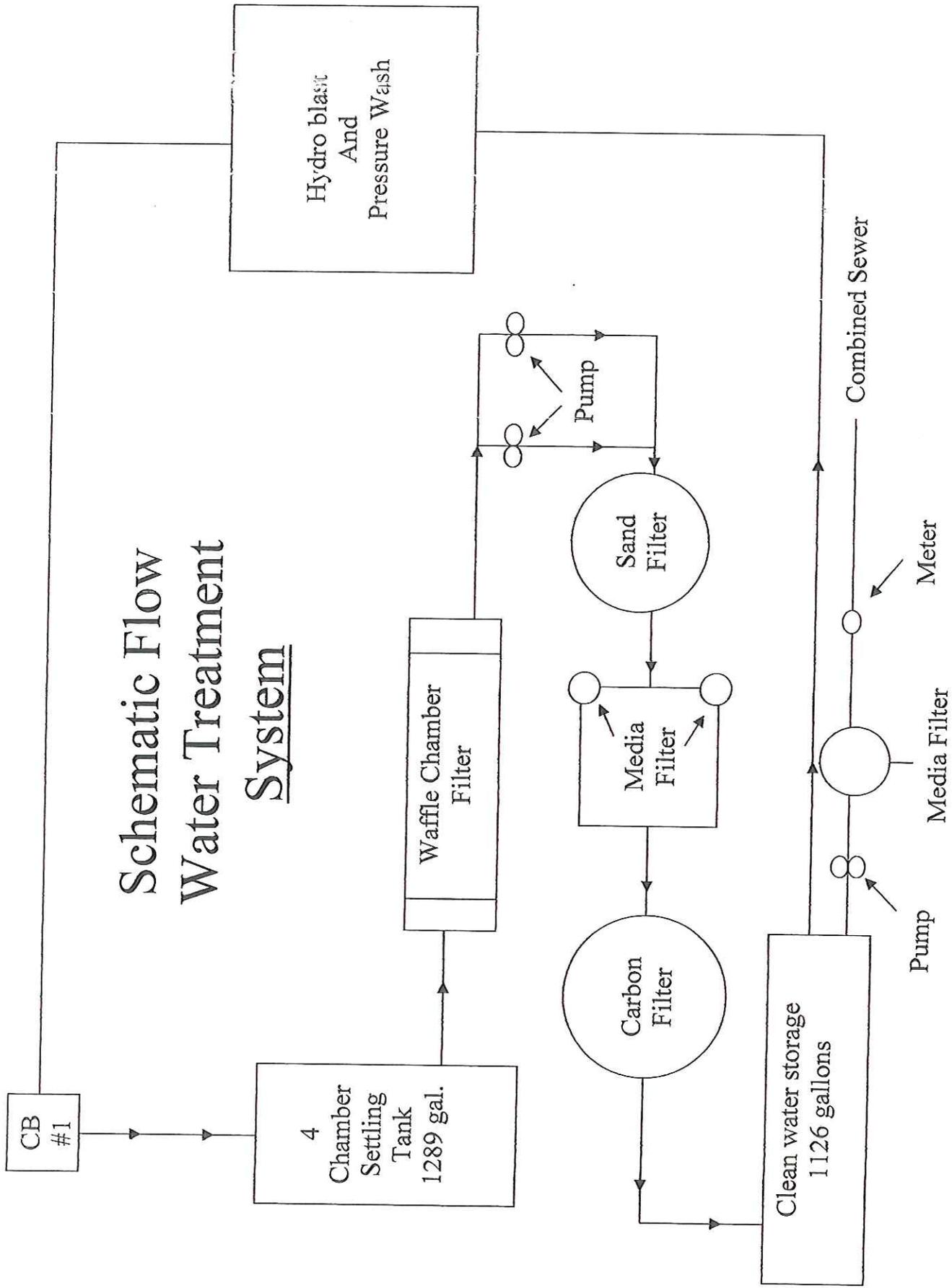
Our one railway trolley is lowered into the water in order to lift vessels out of the water onto our railway. The trolley is constructed of steel and has 88 wheels which roll on 2 tracks. The trolley is moved up and down the rails by use of an electric winch mounted at the head of the railway and a series of cables and pulleys. These pulleys and wheels are greased on a regular basis as part of routine maintenance.

The possibility exists that some of the grease could enter the water during the use of the railway. We have monitored and sampled the water surrounding the railway during and after launch events quarterly over the past 15 years in an attempt to detect any such grease releases. All test results have been negative, as reported to the Department of Ecology under current permit requirements.

Exhibit A & Exhibit B



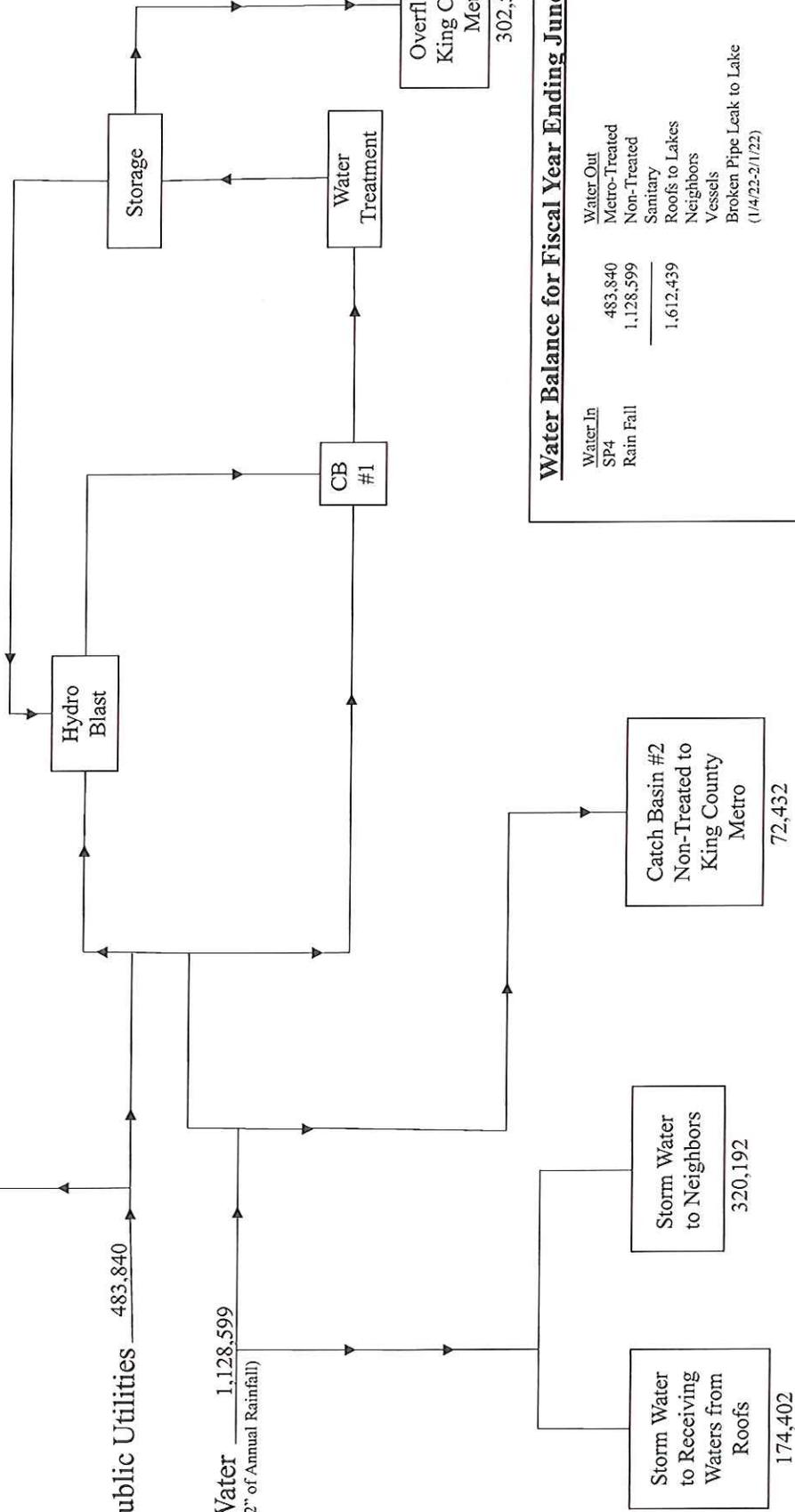
Schematic Flow Water Treatment System



Onto Vessels Heading to Alaska 594,020
Sanitary Use 36,595

City Public Utilities 483,840

Rain Water 1,128,599
(Assumes 36.2" of Annual Rainfall)



Water Balance for Fiscal Year Ending June 30th, 2022

Water In		
SP4	483,840	302,590
Rain Fall	1,128,599	72,432
	<u>1,612,439</u>	36,595
		174,402
		320,192
		594,020
		112,208
		<u>1,612,439</u>

Broken Pipe Leak to Lake
(1/4/22-2/1/22)

Epoxy

PRODUCT DESCRIPTION

A two component, abrasion resistant pure epoxy coating pigmented with aluminium to give excellent long term anti-corrosive protection.

Formulated on proprietary polymer technology, enabling rapid cure and overcoating even under low temperature conditions.

INTENDED USES

As an abrasion resistant coating that can reduce corrosion due to mechanical damage and provide barrier protection in aggressive environments.

Ideally suited for use as a universal primer on offshore platforms and floating production and storage facilities on areas such as underwater hull, topsides, external superstructure, decks, cargo tanks and ballast tanks.

Can be applied directly to mechanically prepared shop primer or suitably prepared bare steel.

PRACTICAL INFORMATION FOR INTERSHIELD 300

Colour	Bronze, Aluminium
Gloss Level	Not applicable
Volume Solids	60% ± 2%
Typical Thickness	100-200 microns (4-8 mils) dry equivalent to 167-333 microns (6.7-13.3 mils) wet
Theoretical Coverage	4 m ² /litre at 150 microns d.f.t and stated volume solids 160 sq.ft/US gallon at 6 mils d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Brush, Roller
Drying Time	

Temperature	Touch Dry	Hard Dry	Overcoating interval with self	
			Minimum	Maximum
-5°C (23°F)	7 hours	10 hours	14 hours ¹	14 days ²
5°C (41°F)	5 hours	8 hours	9 hours ¹	14 days ²
15°C (59°F)	4 hours	7 hours	8 hours ¹	14 days ²
25°C (77°F)	3 hours	6 hours	7 hours ¹	14 days ²
40°C (104°F)	1.5 hours	2.5 hours	3 hours ¹	10 days ²

¹ Values also apply where Intershield 300 is to be overcoated using Intergard 263 or 269 for immersion service.

² Values refer to immersion service; for atmospheric service, see Product Characteristics section.

See Page 3 for information on overcoating using Intersleek 737.

REGULATORY DATA

Flash Point (Typical)	Part A 28°C (82°F); Part B 26°C (79°F); Mixed 28°C (82°F)	
Product Weight	1.23 kg/l (10.3 lb/gal)	
VOC	3.22 lb/gal (386 g/lit)	EPA Method 24
	318 g/kg	EU Solvent Emissions Directive (Council Directive 1999/13/EC)
	329 g/lit	Chinese National Standard GB23985

See Product Characteristics section for further details

Epoxy

SURFACE PREPARATION

All surfaces to be coated should be clean, dry and free from contamination. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:2000. Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Abrasive Blast Cleaning

For immersion service, Intershield 300 must be applied to surfaces blast cleaned to Sa2½ (ISO 8501-1:2007) or SSPC-SP10. However, for atmospheric exposure Intershield 300 may be applied to surfaces prepared to a minimum of Sa2½ (ISO 8501-1:2007) or SSPC-SP6.

Surface defects revealed by the blast cleaning process should be ground, filled, or treated in the appropriate manner.

A surface profile of 50-75 microns (2-3 mils) is recommended.

Ultra High Pressure Hydroblasting / Abrasive Wet Blasting

May be applied to surfaces prepared to Sa2 (ISO 8501-1:2007) or SSPC SP6 which have flash rusted to no worse than Grade HB2M (refer to International Hydroblasting Standards) or Grade SB2M (refer to International Slurry Blasting Standards).

Shop Primed Steel

Areas of breakdown, damage, weld seams etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) or SSPC-SP10 or power tool cleaned to Pt3 (JSRA SPSS:1984) or SSPC-SP11). Intact, approved shop primers must be clean, dry and free from soluble salts and any other surface contaminants. Unapproved shop primers will require complete removal by blast cleaning to Sa2½ (ISO 8501-1:2007) or SSPC-SP10. In some cases sweep blasting to a defined International Paint standard (eg AS2 or AS3) may be acceptable.

APPLICATION

Mixing	Material is supplied in two containers as a unit. Always mix a complete unit in the proportions supplied. Once the unit has been mixed it must be used within the working pot life specified.				
	(1) Agitate Base (Part A) with a power agitator. (2) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.				
Mix Ratio	2.5 part(s) : 1.0 part(s) by volume				
Working Pot Life	-5°C (23°F) 6 hours	5°C (41°F) 6 hours	15°C (59°F) 4 hours	25°C (77°F) 2.5 hours	40°C (104°F) 45 minutes
Airless Spray	Recommended	Tip Range 0.48-0.68 mm (19-27 thou) Total output fluid pressure at spray tip not less than 211 kg/cm ² (3000 p.s.i.)			
Air Spray (Pressure Pot)	Not recommended				
Brush	Suitable - small areas only	Typically 50-75 microns (2.0-3.0 mils) can be achieved			
Roller	Suitable - small areas only	Typically 50-75 microns (2.0-3.0 mils) can be achieved			
Thinner	International GTA220	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.			
Cleaner	International GTA822 (or International GTA220)				
Work Stoppages	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA220. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units.				
Clean Up	Clean all equipment immediately after use with International GTA822. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.				

All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.

Epoxy

PRODUCT CHARACTERISTICS

Apply by airless spray only. Application by other methods, e.g. brush, roller, may require more than one coat and should only be used for small areas or touch-up work.

This product must only be thinned using recommended International thinners. The use of alternative thinners, particularly those containing ketones, can severely inhibit the curing mechanism of the coating.

Surface temperature must always be a minimum of 3°C (5°F) above dew point. When applying Intershield 300 in confined spaces ensure adequate ventilation.

In common with all epoxies Intershield 300 will chalk and discolour on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance. Where a durable cosmetic finish with good gloss and colour retention is required overcoat with recommended topcoats. Over-application of Intershield 300 will extend both the minimum overcoating periods and handling times, and may be detrimental to long term overcoating properties.

Intershield 300 should be high pressure water washed and/or solvent washed prior to overcoating, where necessary, to ensure removal of any surface contamination that has accumulated.

Intershield 300 may be applied at substrate temperatures between -5°C and -20°C in certain locations worldwide. However, consideration should be given when overcoating at low temperatures as the remainder of the system may require higher temperatures to achieve full cure.

Overcoating Intervals with Recommended Topcoats (Atmospheric Service Conditions)

Recommended Topcoat	-5°C (23°F)		5°C (41°F)		25°C (77°F)		40°C (104°F)	
	Min	Max	Min	Max	Min	Max	Min	Max
Interfine 979	NA	NA	8 hours	7 days	6 hours	7 days	2 hours	6 days
Intergard 263	14 hours	14 days	9 hours	14 days	7 hours	14 days	3 hours	14 days
Intergard 269	14 hours	6 months	9 hours	6 months	7 hours	6 months	3 hours	10 weeks
Intergard 740	14 hours	14 days	9 hours	14 days	7 hours	14 days	3 hours	14 days
Intershield 300	14 hours	6 months	9 hours	6 months	7 hours	6 months	4 hours	3 months
Interthane 990	14 hours	5 days	9 hours	5 days	7 hours	3 days	4 hours	36 hours

When Intershield 300 is to be overcoated with **Intersleek 737**, the following values must be observed:

Overcoating Intervals

-5°C (23°F)		5°C (41°F)		25°C (77°F)		40°C (104°F)	
Min	Max	Min	Max	Min	Max	Min	Max
NA	NA	7 hours	24 hours	5 hours	2 days	3 hours	2 days

Maximum Pot Life

0°C (32°F)	15°C (59°F)	25°C (77°F)	35°C (95°F)
160 minutes	105 minutes	75 minutes	45 minutes

This product has the following specification approvals:

- B1 Classification of Ballast Tank Coatings (DNV/Marintek tested)
- Ballast Tank type approval (Germanischer Lloyd)
- Recognised Corrosion Control Coating (Lloyd's Register)
- Norsok M-501 System 3B

Note: VOC values are typical and are provided for guidance purpose only. These may be subject to variation depending on factors such as differences in colour and normal manufacturing tolerances. Low molecular weight reactive additives, which will form part of the film during normal ambient cure conditions, will also affect VOC values determined using EPA Method 24.

SYSTEMS COMPATIBILITY

Intershield 300 will normally be applied to correctly prepared steel substrates. However, it can be used over suitably primed surfaces. Suitable primers are:

Intergard 269	Interplate 977	Interplate 855
Interplate 997	Interplate 937	Intershield 300

Suitable topcoats are:

Interfine 1080	Intergard 740	Interfine 979
Intershield 300	Intergard 263	Intersleek 717
Intergard 269	Intersleek 737	

For other suitable primers/topcoats, consult International Protective Coatings.

Epoxy

ADDITIONAL INFORMATION

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following documents available at www.international-pc.com:

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult International Protective Coatings for further advice.

PACK SIZE	Unit Size	Part A		Part B	
		Vol	Pack	Vol	Pack
	17.5 litre	12.5 litre	20 litre	5 litre	5 litre
	4.6 US gal	3.3 US gal	5.3 US gal	1.3 US gal	1.3 US gal

For availability of other pack sizes, contact International Protective Coatings.

SHIPPING WEIGHT (TYPICAL)	Unit Size	Part A	Part B
		17.5 litre	18 kg

STORAGE	Shelf Life	12 months minimum at 25°C (77°F). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

Important Note

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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www.international-pc.com

SAFETY DATA SHEET

Intershield 300 Bronze Part A

Section 1. Identification

GHS product identifier : Intershield 300 Bronze Part A
 Product code : ENA300

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Professional application of coatings and inks	
Uses advised against	Reason
All Other Uses	

Supplier's details : International Paint (PTY) Ltd
 1 Paints Place
 Dickens Road
 Umbogintwini
 KZN 4120,
 South Africa
 Tel: +27 31 904 8000

 +27 31 904 8000 (24hr)

Emergency telephone number (with hours of operation) : 10177 (For use only by licensed medical professionals.)
 e-mail address of person responsible for this SDS : sdsfellinguk@akzonobel.com

Section 2. Hazards identification

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
 SKIN CORROSION/IRRITATION - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
 SKIN SENSITIZATION - Category 1
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 2
 LONG-TERM AQUATIC HAZARD - Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapour.
 Causes serious eye damage.
 Causes skin irritation.
 May cause an allergic skin reaction.
 May cause respiratory irritation.
 May cause damage to organs through prolonged or repeated exposure. (hearing organs)
 Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapour. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Collect spillage. Get medical attention if you feel unwell. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Wear appropriate respirator when ventilation is inadequate.

Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% by weight	CAS number	Classification
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	≥25 - ≤50	25068-38-6	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411
xylene	≥10 - <22	1330-20-7	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Asp. Tox. 1, H304
aromatic hydrocarbons, C9	≤5	128601-23-0	Flam. Liq. 1, H224 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304

Section 3. Composition/information on ingredients

butan-1-ol	≤5	71-36-3	Flam. Liq. 3, H226 Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 STOT SE 3, H336
ethylbenzene	≤5	100-41-4	Flam. Liq. 2, H225 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 STOT RE 2, H373 (hearing organs) Asp. Tox. 1, H304
Solvent naphtha (petroleum), light arom.	≤3	64742-95-6	Flam. Liq. 3, H226 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or

Section 4. First aid measures

waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact : Causes serious eye damage.
- Inhalation : May cause respiratory irritation.
- Skin contact : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact : Adverse symptoms may include the following:
 - pain
 - watering
 - redness
- Inhalation : Adverse symptoms may include the following:
 - respiratory tract irritation
 - coughing
 - headache
 - drowsiness/fatigue
 - dizziness/vertigo
 - muscle weakness
 - unconsciousness
- Skin contact : Adverse symptoms may include the following:
 - pain or irritation
 - redness
 - blistering may occur
- Ingestion : Adverse symptoms may include the following:
 - stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments : No specific treatment.
- Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

- Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media : Do not use water jet.

- Specific hazards arising from the chemical : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Firefighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spill product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open

Section 7. Handling and storage

flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Dry sanding, flame cutting and/or welding of the dry paint film will give rise to dust and/or hazardous fumes. Wet sanding/flattening should be used wherever possible. If exposure cannot be avoided by the provision of local exhaust ventilation, suitable respiratory protective equipment should be used.

Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

: Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Vapours are heavier than air and may spread along floors. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
xylene	DOL OEL (South Africa, 8/1995). Absorbed through skin. TWA: 435 mg/m ³ 8 hours. TWA: 100 ppm 8 hours. STEL: 650 mg/m ³ 15 minutes. STEL: 150 ppm 15 minutes.
Talc , not containing asbestiform fibres	DOL OEL (South Africa, 8/1995). TWA: 1 mg/m ³ 8 hours. Form: Respirable dust TWA: 10 mg/m ³ 8 hours. Form: total inhalable dust
Aluminium powder (stabilized)	DOL OEL (South Africa, 8/1995). TWA: 5 mg/m ³ 8 hours. Form: Respirable dust TWA: 10 mg/m ³ 8 hours. Form: total inhalable dust
Kaolin	ACGIH TLV (United States, 3/2015). TWA: 2 mg/m ³ 8 hours. Form: Respirable fraction
butan-1-ol	DOL OEL (South Africa, 8/1995). Absorbed through skin. STEL: 150 mg/m ³ 15 minutes. STEL: 50 ppm 15 minutes.
ethylbenzene	DOL OEL (South Africa, 8/1995). STEL: 545 mg/m ³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m ³ 8 hours. TWA: 100 ppm 8 hours.

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

- Hand protection** : Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Recommended: Viton® or Nitrile gloves. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: half-face mask APF4

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Colour	: Metallic.
Odour	: Solvent.
Odour threshold	: Not available.
pH	: Not applicable.
Melting point	: Not available.
Boiling point	: Lowest known value: 136.16°C (277.1°F) (xylene).
Flash point	: Closed cup: 28°C (82.4°F)
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Greatest known range: Lower: 0.8% Upper: 6.7% (xylene)
Vapour pressure	: Not available.
Vapour density	: Not available.
Relative density	: 1.34
Solubility	: Insoluble in the following materials: cold water.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Kinematic (room temperature): 342 mm ² /s (342 cSt)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
xylene butan-1-ol	LD50 Oral	Rat	4300 mg/kg	-
	LC50 Inhalation Vapour	Rat	24 mg/l	4 hours
ethylbenzene	LD50 Dermal	Rabbit	3400 mg/kg	-
	LD50 Oral	Rat	790 mg/kg	-
	LC50 Inhalation Gas.	Rabbit	4000 ppm	4 hours
	LD50 Dermal	Rabbit	17800 mg/kg	-
Solvent naphtha (petroleum), light arom.	LD50 Oral	Rat	3500 mg/kg	-
	LD50 Oral	Rat	8400 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
reaction product: bisphenol- A-(epichlorhydrin); epoxy resin	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 microliters	-
butan-1-ol	Skin - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Eyes - Severe irritant	Rabbit	-	0.005 Milliliters	-
ethylbenzene	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	500 milligrams	-
Solvent naphtha (petroleum), light arom.	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 100 microliters	-

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
xylene	Category 3	Not applicable.	Respiratory tract irritation
aromatic hydrocarbons, C9	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
butan-1-ol	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
ethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Solvent naphtha (petroleum), light arom.	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
ethylbenzene	Category 2	Not determined.	hearing organs

Aspiration hazard

Name	Result
xylene	ASPIRATION HAZARD - Category 1
aromatic hydrocarbons, C9	ASPIRATION HAZARD - Category 1
ethylbenzene	ASPIRATION HAZARD - Category 1
Solvent naphtha (petroleum), light arom.	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May cause respiratory irritation.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo
muscle weakness
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:

Section 11. Toxicological information

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	20000 mg/kg
Dermal	8389.3 mg/kg
Inhalation (vapours)	67.11 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
butan-1-ol	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 1983 to 2072 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1910 mg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
ethylbenzene	Acute EC50 3.6 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 18.4 to 25.4 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5.1 to 5.7 mg/l Marine water	Fish - Menidia menidia	96 hours
Solvent naphtha (petroleum), light arom.	Acute EC50 6.14 mg/m ³	Daphnia	48 hours
	Acute LC50 9.22 mg/m ³	Fish - Mykiss	96 hours

Section 12. Ecological information

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	-	-	Not readily
ethylbenzene	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	2.64 to 3.78	-	low
xylene	3.12	8.1 to 25.9	low
butan-1-ol	1	-	low
ethylbenzene	3.6	15	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
UN number	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT. Marine pollutant (reaction product: bisphenol-A-(epichlorhydrin); epoxy resin, aromatic hydrocarbons, C9)	PAINT
Transport hazard class(es)	3 	3 	3

Section 14. Transport information

Packing group	III	III	III
Environmental hazards	No.	Yes.	No.
Additional information	-	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark may appear if required by other transportation regulations.

IMDG Code Segregation group : Not applicable.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: Not determined.
Canada	: Not determined.
China	: Not determined.
Europe	: Not determined.
Japan	: Japan inventory (ENCs): Not determined. Japan inventory (ISHL): Not determined.
Malaysia	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: Not determined.
Turkey	: Not determined.
United States	: Not determined.

Section 16. Other information

Justification

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Skin Irrit. 2, H315	Calculation method
Eye Dam. 1, H318	Calculation method
Skin Sens. 1, H317	Calculation method
STOT SE 3, H335	Calculation method
STOT RE 2, H373 (hearing organs)	Calculation method
Aquatic Chronic 2, H411	Calculation method

History

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Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

References : Not available.

☑ Indicates information that has changed from previously issued version.

Notice to reader

IMPORTANT NOTE: the information contained in this data sheet (as may be amended from time to time) is not intended to be exhaustive and is presented in good faith and believed to be correct as of the date on which it is prepared. It is the user's responsibility to verify that this data sheet is current prior to using the product to which it relates.

Persons using the information must make their own determinations as to the suitability of the relevant product for their purposes prior to use. Where those purposes are other than as specifically recommended in this safety data sheet, then the user uses the product at their own risk.

MANUFACTURER'S DISCLAIMER: the conditions, methods and factors affecting the handling, storage, application, use and disposal of the product are not under the control and knowledge of the manufacturer. Therefore the manufacturer does not assume responsibility for any adverse events which may occur in the handling, storage, application, use, misuse or disposal of the product and, so far as permitted by applicable law, the manufacturer expressly disclaims liability for any and all loss, damages and/or expenses arising out of or in any way connected to the storage, handling, use or disposal of the product. Safe handling, storage, use and disposal are the responsibility of the users. Users must comply with all applicable health and safety laws.

Unless we have agreed to the contrary, all products are supplied by us subject to our standard terms and conditions of business, which include limitations of liability. Please make sure to refer to these and / or the relevant agreement which you have with AkzoNobel (or its affiliate, as the case may be).

Polyurethane Finish

PRODUCT DESCRIPTION A two pack, acrylic polyurethane finish giving excellent durability and long term recoatability.

INTENDED USES As a cosmetic finish on above water areas. Suitable for use on topsides, external superstructure, external decks and boottops.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Colour	PHB000-White, PHY999-Black ; and a wide range of colours.
Finish/Sheen	High Gloss
Part B (Curing Agent)	PHA046
Volume Solids	57% ±3% (ISO 3233:1998)
Mix Ratio	6.00 volume(s) Part A to 1 volume(s) Part B
Typical Film Thickness	50 microns dry (88 microns wet)
Theoretical Coverage	11.4 m ² /litre at 50 microns dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Conventional Spray, Roller
Flash Point (Typical)	Part A 34°C; Part B 49°C; Mixed 35°C
Induction Period	Not required

Drying Information	-5°C	5°C	25°C	35°C
Touch Dry [ISO 9117/3:2010]	8 hrs	5 hrs	1.5 hrs	60 mins
Hard Dry [ISO 9117-1:2009]	60 hrs	24 hrs	6 hrs	4 hrs
Pot Life	26 hrs	12 hrs	2 hrs	60 mins

Overcoating Data - see limitations	Substrate Temperature							
	-5°C		5°C		25°C		35°C	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Interthane 990	60 hrs	ext	24 hrs	ext	6 hrs	ext	4 hrs	ext

Note Drying and overcoating times quoted are measured at 50 microns dry, at higher film thickness times will be increased.

REGULATORY DATA

VOC	420 g/lit as supplied (EPA Method 24) 341 g/kg of liquid paint as supplied, EU Solvent Emissions Directive (Council Directive 1999/13/EC) 379 g/lit Chinese National Standard GB23985
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Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in colour and normal manufacturing tolerances.

Polyurethane Finish

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Smoke & Toxicity (Exova Warringtonfire)
- NORSOK M-501, Rev 4, system no.1 (NITN)
- Fire Resistance - Marine Equipment Directive compliant

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Interthane 990 must be applied over a recommended primer system, which will vary depending upon the vessel area. Direct application is acceptable over the following marine anticorrosives:

Intergard 264 (USA)
Intergard 400
Intergard 5600
Intergard 5620
Intergard 7600
Intershield 300
Intershield 803

A tiecoat of Intergard 263, Intergard 267 or Intergard 269 may be required if Interthane 990 is to be applied over other epoxy primers and may also be used to extend the maximum overcoating interval when Interthane 990 is to be applied over those primers listed above.

Interprime 198 may also be used as a primer for Interthane 990.

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

All surfaces to be coated should be clean, dry and free from contamination.

High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

NEWBUILDING/MAJOR REFURBISHMENT

Interthane 990 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interthane 990 must be applied within the overcoating intervals specified (consult the relevant product data sheet). For boottop areas the overcoating intervals for primers are reduced. Consult International Paint.

Areas of breakdown, damage etc. should be prepared to the specified standard (eg. Sa2½ (ISO 8501-1:2007)) and primed prior to the application of Interthane 990.

REPAIR/OBM

Interthane 990 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interthane 990 must be applied within the overcoating intervals specified (consult the relevant product data sheet). For boottop areas the overcoating intervals for primers are reduced. Consult International Paint.

Areas of breakdown, damage etc. should be prepared to the specified standard (eg. Sa2½ (ISO 8501-1:2007)) and primed prior to the application of Interthane 990.

Interthane 990 may be applied directly over aged Interthane 990 following thorough fresh water washing and degreasing provided the coating to be overcoated is in an intact and tightly adherent condition. Loose or flaking coatings should be removed back to a firm edge and Interthane 990 or an appropriate primer should be used to repair the area before application of the full coat.

This product may be applied directly over most generic types of paint that have been aged for at least 3 months. It is advisable that a small trial be carried out before applying a full coat.

Consult your International Paint representative for specific recommendations.

NOTE

For use in Marine situations in North America, the following surface preparation standards can be used: SSPC-SP10 in place of Sa2½ (ISO 8501-1:2007)

Polyurethane Finish

APPLICATION

Mixing	Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Base (Part A) with a power agitator. (2) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.
Thinner	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.
Airless Spray	Recommended Tip Range 0.33-0.45 mm (13-18 thou) Total output fluid pressure at spray tip not less than 155 kg/cm ² (2200 p.s.i.)
Conventional Spray	Use suitable proprietary equipment. Thinning may be required.
Brush	Suitable.
Roller	Suitable.
Cleaner	International GTA056/GTA713/GTA733
Work Stoppages and Cleanup	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA056/GTA713/GTA733. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units. Clean all equipment immediately after use with International GTA056/GTA713/GTA733. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays. Do not exceed pot life limitations. All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

All work involving the application and use of this product should be performed in compliance with all relevant national Health, Safety & Environmental standards and regulations.

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China - Contact (86) 532 83889090

R.O.W. - Contact Regional Office

Warning: Contains isocyanate. Wear air-fed hood for spray application.

Polyurethane Finish

LIMITATIONS

This product is not recommended for use in permanently immersed conditions.

Interthane 990 may be used on boottop areas at reduced overcoating intervals over appropriate primers. Consult International Paint.

For brush and roller application, and in some colours, two coats of Interthane 990 may be required to give uniform coverage, especially when applying Interthane 990 over dark undercoats and when using certain lead-free bright finish colours such as yellows and oranges. Best practice is to use a colour compatible intermediate or anticorrosive coating under Interthane 990.

Interthane 990 may be applied at substrate temperatures down to -15°C. Before applications are made below -5°C consult your local IP representative for further detail of application procedure.

Low temperature, high relative humidity and condensation occurring during or immediately after application may result in a matt finish and an inferior film. Premature exposure to ponding water will cause colour change, especially in dark colours and at low temperatures.

Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations.

Apply in good weather. Temperature of the surface to be coated must be at least 3°C above the dew point. For optimum application properties bring the material to 21-27°C, unless specifically instructed otherwise, prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage in accordance with information given in the STORAGE Section of this data sheet. Technical and application data herein is for the purpose of establishing a general guideline of the coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.

In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

UNIT SIZE	Unit Size	Part A		Part B	
		Vol	Pack	Vol	Pack
	20 lt	17.14 lt	20 lt	2.86 lt	5 lt
	5 US gal	5 US gal	5 US gal	1 US gal	1 US gal
	1 US gal	1 US gal	1 US gal	1 US quart	1 US quart

Note : US containers are short filled
For availability of other unit sizes consult International Paint

UNIT SHIPPING WEIGHT (TYPICAL)	Unit Size	Unit Weight
	1 US gal	13.7 lb
	20 lt	26.59 Kg
	5 US gal	54.7 lb

STORAGE	Shelf Life	Part A - 24 months minimum at 25°C. Part B - 12 months minimum at 25°C Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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SAFETY DATA SHEET

Interthane 990 White Part A

Section 1. Chemical product and company identification

A. Product name : Interthane 990 White Part A
 Product code : PHB000

B. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Professional application of coatings and inks	
Uses advised against	Reason
All Other Uses	

C. Manufacturer : International Paint Ltd.
 Stoneygate Lane
 Felling
 Gateshead
 Tyne and Wear
 NE10 0JY UK
 Tel: +44 (0)191 469 6111 Fax: +44 (0)191 438 3711

Emergency telephone number (with hours of operation) : +44 (0)191 469 6111 (24H)

e-mail address of person responsible for this SDS : sdsfellinguk@akzonobel.com

Section 2. Hazards identification

A. Hazard classification : FLAMMABLE LIQUIDS - Category 3
 SKIN CORROSION/IRRITATION - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 CARCINOGENICITY - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
 LONG-TERM AQUATIC HAZARD - Category 3

B. GHS label elements, including precautionary statements

Symbol :   

Signal word : Danger

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapour.
 Causes serious eye irritation.
 Causes skin irritation.
 Suspected of causing cancer.
 May cause respiratory irritation.
 May cause drowsiness or dizziness.
 Causes damage to organs through prolonged or repeated exposure.
 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapour. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Wear appropriate respirator when ventilation is inadequate.

C. Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	Common name	CAS number	%	Classification
titanium dioxide	Titanium dioxide	13463-67-7	≥15 - <20	Carc. 2, H351
Solvent naphtha (petroleum), light arom.	solvent naphtha (petroleum), light arom.	64742-95-6	≥10 - <20	Flam. Liq. 3, H226 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
xylene	xylene	1330-20-7	≥10 - <15	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319

Section 3. Composition/information on ingredients

1,2,4-trimethylbenzene	1,2,4-trimethylbenzene	95-63-6	<10	STOT SE 3, H336 STOT RE 1, H372 Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411
ethylbenzene	ethylbenzene	100-41-4	≥0.1 - <5	Flam. Liq. 2, H225 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 (hearing organs) Asp. Tox. 1, H304
mesitylene	mesitylene	108-67-8	<10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

- A. Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- B. Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- C. Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- D. Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by

Section 4. First aid measures

mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

- E. Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Firefighting measures

- A. Extinguishing media**
- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.
- B. Specific hazards arising from the chemical** : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides
- C. Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Section 6. Accidental release measures

- A. Personal precautions, protective equipment and emergency procedures** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- B. Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
- C. Methods and material for containment and cleaning up**

Section 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

A. Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

B. Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Vapours are heavier than air and may spread along floors. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

A. Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
titanium dioxide	Ministry of Labor (Republic of Korea, 8/2013). TWA: 10 mg/m ³ 8 hours. Form: total dust with less than 1% of free SiO ₂
xylene	Ministry of Labor (Republic of Korea, 8/2013). STEL: 655 mg/m ³ 15 minutes. STEL: 150 ppm 15 minutes.

Section 8. Exposure controls/personal protection

1,2,4-trimethylbenzene	TWA: 435 mg/m ³ 8 hours. TWA: 100 ppm 8 hours. Ministry of Labor (Republic of Korea, 8/2013).
ethylbenzene	TWA: 125 mg/m ³ 8 hours. TWA: 25 ppm 8 hours. Ministry of Labor (Republic of Korea, 8/2013).
mesitylene	STEL: 545 mg/m ³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m ³ 8 hours. TWA: 100 ppm 8 hours. Ministry of Labor (Republic of Korea, 8/2013). TWA: 125 mg/m ³ 8 hours. TWA: 25 ppm 8 hours.

- B. Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- C. Personal protective equipment**
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Eye protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Hand protection** : Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Recommended: Viton® or Nitrile gloves. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment. **NOTICE:** The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties

A. Appearance

- Physical state** : Liquid.
Colour : White.
- B. Odour** : Solvent.
- C. Odour threshold** : Not available.
- D. pH** : Not applicable.
- E. Melting/freezing point** : Not available.
- F. Boiling point/boiling range** : Lowest known value: 136.16°C (277.1°F) (xylene).
- G. Flash point** : Closed cup: 34°C (93.2°F)
Fire point : Not available.
- H. Evaporation rate** : Not available.
- I. Flammability (solid, gas)** : Not available.
- J. Lower and upper explosive (flammable) limits** : Greatest known range: Lower: 1.4% Upper: 7.6% (Solvent naphtha (petroleum), light arom.)
- K. Vapour pressure** : Not available.
- L. Solubility** : Insoluble in the following materials: cold water.
- M. Vapour density** : Not available.
- N. Relative density** : 1.24
- O. Partition coefficient: n-octanol/water** : Not available.
- P. Auto-ignition temperature** : Not available.
- Q. Decomposition temperature** : Not available.
- R. Viscosity** : Kinematic (room temperature): 259 mm²/s (259 cSt)
- S. Molecular weight** : Not applicable.

Section 10. Stability and reactivity

- A. Chemical stability** : The product is stable.
Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
- B. Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- C. Incompatible materials** : Reactive or incompatible with the following materials:
oxidizing materials
- D. Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

A. Information on likely routes of exposure : Not available.

Potential acute health effects

- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
- Skin contact** : Causes skin irritation.
- Eye contact** : Causes serious eye irritation.

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
muscle weakness
unconsciousness
- Ingestion** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness

B. Health hazards

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light arom. xylene	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
1,2,4-trimethylbenzene	LC50 Inhalation Vapour	Rat	18000 mg/m ³	4 hours
	LD50 Oral	Rat	5 g/kg	-
ethylbenzene	LC50 Inhalation Gas.	Rabbit	4000 ppm	4 hours
	LD50 Dermal	Rabbit	17800 mg/kg	-
mesitylene	LD50 Oral	Rat	3500 mg/kg	-
	LC50 Inhalation Vapour	Rat	24000 mg/m ³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
titanium dioxide	Skin - Mild irritant	Human	-	72 hours	-
				300 Micrograms Intermittent	
Solvent naphtha (petroleum), light arom. ethylbenzene	Eyes - Mild irritant	Rabbit	-	24 hours	-
				100 microliters	
ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 milligrams	-
				24 hours 15 milligrams	
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-

Section 11. Toxicological information

mesitylene	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-

Sensitisation

Not available.

CMR - ISHA Article 42 Public Notice No 2013-38 Occupational Exposure Limits

Product/ingredient name	CAS number	Classification
Titanium dioxide	13463-67-7	Carc. 2
Ethyl benzene	100-41-4	Carc. 2

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
xylene	Category 3	Not applicable.	Narcotic effects
1,2,4-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
ethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
mesitylene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
xylene	Category 1	Not determined	Not determined
ethylbenzene	Category 2	Not determined	hearing organs

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom. ethylbenzene	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Potential chronic health effects

Chronic toxicity

Not available.

General

: Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity

: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Section 11. Toxicological information

Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

ATE value

Route	Result
Oral	21542.6 mg/kg
Dermal	10246.9 mg/kg
Inhalation (vapours)	66.62 mg/l

Section 12. Ecological information

A. Ecotoxicity

Product/ingredient name	Result	Species	Exposure
Solvent naphtha (petroleum), light arom.	Acute EC50 6.14 mg/m ³	Daphnia	48 hours
	Acute LC50 9.22 mg/m ³	Fish - Mykiss	96 hours
xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
1,2,4-trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pecteniscus - Adult	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
ethylbenzene	Acute EC50 3.6 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 18.4 to 25.4 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
mesitylene	Acute LC50 5.1 to 5.7 mg/l Marine water	Fish - Menidia menidia	96 hours
	Acute LC50 13000 µg/l Marine water	Crustaceans - Cancer magister - Zoea	48 hours
	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days

B. Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
ethylbenzene	-	-	Readily

C. Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
titanium dioxide	-	352	low
xylene	3.12	8.1 to 25.9	low
1,2,4-trimethylbenzene	3.63	243	low
ethylbenzene	3.6	15	low
mesitylene	3.42	186.208713666	low

D. Mobility in soil

Soil/water partition coefficient (K_{oc})	: Not available.
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Section 12. Ecological information

E. Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

- A. Disposal methods** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- B. Disposal precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
A. UN number	UN1263	UN1263	UN1263
B. UN proper shipping name	PAINT	PAINT	PAINT
C. Transport hazard class(es)	3 	3 	3 
D. Packing group	III	III	III
E. Environmental hazards	No.	No.	No.
F. Additional information	-	-	-

IMDG Code Segregation group : Not applicable.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 37 (Harmful substances prohibited from manufacture) : None of the components are listed.

Section 15. Regulatory information

ISHA article 38 : None of the components are listed.
(Harmful substances requiring permission)

Article 2 of Youth Protection Act on Substances Hazardous to Youth : Not applicable.

Exposure Limits of Chemical Substances and Physical Factors

The following components have an OEL:

titanium dioxide

Xylene

1,2,4-trimethylbenzene

ethylbenzene

mesitylene

ISHA Enforcement Regs Annex 11-3 (Exposure standards established for harmful factors) : None of the components are listed.

ISHA Enforcement Regs Annex 11-4 (Harmful factors subject to Work Environment Measurement) : The following components are listed: Titanium dioxide; Xylene, o,m,p-isomers; Ethylbenzene

ISHA Enforcement Regs Annex 12-2 (Harmful Factors Subject to Special Health Check-up) : The following components are listed: Xylene; Ethylbenzene

Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control) : The following components are listed: Titanium dioxide; Xylene; Ethyl benzene

B. Regulation according to Chemicals Control Act

K-Reach Article 20 (Toxic chemicals) : Not applicable

K-Reach Article 27 (Prohibited) : None of the components are listed.

K-Reach Article 27 (Restricted) : None of the components are listed.

CSCA Article 11 (TRI) : The following components are listed: Xylene; Ethylbenzene

Korea inventory : Not determined.

CSCA Article 39 (Accident Precaution Chemicals) : None of the components are listed.

C. Dangerous Materials Safety Management Act : Class: Class 4 - Flammable Liquid
Item: 4. Class 2 petroleums - Water-insoluble liquid
Threshold: 1000 L
Danger category: III
Signal word: Contact with sources of ignition prohibited

D. Wastes regulation : Dispose of contents and container in accordance with all local, regional, national and international regulations.

E. Regulation according to other foreign laws

Europe inventory : Not determined.

Section 15. Regulatory information

- United States inventory (TSCA 8b) : Not determined.
- Japan inventory : Japan inventory (ENCS): Not determined.
Japan inventory (ISHL): Not determined.

Section 16. Other information

- A. References : Not available.
- B. Date of issue/Date of revision : 31/05/2017
- C. Version : 3
Date of printing : 31/05/2017
- D. Other

▣ Indicates information that has changed from previously issued version.

- Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

IMPORTANT NOTE: the information contained in this data sheet (as may be amended from time to time) is not intended to be exhaustive and is presented in good faith and believed to be correct as of the date on which it is prepared. It is the user's responsibility to verify that this data sheet is current prior to using the product to which it relates.

Persons using the information must make their own determinations as to the suitability of the relevant product for their purposes prior to use. Where those purposes are other than as specifically recommended in this safety data sheet, then the user uses the product at their own risk.

MANUFACTURER'S DISCLAIMER: the conditions, methods and factors affecting the handling, storage, application, use and disposal of the product are not under the control and knowledge of the manufacturer. Therefore the manufacturer does not assume responsibility for any adverse events which may occur in the handling, storage, application, use, misuse or disposal of the product and, so far as permitted by applicable law, the manufacturer expressly disclaims liability for any and all loss, damages and/or expenses arising out of or in any way connected to the storage, handling, use or disposal of the product. Safe handling, storage, use and disposal are the responsibility of the users. Users must comply with all applicable health and safety laws.

Unless we have agreed to the contrary, all products are supplied by us subject to our standard terms and conditions of business, which include limitations of liability. Please make sure to refer to these and / or the relevant agreement which you have with AkzoNobel (or its affiliate, as the case may be).

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TBT Free Polishing Antifouling

PRODUCT DESCRIPTION A high performance, TBT free, polishing antifouling. Enhanced biocide release mechanism. Prevents coating build-up. At subsequent drydockings, it is only necessary to top up the system. Low VOC.

INTENDED USES As a TBT free, polishing antifouling. As a multiple coat system for extended in-service periods. For use at Newbuilding or Maintenance & Repair.

PRODUCT INFORMATION

Color	BRA640-Red, BRA641-Blue, BRA642-Black, BRA643-Ocean Green
Finish/Sheen	Not applicable
Part B (Curing Agent)	One pack
Volume Solids	62% ±2% (ASTM D2697-86)
Mix Ratio	One pack
Typical Film Thickness	4 mils dry (6.4 mils wet), 4 - 5 mils dry practical range equivalent to 6.4 - 8.1 mils wet
Theoretical Coverage	249 ft ² /US gal at 4 mils dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Roller,
Flash Point	Single Pack 82°F (Setaflash) (ASTM D-3278)

Drying Information	41°F	50°F	77°F	95°F
Touch Dry [ASTM D1640 7.5.1]	12 hrs	6 hrs	4 hrs	2 hrs
Before Flooding	12 hrs	12 hrs	8 hrs	7 hrs

Note For Major Refurbishment and Repair if total dft is >300µm or a single coat is >150µm dft, the flooding times must be increased as follows:
24 hours at 50°F or less and 18 hours at 77°F or above.

Overcoating Data - see limitations	Substrate Temperature							
	41°F		50°F		77°F		95°F	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Interspeed 640	24 hrs	ext	20 hrs	ext	6 hrs	ext	4 hrs	ext

REGULATORY DATA **VOC** 385 g/lit (3.21 lb/US gal) as supplied (EPA Method 24)

Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

EPA Federal EPA Registration No. 2693-142
For specific state registrations contact your International Paint representative.
See Page 4 for additional Regulatory Data.

This product does not contain organotin compounds acting as biocides and as such is in compliance with the International Convention on the Control of Harmful Anti-fouling Systems on ships as adopted by IMO in October 2001 (IMO document AFS/CONF/26).

TBT Free Polishing Antifouling

CERTIFICATION

When used as part of an approved scheme, this product has the following certification:

Product recognised by the following classification societies as compliant with the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS 2001):

- Lloyds Register
- Det Norske Veritas
- Bureau Veritas
- Germanischer Lloyd

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

Paint only clean, dry surfaces. Remove all grease, oil, soluble contaminants and other foreign matter by "solvent cleaning" (SSPC-SP1).

NEWBUILDING

Dependent on yard procedures. Consult International Paint.

Unpainted surfaces:

Prepare surface and apply recommended primer. Apply one or more coats of Interspeed 640 as specified. (Consult the relevant primer data sheet for surface preparation and overcoating information.)

Recoating and Upgrading of approved systems:

Use controlled close high pressure fresh water washing (minimum 3,000 psi, 211kg/sq. cm.) to clean the entire area, and remove any leached layer at the surface of the existing antifouling system.

Repair corroded areas with the recommended anticorrosive primer and apply a spot coat of Interspeed 640 within the overcoating interval specified for the primer (consult the relevant primer data sheet for surface preparation and overcoating information).

Apply the specified number of full coats of Interspeed 640.

TBT Free Polishing Antifouling

APPLICATION	Apply by airless spray only. Application by other methods, brush or roller, may require more than one coat. Strain material through a minimum 60 mesh screen before application. Apply at 6.5 mils wet which will yield 4.0 mils dry film thickness. Consult the following equipment recommendations and/or utilize suitable equal.
Mixing	This material is a one pack coating. Always mix thoroughly with a power agitator before application.
Thinner	DO NOT THIN BEYOND YOUR STATE'S COMPLIANCY. Material is supplied at spray viscosity and normally does not need thinning. If thinning is necessary, thin up to a maximum of 4 ounces/gal. with International GTA007 Thinner.
Airless Spray	Minimum 28:1 ratio pump; 0.021" - 0.026" (533-661 microns) orifice tip; 3/8" (9.5mm) ID high pressure material hose; 60 mesh tip filter
Brush	Use appropriate size China bristle brush.
Roller	Use All Purpose Roller cover with 3/8" (9.5mm) pile smooth to medium nap. Prewash roller cover to remove loose fibers prior to use.
Cleaner	International GTA007
Work Stoppages and Cleanup	Clean all equipment immediately after use with International GTA007. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency will depend upon factors such as amount sprayed, temperature and elapsed time including work stoppages. Monitor material condition. All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

All work involving the application and use of this product should be performed in compliance with all relevant national Health, Safety & Environmental standards and regulations.

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China - Contact (86) 532 83889090

R.O.W. - Contact Regional Office

TBT Free Polishing Antifouling

LIMITATIONS

Apply in good weather when air and surface temperatures are above 35°F. Surface temperature must be at least 5° F above dew point. For optimum application properties, bring material to 70-80 °F prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F. Prolonged atmospheric exposure of this product may detract from antifouling performance. Recommended maximum exposure time before flooding:
 Temperate conditions - 6 months
 Tropical conditions - 3 months
 These times may be extended under certain conditions. Contact your International Paint representative for advice. Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Technical and application data herein is for the purpose of establishing a general guideline of the coating and proper coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results actually found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating. In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

ADDITIONAL REGULATORY DATA

It is a violation of federal law to use this product in a manner inconsistent with its labelling. Refer to container label for information concerning Precautionary Statements, Directions for Use and Storage and Disposal.

UNIT SIZE

Unit Size	Vol	Pack
5 US gal	5 US gal	5 US gal

UNIT SHIPPING WEIGHT

Unit Size	Unit Weight
5 US gal	94 lb

STORAGE

Shelf Life 24 months minimum from date of manufacture when maintained in protected storage at 40-100°F. Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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www.international-marine.com

H410 Very toxic to aquatic life with long lasting effects.

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P280 Wear protective gloves / eye protection / face protection.

P301+310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+352 IF ON SKIN: Wash with soap and water.

P303+361+353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P312 Call a POISON CENTER or doctor / physician if you feel unwell.

P330 Rinse mouth.

P362 Take off contaminated clothing and wash before reuse.

P370 In case of fire: Use water spray, fog, or regular foam..

P391 Collect spillage.

P403+233 Store in a well ventilated place. Keep container tightly closed.

P501 Dispose of contents / container in accordance with local / national regulations.

HMIS Rating Health: 2* Flammability: 3 Reactivity: 0

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Copper oxide (Cu ₂ O) CAS Number: 0001317-39-1	25 - 50	Acute Tox. 4;H302 Aquatic Acute 1;H400 Aquatic Chronic 1;H410	[1]
Zinc oxide CAS Number: 0001314-13-2	10 - 25	Aquatic Acute 1;H400 Aquatic Chronic 1;H410	[1][2]
Xylenes (o-, m-, p- isomers) CAS Number: 0001330-20-7	10 - 25	Flam. Liq. 3;H226 Acute Tox. 4;H332 Acute Tox. 4;H312 Skin Irrit. 2;H315 Eye Irrit. 2;H319 STOT SE 3;H335 Asp. Tox. 1;H304	[1][2]
Iron oxide CAS Number: 0001309-37-1	1.0 - 10	----	[1][2]
Butanol CAS Number: 0000071-36-3	1.0 - 10	Flam. Liq. 3;H226 Acute Tox. 4;H302 STOT SE 3;H335 Skin Irrit. 2;H315 Eye Dam. 1;H318 STOT SE 3;H336	[1][2]
ETHYLTOLUENESULFONAMIDE CAS Number: 0008047-99-2	1.0 - 10	----	[1]
Benzene, ethyl- CAS Number: 0000100-41-4	1.0 - 10	Flam. Liq. 2;H225 Acute Tox. 4;H332 Asp. Tox. 1;H304 Eye Irrit. 2;H319 Skin Irrit. 2;H315 STOT SE 3;H335 STOT RE 2;H373	[1][2]
Copper oxide CAS Number: 0001317-38-0	1.0 - 10	----	[1]

- [1] Substance classified with a health or environmental hazard.
 [2] Substance with a workplace exposure limit.
 [3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.
Ingestion	If swallowed, immediately contact Poison Control Center at 1-800-854-6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Overview	NOTICE: 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. Avoid contact with eyes, skin and clothing.
Inhalation	Harmful if inhaled. Causes nose and throat irritation. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.
Eyes	Causes severe eye irritation. Avoid contact with eyes.
Skin	Causes skin irritation. May be harmful if absorbed through the skin.
Ingestion	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness.
Chronic effects	Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 2 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.

5. Fire-fighting measures

5.1. Extinguishing media

CAUTION: This product has a very low flashpoint. Use of water spray when fighting fire may be inefficient.
 CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.
 SMALL FIRES: Use dry chemical, CO₂, water spray or regular foam. LARGE FIRES: Use water spray, fog, or regular foam. Do not use straight streams. Move containers from fire area if you can do so without risk.

5.2. Special hazards arising from the substance or mixture

HIGHLY FLAMMABLE MATERIALS: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) creating a vapor explosion hazard. Runoff to sewers may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water.

5.3. Advice for fire-fighters

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water courses.

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6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Use only non-sparking equipment to handle spilled material and absorbent. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to containers. Use non-sparking tools to collect absorbed material.

6.2. Environmental precautions

Do not allow spills to enter drains or watercourses.

6.3. Methods and material for containment and cleaning up

CALL CHEMTREC at (800)-424-9300 for emergency response. Isolate spill or leak area immediately for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. LARGE SPILLS: Consider initial downwind evacuation for at least 300 meters (1000 feet).

7. Handling and storage

7.1. Precautions for safe handling

Handling

Vapors may cause flash fire or ignite explosively.

In Storage

Keep away from heat, sparks and flame.

7.2. Conditions for safe storage, including any incompatibilities

Store between 40-100F (4-38C).

Do not get in eyes, on skin or clothing.

Strong oxidizing agents.

Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone.

7.3. Specific end use(s)

Close container after each use.

Wash thoroughly after handling.

Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

8. Exposure controls and personal protection

8.1. Control parameters

CAS No.	Ingredient	Exposure	
		Source	Value
0000071-36-3	Butanol	OSHA	100 ppm TWA; 300 mg/m3 TWA50 ppm Ceiling; 150 mg/m3 Ceiling
		ACGIH	20 ppm TWA
		NIOSH	50 ppm Ceiling; 150 mg/m3 Ceiling1400 ppm IDLH (10% LEL)
		Supplier	
		OHSA, CAN	20 ppm TWA
		Mexico	
		Brazil	40 ppm TWA LT; 115 mg/m3 TWA LT
0000100-41-4	Benzene, ethyl-	OSHA	100 ppm TWA; 435 mg/m3 TWA125 ppm STEL; 545 mg/m3 STEL
		ACGIH	20 ppm TWA
		NIOSH	100 ppm TWA; 435 mg/m3 TWA125 ppm STEL; 545 mg/m3 STEL800 ppm IDLH (10% LEL)
		Supplier	
		OHSA, CAN	20 ppm TWA
		Mexico	100 ppm TWA LMPE-PPT; 435 mg/m3 TWA LMPE-PPT125 ppm STEL [LMPE-CT]; 545 mg/m3 STEL [LMPE-CT]
		Brazil	78 ppm TWA LT; 340 mg/m3 TWA LT
0001309-37-1	Iron oxide	OSHA	10 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust, listed under Rouge); 5 mg/m3 TWA (respirable fra
		ACGIH	5 mg/m3 TWA (respirable fraction)
		NIOSH	

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			5 mg/m3 TWA (dust and fume, as Fe)2500 mg/m3 IDLH (dust and fume, as Fe)
		Supplier	
		OHSA, CAN	5 mg/m3 TWA (respirable)
		Mexico	5 mg/m3 TWA LMPE-PPT10 mg/m3 STEL [LMPE-CT] (as Fe)
		Brazil	
0001314-13-2	Zinc oxide	OSHA	5 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)10 mg/m3 STEL (fume)
		ACGIH	2 mg/m3 TWA (respirable fraction)10 mg/m3 STEL (respirable fraction)
		NIOSH	5 mg/m3 TWA (dust and fume)10 mg/m3 STEL (fume)15 mg/m3 Ceiling (dust)500 mg/m3 IDLH
		Supplier	
		OHSA, CAN	2 mg/m3 TWA (respirable)10 mg/m3 STEL (respirable)
		Mexico	5 mg/m3 TWA LMPE-PPT (fume); 10 mg/m3 TWA LMPE-PPT (dust)10 mg/m3 STEL [LMPE-CT] (fume)
		Brazil	
0001317-38-0	Copper oxide	OSHA	
		ACGIH	
		NIOSH	0.1 mg/m3 TWA (fume, as Cu)
		Supplier	
		OHSA, CAN	
		Mexico	
		Brazil	
0001317-39-1	Copper oxide (Cu2O)	OSHA	
		ACGIH	
		NIOSH	
		Supplier	
		OHSA, CAN	
		Mexico	
		Brazil	
0001330-20-7	Xylenes (o-, m-, p- isomers)	OSHA	100 ppm TWA; 435 mg/m3 TWA150 ppm STEL; 655 mg/m3 STEL
		ACGIH	100 ppm TWA150 ppm STEL
		NIOSH	
		Supplier	
		OHSA, CAN	100 ppm TWA150 ppm STEL
		Mexico	100 ppm TWA LMPE-PPT; 435 mg/m3 TWA LMPE-PPT150 ppm STEL [LMPE-CT]; 655 mg/m3 STEL [LMPE-CT]
		Brazil	78 ppm TWA LT; 340 mg/m3 TWA LT
0008047-99-2	ETHYLTOLUENESULFONAMIDE	OSHA	
		ACGIH	
		NIOSH	
		Supplier	
		OHSA, CAN	
		Mexico	
		Brazil	

Health Data

CAS No.	Ingredient	Source	Value
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0000071-36-3	Butanol	NIOSH	Eye and mucous membrane irritation CNS depression
0000100-41-4	Benzene, ethyl-	NIOSH	Eye skin
0001309-37-1	Iron oxide	NIOSH	Benign pneumoconiosis termed siderosis
0001314-13-2	Zinc oxide	NIOSH	Metal fume fever
0001317-38-0	Copper oxide	NIOSH	
0001317-39-1	Copper oxide (Cu ₂ O)	NIOSH	
0001330-20-7	Xylenes (o-, m-, p- isomers)	NIOSH	Central nervous system depressant; respiratory and eye irritation
0008047-99-2	ETHYLTOLUENESULFONAMIDE	NIOSH	

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000071-36-3	Butanol	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000100-41-4	Benzene, ethyl-	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0001309-37-1	Iron oxide	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0001314-13-2	Zinc oxide	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001317-38-0	Copper oxide	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001317-39-1	Copper oxide (Cu ₂ O)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001330-20-7	Xylenes (o-, m-, p- isomers)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0008047-99-2	ETHYLTOLUENESULFONAMIDE	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory

Select equipment to provide protection from the ingredients listed in Section 3 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1-800-243-4630, in Canada call 1-800-267-4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet.

Eyes

Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document.

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	Depending on the site-specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Skin	Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site-specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Engineering Controls	Depending on the site-specific conditions of use, provide adequate ventilation.
Other Work Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

9. Physical and chemical properties

Appearance	Coloured Liquid
Odour threshold	Not Measured
pH	No Established Limit
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	93 (°C) 200 (°F)
Flash Point	28 (°C) 82 (°F)
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: .6 Upper Explosive Limit: No Established Limit
vapor pressure (Pa)	Not Measured
Vapor Density	Heavier than air
Specific Gravity	2.17
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	No Established Limit Not Measured
VOC %	Refer to the Technical Data Sheet or label where information is available.

10. Stability and reactivity

10.1. Reactivity

No data available

10.2. Chemical stability

This product is stable and hazardous polymerization will not occur. Not sensitive to mechanical impact. Excessive heat and fumes generation can occur if improperly handled.

10.3. Possibility of hazardous reactions

No data available

10.4. Conditions to avoid

No data available

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

HIGHLY FLAMMABLE MATERIALS: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) creating a vapor explosion hazard. Runoff to sewers may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water.

11. Toxicological information

Acute toxicity

NOTICE: 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.

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr
Copper oxide (Cu ₂ O) - (1317-39-1)	470.00, Rat - Category: 4	2,000.00, Rabbit - Category: 4	No data available	50.00, Rat - Category: NA
Zinc oxide - (1314-13-2)	5,000.00, Rat - Category: 5	No data available	No data available	2.50, Mouse - Category: 4
Xylenes (o-, m-, p- isomers) - (1330-20-7)	4,299.00, Rat - Category: 5	1,548.00, Rabbit - Category: 4	20.00, Rat - Category: 4	No data available
Iron oxide - (1309-37-1)	10,000.00, Rat - Category: NA	No data available	No data available	No data available
Butanol - (71-36-3)	2,292.00, Rat - Category: 5	3,430.00, Rabbit - Category: 5	No data available	No data available
ETHYLTOLUENESULFONAMIDE - (8047-99-2)	No data available	No data available	No data available	No data available
Benzene, ethyl- - (100-41-4)	3,500.00, Rat - Category: 5	15,433.00, Rabbit - Category: NA	17.20, Rat - Category: 4	No data available
Copper oxide - (1317-38-0)	470.00, Rat - Category: 4	No data available	No data available	No data available

Item	Category	Hazard
Acute Toxicity (mouth)	4	Harmful if swallowed.
Acute Toxicity (skin)	5	May be harmful in contact with skin.
Acute Toxicity (inhalation)	Not Classified	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Eye damage/irritation	1	Causes serious eye damage.
Sensitization (respiratory)	Not Classified	Not Applicable
Sensitization (skin)	Not Classified	Not Applicable
Germ toxicity	Not Classified	Not Applicable
Carcinogenicity	Not Classified	Not Applicable
Reproductive Toxicity	Not Classified	Not Applicable
Specific target organ systemic toxicity (single exposure)	Not Classified	Not Applicable
Specific target organ systemic Toxicity (repeated exposure)	Not Classified	Not Applicable
Aspiration hazard	Not Classified	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Copper oxide (Cu ₂ O) - (1317-39-1)	0.075, Danio rerio	0.042, Daphnia similis	0.03 (96 hr), Pseudokirchneriella subcapitata

BRA640_B4

Zinc oxide - (1314-13-2)	1.10, Oncorhynchus mykiss	0.098, Daphnia magna	0.042 (72 hr), Pseudokirchneriella subcapitata
Xylenes (o-, m-, p- isomers) - (1330-20-7)	3.30, Oncorhynchus mykiss	8.50, Palaemonetes pugio	100.00 (72 hr), Chlorococcales
Iron oxide - (1309-37-1)	Not Available	Not Available	Not Available
Butanol - (71-36-3)	1,376.00, Pimephales promelas	1,328.00, Daphnia magna	500.00 (96 hr), Scenedesmus subspicatus
ETHYLTOLUENESULFONAMIDE - (8047-99-2)	Not Available	Not Available	Not Available
Benzene, ethyl- - (100-41-4)	4.20, Oncorhynchus mykiss	2.93, Daphnia magna	3.60 (96 hr), Pseudokirchneriella subcapitata
Copper oxide - (1317-38-0)	25.40, Oncorhynchus mykiss	0.011, Daphnia magna	0.014 (72 hr), Pseudokirchneriella subcapitata

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available

13. Disposal considerations

13.1. Waste treatment methods

Do not allow spills to enter drains or watercourses.

Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. Transport information

14.1. UN number UN 1263

14.2. UN proper shipping name PAINT

14.3. Transport hazard class(es)

DOT (Domestic Surface Transportation)

DOT Proper Shipping Name PAINT

DOT Hazard Class 3 - Flammable and Combustible liquid

UN / NA Number UN 1263

DOT Packing Group III

CERCLA/DOT RQ 48 gal. / 864 lbs.

IMO / IMDG (Ocean Transportation)

IMDG Proper Shipping Name PAINT

IMDG Hazard Class Sub Class 3 - Flammable and Combustible liquid
3 - Flammable and Combustible liquid

IMDG Packing Group III

System Reference Code 2

14.4. Packing group III

14.5. Environmental hazards

IMDG Marine Pollutant: Yes (Copper oxide (Cu2O))

14.6. Special precautions for user

Not Applicable

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not Applicable

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.

WHMIS Classification B2 D2B E

DOT Marine Pollutants (10%):
(No Product Ingredients Listed)

DOT Severe Marine Pollutants (1%):
(No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%) :

- Copper (5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diame)
- Benzene, ethyl- (1000 lb final RQ; 454 kg final RQ)
- Butanol (5000 lb final RQ; 2270 kg final RQ)
- Xylenes (o-, m-, p- isomers) (100 lb final RQ; 45.4 kg final RQ)

EPCRA 302 Extremely Hazardous (>.1%) :

(No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%) :

- Copper
- Benzene, ethyl-
- Butanol
- Xylenes (o-, m-, p- isomers)

Mass RTK Substances (>1%) :

- Benzene, ethyl-
- Iron oxide
- Butanol
- Xylenes (o-, m-, p- isomers)
- Zinc oxide

Penn RTK Substances (>1%) :

- Benzene, ethyl-
- Iron oxide
- Butanol
- Xylenes (o-, m-, p- isomers)
- Zinc oxide

Penn Special Hazardous Substances (>.01%) :

(No Product Ingredients Listed)

RCRA Status:
(No Product Ingredients Listed)

N.J. RTK Substances (>1%) :

- Benzene, ethyl-
- Iron oxide
- Butanol
- Xylenes (o-, m-, p- isomers)
- Zinc oxide

N.J. Special Hazardous Substances (>.01%) :

- 2-Butoxyethanol
- Benzene, ethyl-
- Butanol
- Xylenes (o-, m-, p- isomers)

N.J. Env. Hazardous Substances (>.1%) :

- Copper
- Benzene, ethyl-

Butanol
Xylenes (o-, m-, p- isomers)
Proposition 65 - Carcinogens (>0%):
Cadmium
Benzene, ethyl-
Lead
Quartz
Proposition 65 - Female Repro Toxins (>0%):
Lead
Proposition 65 - Male Repro Toxins (>0%):
Cadmium
Lead
Proposition 65 - Developmental Toxins (>0%):
Cadmium
Lead

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

- H225 Highly flammable liquid and vapor.
- H226 Flammable liquid and vapor.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H312 Harmful in contact with skin.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- H372 Causes damage to organs through prolonged or repeated exposure.
- H373 May cause damage to organs through prolonged or repeated exposure.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

The following sections have changed since the previous revision.

End of Document

Epoxy Anticorrosive

PRODUCT DESCRIPTION TEMPERATE
A hard wearing, surface tolerant, two pack epoxy primer. A low temperature version is available for use at temperatures down to -5°C (see separate datasheet).

INTENDED USES
As an epoxy anticorrosive coating for use from Keel to Rail.
Suitable for use with controlled cathodic protection.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Colour KHA300-Off White, KHA302-Grey, KHA303-Red, KHA304-Black, KHA305-Buff
These colours are suitable for immersion service. Special colours, which are not suitable for immersion service, can be matched to meet customer specifications.

Finish/Sheen Low-Gloss

Part B (Curing Agent) KHA062

Volume Solids 73% ±2% (ISO 3233:1998)

Mix Ratio 4 volume(s) Part A to 1 volume(s) Part B

Typical Film Thickness 125 microns dry (171 microns wet)

Theoretical Coverage 5.84 m²/litre at 125 microns dft, allow appropriate loss factors

Method of Application Airless Spray, Brush, Conventional Spray, Roller

Flash Point (Typical) Part A 44°C; Part B 40°C; Mixed 40°C

Induction Period 30 minutes at temperatures below 21°C

Drying Information	10°C	15°C	25°C	35°C
Touch Dry [ISO 9117/3:2010]	12 hrs	8 hrs	6 hrs	4 hrs
Hard Dry [ISO 9117-1:2009]	28 hrs	24 hrs	18 hrs	10 hrs
Pot Life	7 hrs	6 hrs	4 hrs	2 hrs

Overcoating Data - see limitations	Substrate Temperature							
	10°C		15°C		25°C		35°C	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Intergard 263	16 hrs	21 days	11 hrs	21 days	6 hrs	21 days	4 hrs	21 days
Intergard 267	24 hrs	7 days	15 hrs	6 days	6 hrs	5 days	4 hrs	5 days
Interthane 990	16 hrs	7 days	11 hrs	5 days	6 hrs	3 days	4 hrs	2 days
Interthane 990V	16 hrs	7 days	11 hrs	5 days	6 hrs	3 days	4 hrs	2 days
Intertuf 262	18 hrs	28 days	13 hrs	28 days	6 hrs	28 days	4 hrs	15 days

Note Stated drying times are for normal recoat situations with KHA062 converter. For low temperature dry time information, see Intertuf 262 low temperature product datasheet.

REGULATORY DATA VOC 285 g/lit as supplied (EPA Method 24)

Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in colour and normal manufacturing tolerances.

Epoxy Anticorrosive

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Food Contact - Carriage of Grain (NOHA)
- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Marine Equipment Directive compliant

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

All surfaces to be coated should be clean, dry and free from contamination.

High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

NEWBUILDING

Where necessary, remove weld spatter and smooth weld seams and sharp edges.

Weld seams and damaged areas should be blast cleaned to Sa2½ (ISO 8501-1:2007) or power tooled to Pt3 (JSRA SPSS:1984)

For iron oxide epoxy shop primers, ensure the intact primer is clean and dry. Weld seams and damaged areas should be prepared to the specified standard (eg. Sa2½ ISO 8501-1:2001).

For PVB and unapproved shop primers, the surface should be blast cleaned to Sa2½ (ISO 8501-1:2007)

Intertuf 262 can be applied over Intergard 269. The primer surface should be dry and free from all contamination and Intertuf 262 must be applied within the overcoating interval specified (consult the Intergard 269 product data sheet). Areas of breakdown, damage etc. should be prepared to the specified standard (eg Sa2½ (ISO 8501-1:2007)).

MAJOR REFURBISHMENT

Underwater Hull/Boottop/Topsides

Abrasive blast clean to Sa2 (ISO 8501-1:2007). If oxidation has occurred between blasting and application of Intertuf 262, the surface should be reblasted to the specified visual standard.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

Intertuf 262 may be applied to surfaces prepared to International Paint Hydroblasting Standard HB2 which have flash rusted to no worse than HB2L for underwater hull/boottop or HB2M for above water areas.

REPAIR

Consult International Paint.

Intertuf 262 can be applied over Intergard 269. The primer surface should be dry and free from all contamination and Intertuf 262 must be applied within the overcoating interval specified (consult the Intergard 269 product data sheet).

Areas of breakdown, damage etc. should be prepared to the specified standard (eg Sa2½ (ISO 8501-1:2007)).

Or - Intertuf 262 may be applied to surfaces prepared to International Paint Hydroblasting Standard HB2 which have flash rusted to no worse than HB2M.

Consult your International Paint representative for specific recommendations and procedures.

NOTE:

For use in Marine situations in North America, the following surface preparation standards can be used:

SSPC-SP6 in place of Sa2 (ISO 8501-1:2007)

SSPC-SP10 in place of Sa2½ (ISO 8501-1:2007)

SSPC-SP11 in place of Pt3 (JSRA SPSS:1984)

Epoxy Anticorrosive

APPLICATION	Apply by conventional or airless spray. Application by other methods, brush or roller may require more than one coat and is suggested for small areas only of stripe coating. Strain material through a minimum 60 mesh screen before application. Apply at 160 microns wet which will yield 127 microns dry film thickness. Consult the following equipment recommendations or utilize suitable equal.
Tinting	Range of colours available from Chromascan. Most colours require that containers be slightly short filled to accommodate the addition of colourant. Actual coverage will depend upon amount of colourant added and should be taken into consideration when ordering. A limited number of Intertuf 262 tinted colours may require more than one coat for complete hiding.
Mixing	Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with a power agitator, (2) Combine entire contents of Part A and B and mix thoroughly with the power agitator, (3) Allow the coating a 30 minute sweat-in period, at temperatures below 21°C.
Thinner	Not recommended. Use International GTA220 only in exceptional circumstances. DO NOT thin more than allowed by local environmental legislation.
Airless Spray	Minimum 30:1 ratio pump; 0.021"- 0.033" (534-838 microns) orifice tip; 3/8" (9.5 mm) ID high pressure material hose; 60 mesh tip filter
Conventional Spray	DeVilbiss MBC-510 gun E tip and 704 air cap; 3/8" (9.5mm) ID material hose; double regulated pressure tank with oil and moisture separator.
Brush	Use appropriate size China bristle brush.
Roller	Use All Purpose Roller cover with 3/8" (9.5mm) pile smooth to medium nap. Prewash roller cover to remove loose fibers prior to use.
Cleaner	International GTA220/GTA822
Work Stoppages and Cleanup	Clean all equipment immediately after use with International GTA220/GTA822. Spray equipment requires flushing with this solvent. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency will depend upon factors such as amount sprayed, temperature and elapsed time including work stoppages. Monitor material condition. Do not exceed pot life limitations. All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

All work involving the application and use of this product should be performed in compliance with all relevant national Health, Safety & Environmental standards and regulations.

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

R.O.W. - Contact Regional Office

Epoxy Anticorrosive

LIMITATIONS

Apply in good weather when air and surface temperatures are above 10°C. Surface temperature must be at least 3° C above dew point. For optimum application properties, bring material to 21-27°C prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 4-38°C.

Ultra violet light may cause color variations if Intertuf 262 is used as a finish coat.

For North America if overcoating Intertuf 262 with antifoulings, the first coat of antifouling must be applied while the Intertuf 262 is still tacky.

A low temperature version of this product is available, see low temperature version data sheet.

Exposure to unacceptably low temperatures and/or high humidities during, or immediately after application may result in development of a surface 'sweat' which must be washed off with fresh water prior to overcoating, so that subsequent intercoat adhesion is not affected.

Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Technical and application data herein is for the purpose of establishing a general guideline of the coating and proper coating application guidelines. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results actually found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.

TINT BASE AVAILABILITY

KHA011 - Light, KHA044 - Ultra Deep

UNIT SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
1 US gal	0.8 US gal	1 US gal	0.2 US gal	1 US quart
5 US gal	4 US gal	5 US gal	1 US gal	1 US gal

For availability of other unit sizes consult International Paint

UNIT SHIPPING WEIGHT (TYPICAL)

Unit Size	Unit Weight
1 US gal	12.5 lb
5 US gal	61 lb

STORAGE

Shelf Life 24 months minimum from date of manufacture when maintained in protected storage at 4-38° C Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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Safety Data Sheet**KHA300 INTERTUF 262 OFF WHITE PART A**

Version No 4 Revision Date 05/23/17

1. Product and company identification

1.1. Product identifier	INTERTUF 262 OFF WHITE PART A
Product Code	KHA300
1.2. Relevant identified uses of the substance or mixture and uses advised against	
Intended use	Anticorrosive primer For professional use only.
Application Method	Refer Technical Data Sheet.
1.3. Details of the supplier of the safety data sheet	
Importer or Manufacturer	International Paint (Korea) Limited (8-6B/L Chilseo Industrial Complex), 626-6 Gyenae-Ri, Chilseo-Myeon, Haman-Gun, Gyeongsangnam-Do Korea
Telephone No.	055-632-6286(R&D), 055 586 2310(Fact)
Fax No.	055 632-6287(R&D), 055 587 6276(Fact)
1.4. Emergency telephone number (24 hour)	055-586-2310(Factory)
For Poisons Advice telephone	055-586-2310(Factory) For Advice to Doctors & Hospitals only

2. Hazard identification of the product**2.1. Classification of the substance or mixture**

Flam. Liq. 3;H226	Flammable liquid and vapour.
Skin Irrit. 2;H315	Causes skin irritation.
Eye Irrit. 2;H319	Causes serious eye irritation.
Skin Sens. 1;H317	May cause an allergic skin reaction.
Aquatic Chronic 3;H412	Harmful to aquatic life with long lasting effects.

2.2. Label elements

Using the Toxicity Data listed in section 11 & 12 the product is labelled as follows.



H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H412 Harmful to aquatic life with long lasting effects.

[Prevention]:

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.
 P261 Avoid breathing dust / fume / gas / mist / vapours / spray.
 P264 Wash thoroughly after handling.
 P272 Contaminated work clothing should not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves / eye protection / face protection.

[Response]:

P302+352 IF ON SKIN: Wash with soap and water.
 P303+361+353 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower.
 P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.
 P321 Specific treatment (see information on this label).
 P333+313 If skin irritation or a rash occurs: Get medical advice / attention.
 P337 If eye irritation persists:
 P362 Take off contaminated clothing and wash before reuse.
 P363 Wash contaminated clothing before reuse.
 P370 In case of fire:
 P378 Use alcohol resistant foam, CO2, powder, water spray for extinction. Do not use water jet.

[Storage]:

P403+233 Store in a well ventilated place. Keep container tightly closed.

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

2.3. Other hazards

This product contains no PBT/vPvB chemicals.

3. Composition/information on ingredients

This product contains the following hazardous substances.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Epoxy Resin CAS Number: 0025068-38-6	10- <20	Eye Irrit. 2;H319 Skin Irrit. 2;H315 Skin Sens. 1;H317 Aquatic Chronic 2;H411	[1]
Xylene CAS Number: 0001330-20-7	10- <20	Flam. Liq. 3;H226 Acute Tox. 4;H312 Acute Tox. 4;H332 Skin Irrit. 2;H315 Eye Dam. 2A;H319 STOT SE 3;H336 STOT RE 1;H372	[1][2]
Ethyl Benzene CAS Number: 0000100-41-4	2.5- <5	Flam. Liq. 2;H225 Acute Tox. 4;H332 STOT RE 2;H373 Asp. Tox. 1;H304 Skin Irrit. 2;H315	[1][2]

1-METHOXYPROPAN-2-OL CAS Number: 0000107-98-2	1- <2.5	Flam. Liq. 3;H226 STOT SE 3;H336	[1][2]
Trade secret	60- <70	---	---

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

*The full texts of the Hazard (H) phrases are shown in Section 16.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence do not require reporting in this section.

Common Names

0025068-38-6	(Epoxy Resin)
0001330-20-7	(Xylene)
0000100-41-4	(Ethyl Benzene)
0000107-98-2	(1-METHOXYPROPAN-2-OL)

4. First aid measures

4.1. Description of first aid measures

General

In all cases of doubt, or when symptoms persist, seek medical attention.

Never give anything by mouth to an unconscious person.

Inhalation

Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Skin Contact

Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognised skin cleanser. Do NOT use solvents or thinners.

Eye Contact

Irrigate copiously with clean fresh water for at least 10 minutes, holding the eyelids apart and seek medical attention.

Ingestion

If accidentally swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

No data available

4.3. Indication of any immediate medical attention and special treatment needed and notes for physician

No data available

5. Fire-fighting measures

5.1. Extinguishing media

Recommended extinguishing media: alcohol resistant foam, CO₂ powder, water spray

Do not use - water jet.

Note; Fire will produce dense black smoke. Decomposition products may be hazardous to health. Avoid exposure and use breathing apparatus as appropriate.

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water courses.

5.2. Special hazards arising from the substance or mixture

Fire will produce dense black smoke. Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Avoid exposure and use breathing apparatus as appropriate.

5.3. Advice for fire-fighters

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water courses.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition, do not turn lights or unprotected electrical equipment on or off. In case of a major spill or spillage in a confined space evacuate the area and check that solvent vapour levels are below the Lower Explosive Limit before re-entering.

6.2. Environmental precautions

Do not allow spills to enter drains or watercourses.

6.3. Methods and material for containment and cleaning up

Ventilate the area and avoid breathing vapours. Take the personal protective measures listed in section 8.

Contain and absorb spillage with non-combustible materials e.g. sand, earth, vermiculite. Place in closed containers outside buildings and dispose of according to the Waste Regulations. (See section 13).

Clean, preferably with a detergent. Do not use solvents.

Do not allow spills to enter drains or watercourses.

If drains, sewers, streams or lakes are contaminated, inform the local water company immediately. In the case of contamination of rivers, streams or lakes the Environmental Protection Agency should also be informed.

7. Handling and storage

7.1. Precautions for safe handling

Handling

This coating contains solvents. Solvent vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Areas of storage, preparation and application should be ventilated to prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentrations higher than the occupational exposure limits.

In Storage

Handle containers carefully to prevent damage and spillage.

Naked flames and smoking should not be permitted in storage areas. It is recommended that fork lift trucks and electrical equipment are protected to the appropriate standard.

This coating contains solvents. Solvent vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Areas of storage, preparation and application should be ventilated to prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour

7.2. Conditions for safe storage, including any incompatibilities

Keep away from the following materials: oxidising agents, strong alkalis, strong acids.

Avoid skin and eye contact. Avoid inhalation of vapours and spray mists. Observe label precautions. Use personal protection as shown in section 8.

Smoking, eating and drinking should be prohibited in all preparation and application areas.

Never use pressure to empty a container; containers are not pressure vessels.

This product is a flammable liquid. Refer to local storage and handling regulations pertaining to this type of material.

There are no exposure scenarios, see details in section 1.

7.3. Specific end use(s)

Store in a well ventilated, dry place away from sources of heat and direct sunlight.

Store on concrete or other impervious floor, preferably with bunding to contain any spillage. Do not stack more than 3 pallets high.

Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in the original container or one of the same material.

Prevent unauthorised access.

All sources of ignition (hot surfaces, sparks, open flames etc) should be excluded from areas of preparation and application. All electrical equipment (including torches) should be protected (Ex) to the appropriate standard.

The product may charge electrostatically. Always use earthing leads when pouring solvents and transferring product. Operators should wear clothing which does not generate static (at least 60% natural fibre) and antistatic footwear; floors should be of conducting type.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure standards are those provided by the ACGIH (American Conference of Government Industrial Hygenists).

Material	Short term (15 min. ave)		Long term (8hr time weighted average)		Comments
	ppm	mg/m ³	ppm	mg/M3	
1-METHOXYPROPAN-2-OL	150	540	100	360	
Barium Sulphate			2	10	
Ethyl Benzene	125	545	100	435	
Talc				2	
Titanium dioxide				10	
Xylene	150	655	100	434	

Key to notification

(P) Peak exposure limit

(R) Suppliers Recommended Limit

(Sk) There is a risk of absorption through unbroken skin

(Sen) Sensitiser

(Cat1) Category 1 - established human carcinogen

(Cat2) Category 2 - probable human carcinogen

(Cat3) Category 3 - substances suspected of having carcinogenic potential

No Data Available

8.2. Exposure controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapour below occupational exposure limits suitable respiratory protection must be worn.

Eye Protection

Wear safety eyewear, e.g. safety spectacles, goggles or visors to protect against the splash of liquids. Eyewear should comply with an approved standard.

Wear a full face shield if mixing or pouring operations pose a risk of splashes.

An eye wash station is suggested as a good work place practice.

Skin Protection

Gloves of an appropriate material should be worn during mixing and application.

Other

Overalls which cover the body, arms and legs should be worn. Skin should not be exposed. Barrier creams may help to protect areas which are difficult to cover such as the face and neck. They should however not be applied once exposure has occurred. Petroleum jelly based types such as Vaseline should not be used. All parts of the body should be washed after contact.

Respiratory Protection

When concentrations exceed the exposure limits shown above, workers must wear appropriate approved respirators. Provision of other controls such as exhaust ventilation should be considered if practical.

Thermal hazards

No Data Available

9. Physical and chemical properties

Appearance	White Liquid
Odour	Smell of Solvent
Odour threshold	Not Measured
pH	N/A
Melting point / freezing point (°C)	Not Measured
Initial boiling point and boiling range (°C)	117
Flash Point (C)	28
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: 1.1 Xylene Upper Explosive Limit: 6.6 Xylene
Vapour pressure (Pa)	Not Measured
Vapour Density	Heavier than air.
Specific Gravity	1.58
Solubility in Water	Immiscible
Partition coefficient n-octanol/water (Log Kow)	Not Measured

Viscosity (cSt) N/A
Molecular Weight Not Measured

9.2. Other information

No further information

10. Stability and reactivity

10.1. Reactivity

No data available

10.2. Chemical stability

Stable under recommended storage and handling conditions (see section 7). When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, oxides of nitrogen and smoke.

Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid possible exothermic reactions.

10.3. Possibility of hazardous reactions

May react exothermically with: oxidising agents, strong alkalis, strong acids.

10.4. Conditions to avoid

Stable under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Keep away from the following materials: oxidising agents, strong alkalis, strong acids.

10.6. Hazardous decomposition products

Fire will produce dense black smoke. Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Avoid exposure and use breathing apparatus as appropriate.

11. Toxicological information

Acute toxicity

Exposure to solvent vapour concentrations from the component solvents in excess of the stated occupational exposure limits may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eyes may cause irritation and soreness with possible reversible damage.

Based on the properties of the epoxy constituents and considering toxicological data on similar preparations this preparation may be an irritant and a skin and respiratory sensitiser. Low molecular weight epoxy constituents are irritating to eyes, mucous membranes and skin. Repeated skin contact may lead to irritation and sensitisation, possibly with cross-sensitisation to other epoxies.

The preparation has been assessed using the Acute Toxicity Data listed below, and classified for toxicological hazards accordingly. See section 2 for details.

Inredient	Oral LD50,	Skin LD50,	Inhalation Vanour LD50.	Inhalation Dust/Mist LD50.
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Epoxy Resin - (25068-38-6)	2,000.00, Rat	2,000.00, Rabbit	Not Available	Not Available
Ethyl Benzene - (100-41-4)	3,500.00, Rat	15,433.00, Rabbit	17.20, Rat	Not Available
Xylene - (1330-20-7)	4,299.00, Rat	1,548.00, Rabbit	Not Available	20.00, Rat

Item	Category	Hazard
Acute Toxicity (mouth)	Not Classified	Not Applicable
Acute Toxicity (skin)	Not Classified	Not Applicable
Acute Toxicity (inhalation)	Not Classified	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Eye damage/irritation	2	Causes serious eye irritation.
Sensitization (respiratory)	Not Classified	Not Applicable
Sensitization (skin)	1	May cause an allergic skin reaction.
Germ toxicity	Not Classified	Not Applicable
Carcinogenicity	Not Classified	Not Applicable
Reproductive Toxicity	Not Classified	Not Applicable
Specific target organ systemic toxicity (single exposure)	Not Classified	Not Applicable
Specific target organ systemic Toxicity (repeated exposure)	Not Classified	Not Applicable
Aspiration hazard	Not Classified	Not Applicable

12. Ecological information

12.1. Toxicity

The preparation has been assessed according to the GHS criteria and is classified as dangerous for the environment, using the toxicity data listed below.

There are no data available on the product itself.

The product should not be allowed to enter drains or water courses.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Epoxy Resin - (25068-38-6)	3.10, Pimephales promelas	1.40, Daphnia magna	Not Available
Xylene - (1330-20-7)	Not Available	Not Available	Not Available
Ethyl Benzene - (100-41-4)	4.20, Oncorhynchus mykiss	2.93, Daphnia magna	3.60 (96 hr), Pseudokirchneriella subcapitata
1-METHOXYPROPAN-2-OL - (107-98-2)	1,000.00, Oncorhynchus mykiss	500.00, Daphnia magna	1,000.00 (96 hr), Selenastrum capricornutum

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available

13. Disposal considerations

13.1. Waste treatment methods

Do not allow into drains or water courses. Wastes and empty containers should be disposed of in accordance with State and Federal regulations.

Using information provided in this data sheet advice should be obtained from the local Waste Regulation Authority as to whether special waste regulations apply.

14. Transport information

14.1. UN number 1263

14.2. UN proper shipping name Paint

14.3. Transport hazard class(es)

Road and Rail Transport UN1263, Paint, CLASS 3, PG III, HAZCHEM *3Y

IMDG reference : Class/Div 3 Sub Class

Ems F-E,S-E

ICAO/IATA Class 3 Sub Class

14.4. Packing group III

14.5. Environmental hazards

Road and Rail Environmentally Hazardous: No Transport

IMDG reference : Marine Pollutant: No

14.6. Special precautions for user
No further information

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not Applicable

15. Regulatory information

This product and all its components complies with the chemical and transport regulations from the country listed in section 1.3.

Other regulatory information specific to the hazardous chemical(s):

Dangerous Goods Act Class 4 Flammable Liquid, 2nd Petroleum Division, hazard class III
Waste Control Act Hazardous Waste

KOSHA

Please see section 8 in this MSDS for Harmful Factors Subject to Exposure Limit.

Harmful Factors Subject to Work Environment Measurement:

Ethyl Benzene
Talc
Titanium dioxide

Hazard Substances Subject to Control:

Ethyl Benzene
Titanium dioxide
Xylene

Harmful Factors Subject to Special Health Check-up:

Ethyl Benzene
Xylene

Harmful Substances Requiring Permission :

(No Product Ingredients Listed)

Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying:

(No Product Ingredients Listed)

Chemical Substances Control Act

Toxic Chemicals:

(No Product Ingredients Listed)

Observational Chemicals:

(No Product Ingredients Listed)

TRI PRTR Group I:

(No Product Ingredients Listed)

TRI PRTR Group II:

Barium Sulphate
Epoxy Resin
Ethyl Benzene
Xylene

Accident Precaution Chemicals:

(No Product Ingredients Listed)

Restricted Chemicals

(No Product Ingredients Listed)

Banned Chemicals:

Talc

16. Other information

Revision Date: 05/23/2017

Version: 4

Initial Date: 11/26/2013

This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS, NCIS.

The information on this SDS is based upon the present state of our knowledge and on current law.
The product should not be used for purposes other than shown in the product data sheet without first

It is always the responsibility of the user to take all necessary steps to meet the demands of applicable legislation.

The information in this Safety Data Sheet is required according to legislation.

The full text of the phrases appearing in section 3 is:

H225 Highly flammable liquid and vapour.

H226 Flammable liquid and vapour.

H304 May be fatal if swallowed and enters airways.

H312 Harmful in contact with skin.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H336 May cause drowsiness and dizziness.

H372 Causes damage to organs through prolonged or repeated exposure.

H373 May cause damage to organs through prolonged or repeated exposure.

H411 Toxic to aquatic life with long lasting effects.

This SDS is valid for 5 years from the revised date on page 1.

The revision date is in American format (e.g. MM/DD/YY).

End of document



All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable. Akzo Nobel however makes no warranty as to the accuracy of and/or sufficiency of such information.

A blue banner with a wavy top and bottom edge, containing the text "Storm Water Prevention Plan".

Storm Water Prevention Plan

Storm Water Pollution Prevention Plan

1. Property Description

The facility consists of four distinct areas equaling approximately 50,000 square ft.

A. Main Pier

The main pier is where we conduct in water repairs. The pier is approximately 130' in length and can accommodate 5 to 6 vessels moored stern to the pier depending on width. This dock has impervious surface and is sloped away from the water so it drains into our marine railway and rain water catch basin.

B. Marine Railway

We operate one marine railway capable of hauling vessels up to 130' in length and 600 gross tons. The vessels are hauled completely out of the water onto dry land and into a catch basin the entire length of the vessel. The railway area consists of concrete working yard surfaces; one on each side of the vessel. These yard surfaces drain into the railway catch basin.

C. Shop Building

The shop building has a footprint of approximately 7200 square ft. and rests 15% on the wooden pier. The building houses the employee lunchroom, water treatment room, production offices and small fabrication shop.

D. West Pier & Slip

The west pier and slip are constructed of wood. Used mainly for vessel moorage and vessel staging for haul out on the marine railway. The shop building extends onto this pier.

2. Spill Response

Spill response kits are located throughout the facility, see attached site plan. Kits consist of a combination of absorbent booms, absorbent pads, spreadable absorbent materials and waste bags. Spill response kits are to be re-stocked after use. Spill kits shall be inspected quarterly to ensure they are complete.

The General Manager assumes overall responsibility and control for spill response. Secondary/substitute authority is granted to the Shipyard Foreman & Superintendents. These individuals shall immediately report spills to the proper authorities in accordance with the MF NPDES permit.

Facility Foreman shall be responsible for mobilization and direct coordination of spill containment and response for spills in the upland areas.

Foreman shall be responsible for mobilization and direct coordination of response for spills that may result in pollutants reaching the waters of the state. This includes boom deployments and operation of small vessels utilized in coordination of said response.

2. Storm Water Pollution Control Measures

Storm water pollution and prevention control measures are centered around prevention, or in the case of inadvertent spill, containment. Industrial activities and control measures are listed by location.

A. Main Pier

The main Pier requires continuous monitoring during wind/rain events. Potential point sources for storm water pollution come from debris left on the pier, improper transportation of liquid wastes and materials and full or improperly monitored scrap and garbage hoppers. This pier is concrete and sloped into the railway catch basin. However, during extremely heavy rainfall storm water may drip over the edges into the water. Therefore, the following BMP's are in place to prevent pollutants from entering the water.

1. The main pier maintained in a clean and orderly manner.
2. Liquids shall be in enclosed containers and placed in secondary containment for transport. If materials are being loaded on a vessel, they shall remain in secondary containment until loaded.
3. Secondary containments shall be kept as dry as possible and not moved when containing liquids.
4. Removal of liquids from vessels shall only be accomplished by use of a vacuum truck operated by a subcontractor that is properly licensed and trained.
5. Trash and scraps shall be removed promptly. Liquid waste is not to be transported in open containers.

B. Marine Railway & Catch Basin

The marine railway and catch basin is where we conduct 80% of our work and is our largest potential source point for storm water pollution should the treatment system become inoperative. Therefore, the following BMP's have been implemented.

1. Concrete work pads which abut railway catch basin shall be swept into catch basin after each sandblasting event to prevent waste transfer to other areas.
2. All trash or rubbish of any kind shall be picked up each day as to prevent the catch basin suction from being plugged and rendered inoperative.
3. The railway trolley and its cabling system, along with other components shall be thoroughly cleaned as to be free from all dust and grindings and welding debris prior to launching a vessel.

4. Tarpaulin and shrink wrap enclosures shall be deployed during any production work that could possibly produce dust or overspray that could enter the water.
5. Whenever feasible, painting will be accomplished by brush and roller to reduce the risk of overspray.
6. All sandblasting will be done with the injection of water to eliminate the risk of dust and paint chips entering the water.

C. Shop Building

The shop building houses our water treatment system for the railway catch basin and yard, non-hazardous liquid storage area, employee lunch room, production office, and fabrication shop. There is little risk of storm water pollution in this area but the chance does exist so the following BMP's have been implemented.

1. The building floors shall be kept swept and clear of trash and garbage. The intent is to prevent the possibility of dust and particulates from being distributed thru the west end of the building onto the west pier.
2. All liquids in the liquid storage area shall be stored in the secondary containment.
3. The large shop doors shall be kept closed during strong wind events to keep any dust particles from being blown into the water.

D. West Pier

The west pier is constructed of wood and decked with 4" by 12" planking. The primary risk of storm water pollution is that anything spilled or deposited on the pier may be washed thru the cracks between planks during a rain event. The following BMP's shall be implemented in this area to reduce that risk.

1. There shall be no liquids stored on the pier.
2. Any liquid transported across the pier shall be in secondary containment.
3. Vacuuming shall be utilized for cleaning to prevent particulates from being swept thru the cracks falling into the water.
4. Pier shall not be washed down. Pier may be wetted only as required by Seattle Fire Department to mitigate the risk of fire.

4. Employee Training

Employees shall receive initial training during new hire orientation that includes MFSI BMP's. Continuing training shall include the incorporation of supplemental requirements periodically during weekly safety meetings.



Best Management
Practices

Best Management Practices

Marine Fluid Systems, Inc. has instituted the following Best Management Practices (BMP's) as are necessary to prevent the discharge of any foreign materials including but not limited to sandblast grit, paint chips, paint over spray, petroleum products and hull water washings to waters of the state or to local municipal storm water systems. BMP's shall include but not be limited to the following:

1. Debris Cleanup and Storage

The yard and marine railway shall be cleaned at least once daily and always upon completion of vessel repair work to minimize the possibility that runoff will carry sandblasting material or other debris into the receiving water. Cleanup of work, service and storage areas shall consist of mechanical or manual methods to sweep up and collect debris. The use of hose water for cleanup is to be minimized and as much as possible avoided. No sandblasting debris will be stored in an area that does not drain directly into the facilities storm water treatment system.

Collected sandblasting debris shall be stored with spent grit in large jumbo bags and shrink wrapped. The spent sandblasting grit, dust, and other debris shall not accumulate in the yard work areas to an extent that could be judged to be more than a minor deposition by vehicular or pedestrian traffic between regular cleanup efforts.

2. Chemical Storage

Solid chemicals, chemical solutions, paints, oils, solvents and waste materials, including used batteries, shall be stored in a manner which will prevent the inadvertent entry of these materials into waters of the state or municipal sewer systems and in a manner that will prevent spillage by overfilling, tipping or rupture. Waters of the state include ground water. In addition, the following practices shall be used:

- a. All liquid products stored outside shall be stored on durable impervious surfaces and behind berms. Impoundments shall contain capacity equal 10% of total tank or container value or 110% of the largest tank or container, whichever is greater. Local fire department codes may require a larger containment capacity. If a berm has a rain drain, it is not considered a containment berm unless provided with a closed and locked valve.
- b. Waste liquids shall also be stored under cover, such as tarpaulins or roofed structures. Roofs and tarpaulins shall be large enough to keep rainwater out of the containment berm.

- c. Incompatible or reactive materials shall be segregated and securely stored in separate containment areas that prevent mixing of chemicals.
- d. Concentrated waste or spilled chemicals shall be transported off site for disposal at a facility approved by the Department of Ecology or appropriate County Health Department. These materials shall not be discharged to any sewer or any state waters.

3. Recycling of Spilled Chemicals and Rinse Water

All metal finishing chemical solution, caustic wash, and rinse water tanks shall be stored in diked areas with drains and intercept contained overflows and spills. The intercepted chemical spill shall be recycled back to the chemical solutions tank. It must be handled or disposed of in such a manner as to prevent its discharge into state waters.

4. Accidental Oil Discharge

No discharge of oil or hazardous material to state waters is permitted. However, in the unlikely event of an accidental discharge of oil or hazardous material into waters of the state or onto land with potential for entry into state waters, the Department of Ecology and the United States Coast Guard shall be notified immediately.

- a. Oil containment booms shall be conveniently stored so as to be immediately deployable in the event of a spill, or shall be in use in waters surrounding the facility in a manner such that any spill would be effectively contained.
- b. Clean up efforts shall commence immediately and be completed as soon as possible, taking precedence over normal work, and shall include proper disposal of any spilled material and used clean up materials. In the event of a spill on land, all efforts will be made to prevent spilled materials from reaching waters of the state.
- c. Clean up of oil/hazardous material spills shall be in accordance with MFSI's approved Spill Control & Response Plan.
- d. No emulsifiers or dispersants are to be used in waters of the state without approval from the Director of the Department of Ecology.

5. Oil, Grease and Fuel Transfers

Drip pans or other protective device shall be required for all petroleum product transfer operations to catch incidental spillage and drip from hose nozzles, hose racks, drums and barrels. There shall be no transfer by hose or open containers from shore to vessel of any type of liquid other than clean potable water.

6. Dust and Over-Spray Control

Dust and over-spray from abrasive blasting and painting shall be controlled with structures or drapes to contain windblown materials and prevent their transport to the water. Frequent cleanup of these areas shall be accomplished to prevent the abrasive blasting waste from being washed away into waters of the state. The local air quality may have additional requirements beyond these minimums. Feasible measures of control, when appropriate, plastic barriers hung from the bow and stern of the vessel or from structures erected for that purpose. The bottom edge of tarpaulins shall be weighted as necessary to remain in place during a light breeze. When sandblasting vessel superstructures, plywood and/or plastic sheeting shall be used to cover openings and open areas between decks including but not limited to scuppers, railing, freeing ports, ladders and doorways.

Consideration shall also be given to other feasible innovative procedures as appropriate to improve the effectiveness of controls.

7. Paint and Solvent Use

The use and mixing of paints and solvents shall be carried out in locations and under conditions such that no spill shall enter state waters.

- a. Drip pans or other protective devices shall be required for all paint mixing and solvent transfer operations, unless the mixing operation is carried out in controlled areas away from storm drains, surface waters, shorelines, and piers. Drip pans and drop clothes or tarpaulins shall be used whenever paints and solvents are mixed or used on floats.
- b. Paint and solvent spills shall be treated as oil spills and shall be prevented from reaching waters of the state.

8. Maintenance of Hoses and Piping

Leaking connections, valves, pipes, hoses and soil chutes carrying either water or wastewater shall be repaired or replaced immediately. Soil chutes and hose connections to vessels and to receiving lines or containers shall be tightly connected as leak free as practicable.

9. Bilge and Ballast Water

Bilge and ballast water discharges shall not contain any oil and grease and shall not have or cause any visible oil sheen in the receiving waters.

Bilge and ballast water shall not be discharged to state waters if solvents, detergents or other additives have been added, unless a state water quality modification has been granted specific to that instance.

When it is necessary to move a vessel before pumping out the bilge, absorbent pads shall be deployed in the bilge spaces as a precaution to prevent pollution due to accident, slippage or shifting of the vessel, or other causes.

10. Sediment Traps

All sediment traps in the storm water drainage system shall be inspected on a bimonthly basis and cleaned at least quarterly or as necessary to keep the sediment trap at least half empty. Absorbent pads shall be placed in drains and replaced at least twice a week.

Inspection of sediment traps may be done visually. Clean out may be done manually or with a vacuum device. Waste shall be disposed in accordance with all applicable local, state, and/or federal laws.

11. Dangerous Water Handling and Reporting

The owner, manager or operator of a facility shall comply with the handling and reporting requirements for Dangerous Waste in Chapter 173-303 WAC.

12. In-Water Vessel Maintenance- Paint and Coating Application BMPs:

The following methods of paint and coating applications to a vessel's hull while in the water at a NPDES permitted shipyard are allowed provided that all containment, collection, and spill prevention BMPs are in place before any such applications are made to a vessel's hull.

- Application by roller.
- Application by brush.
- Conventional spray paint or sprays coating applications to a vessel's hull while that vessel is in the water are prohibited.
- Innovative spray paint or spray coating application methods will be allowed to be conducted on a vessel's hull while it is in the water provided that it has been demonstrated beforehand to Department of Ecology's satisfaction that such methods do not release generated pollutants into waters of the state.

BMPs for Floats used In-Water Vessel Maintenance:

Floats are defined as free-floating, unattached work platforms capable of moving back and forth along the length of the ship and around its hull.

Floats shall at all times maintain a minimum of 1' of freeboard at the floats lowest point during all phases of maintenance operations. The minimum of 1' freeboard requirement must be maintained with all scaffolding configurations and number of persons on board the float. All necessary precautions will be taken by personnel on board the float to prevent paints, cleaning materials, petroleum products, all other liquids, and unsecured materials from entering the water from the float.

Any container of paint, marine coating, or any other liquid product for painting or surface preparation of one gallon or greater must be provided with secondary containment when used on board a float. All roller pans used on a float must be provided with secondary spill containment. Secondary spill containment capacity is equal to the entire volume of container plus 10% of the volume of the same container.

Documentation Requirements for In-Water Vessel Maintenance BMPs:

Documentation requirements will be in effect for any in-water surface preparation operations of one hour or more in duration and any in-water coating or painting operation involving one half gallon or more of paint or marine coating.

Documentation requirements will consist at a minimum of one or more representative photographs of all in-water vessel maintenance BMPs which are implemented for surface preparation operations and all painting and coating operations. All such photographs shall be dated and maintained in a logbook with all necessary descriptive narrative of the in-water vessel maintenance BMPs being documented. These records shall be made available to a Department of Ecology inspector upon request and will be retained on site for at least three (3) years.

13. Onsite Debris

All potentially hazardous materials will be completely removed from onsite debris and will be disposed of in accordance with all applicable local, state and federal laws. Materials covered by this provision include but are not limited to contaminated containers, fiberglass and asbestos insulating materials, scrap metals, liquid waste, and controlled substances.

14. Sewage and Gray Water Discharges Prohibited

Owners/operators of vessel being hauled for service, repair, transport, or storage shall be notified in writing by the facility manger upon arrival for haul out that the discharge of sewage and gray water is prohibited while the vessel is on the ways, in the yard, or otherwise being transported over land. Any such waste discharge shall either be to the sanitary sewer or to the

vessels holding tanks that are periodically emptied in an approved manner. The facility manager will make available at all times a list of contractors providing disposal service for these waters.



Spill Control & Response Plan

Spill Control & Response Plan

1. Purpose

- a. The purpose of this plan is to address an appropriate response to any possible spills which may occur at the MFSI facility at 801 NW 42nd St. including possible spills from vessels moored dockside.

2. Facility Description

See attached spill response facility map.

3. Types of Possible Spills

- A. Diesel fuel
 1. Equipment fueling
 2. Vessel fuel transfer
- B. Lube Oil
 1. Equipment oil changes/spill
 2. Transfer to vessels
- C. Hydraulic Oil
 1. Transfer to equipment
 2. Transfer to vessels
 3. Flushing of new or repaired hydraulic systems
 4. Leak from open system, broken hoses, broken fittings, broken pipes, or faulty equipment.
- D. Gasoline
 1. Equipment fueling
- E. Paint
 1. Spill from upset container

4. Spill Response/Cleanup Team

- A. The response team under supervision of the Safety Office shall respond to all spill emergencies.

5. Emergency Notification Procedures

- A. Any spill which enters or has a likelihood of entering Lake Union shall immediately be reported by telephone to:

U.S. Coast Guard

206- 217-6232 or 1-800-424-8802

Harbor Patrol	206-684-4071
Department of Ecology	206-649-7229 or 206-649-7000
National Response Center	800-424-8802

- B. In the event of a spill from a vessel moored at MFSI facility, the person in charge of that vessel (master or chief engineer) shall be notified as well as local authorities and MFSI personnel.

6. Spill Response Contractors (in needed)

- A. Foss Environmental Services 206-767-0441 or 1-800-337-7455

7. Training of Facility Personnel

- A. Training in spill response of fire team shall consist of plan orientation and periodic drills to be conducted by the Safety Officer.

8. Response Procedures (after emergency notification)

- A. Initial assessment shall be made by the Safety Officer as to the nature of the spill and the correct response.
- B. Shore/Pier side spills
 - 1. Spill shall be surrounded by sorbing boom and mopped up by sorbing pads and/or sorbing shred material.
 - 2. Sorbing boom shall protect catch basins and dock drains in the way of the spill.
- C. Vessel Spills
 - 1. Spills onto vessel decks shall be handled the same as shore side spills.
- D. Spills into Lake Union Inside Containment Boom
 - 1. Sorbing boom shall be used to contain spill in as little area as possible, facilitating cleanup using sorbing shred and sorbing pads.
- E. Spills into Lake Union Outside Containment Boom
 - 1. Sorbing pads and or spare containment boom shall be deployed by the skiff to contain the spill at which time cleanup shall proceed as in inside spill.

9. Response Scenario

- A. Worst Case Discharge
 - 1. From truck, gallonage contained in truck. In the case of such a spill, an outside contractor would be required to assist.
 - 2. From vessel, gallonage of tank on vessel. In case of spill from a large tank, an outside contractor would be required to assist.

- B. Most Probable or Average Discharge
 - 1. Most spills occur from oil transfers and from equipment leakage. These are of a small size since operators able to secure equipment supervise such operations.
- C. Fire Hazards
 - 1. A spill of any combustible material may present a fire hazard. The Safety Office shall stop all hot work in the yard until it can be determined whether the work areas are safe.

10. Waste Disposal

- A. All waste oil and contaminated sorbing material shall be stored in the MFSI containment facility in approved containers and disposed of by a scheduled waste pick up contractor.
- B. All paint or other hazardous contaminated material shall be stored in the MFSI containment facility in approved containers and picked up by a hazardous materials contractor.

11. Worker Health and Safety

- A. For all personnel regularly required protective gear shall be used by spill response workers as well as rubber gloves, rubber boots, and rain gear when needed. Respirators or fire protective gear shall be used as required.
- B. Members of the team cleaning spills shall be familiar with MSDS, which are available for review in the yard office, and trained in proper product handling procedures.
- C. Since most spills are petroleum products or similar materials, spills can be very slippery presenting severe fall hazards for cleanup personnel. Every effort shall be made to provide sufficient sorbing pads and /or floor-dry on walkways to ensure good footing.

12. Spill Response Equipment Location

- A. Spill response equipment will be stored in a large gang box on the main dock which is clearly labeled "Emergency Spill Response Equipment".
- B. Additional supplies will be stored in the shop main building.



Solid Waste Handling & Disposal

Solid Waste Handling and Disposal

All solid waste material generated at the facility is handled and disposed of in a proper manner to prevent its entry into ground or surface water. Solid waste streams that are generated at the facility are summarized in Table 1. Difficulty or dangerous wastes generated at the site are stored, transported, and disposed of in accordance with WAC 173-303.

Table 1. SOLID WASTE INVENTORY

Waste Stream	Source	Generation Rate	Disposal Method
Municipal Solid Waste	Plastic, wood, empty containers, domestic waste	Approx. 312 yards/year	Collected and disposed as municipal solid waste
Metal Waste (Carbon Steel, Aluminum)	Structural shapes, pipe castings, miscellaneous machinery and hardware	Approx. 100 tons per year	Stored for future use or recycled to an offsite scrap metal dealer
Wood	Planks, plywood, boards, timbers	Approx. 40 cubic yards/year	Stored for use or disposed of to an offsite recycler
Abrasive Grit	Sand Blasting Sand	100 Tons per year	Stored in tarp-covered portable large plastic bags.
Universal Waste	Mercury light tubes	Approx. 10 units/year	Collected and recycled off-site
Used Batteries	Ship and vehicle batteries (dry cell, car, boat)	Approx. 6-12 units/year	Collected and recycled off-site
Non-Regulated Waste Oil	Ship, rolling stock and company vehicles	Approx. 6-10/55 gal drums/year	Collected and recycled off-site

Management Practices for Solid Waste Collection, Storage, and Transport

MFSI has adopted standard procedure for waste collection and transfer which include:

1. Proper solid waste storage
2. Regular site good housekeeping cleanup and
3. Preventative maintenance of collection, transfer equipment and the facility

Solid Waste generated at the site is collected in areas approved by the facilities Supervisor.

Storage and transfer techniques employed at the site include the following:

- Isolating solid waste collection areas from storm water.
- Locating solid waste collection areas in places that are paved, curbed, and graded, or graded and surfaced with crushed rock in a covered area.
- Locating solid waste collection areas away from direct traffic routes to prevent accidents and spills.
- All general solid waste non-hazardous are collected and stored with container lid closed when not in use.

MFSI has established a program of regular good housekeeping cleanup of collection and transfer areas. In active areas of the facility good housekeeping cleanup is conducted on a daily basis or as needed. Other areas of the site are cleaned-up on as needed basis.

MFSI Recycling and Waste Reduction

MFSI has developed a waste reduction and recycling program to reduce the volume of solid waste transferred to offsite disposal facilities. The company collects and stores recyclable materials derived from site operations to the maximum extent possible. Solid waste that may be generated at the site and that can be collected and stored for reuse or offsite recycling include aluminum cans and steel cans, cardboard boxes, scrap metal, waste oil, and lead acid batteries, as well as heavy equipment that has passed its useful life. Where appropriate, areas used for collecting solid waste are provided with containers clearly labeled for either non-recyclable waste or recyclable materials. In addition, solid waste that may be reused onsite is stored in separate containers constructed of compatible materials. Whenever possible, storage facilities for recyclables are located in readily accessible areas that are protected from precipitation and storm water. The Company facilities staff is responsible for arranging to have items recycled offsite.

Off-Site Disposal of Solid Waste

Table 2 lists the name and contact information for each facility that receives solid waste from the MFSI facility.

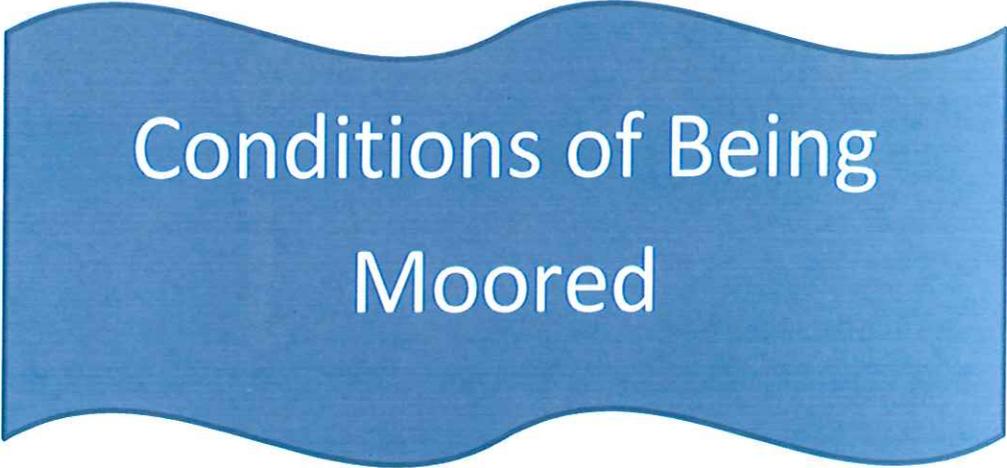
Table 2. Contact Information for Solid Waste Disposal Facilities

Waste Stream	Disposal Company	Company Contact	Address	Phone Number
Municipal Waste	Waste Management	Any Dispatcher	1001 Fannin St. Houston, TX 77002	206-762-3000

Metal Waste	Seattle Iron Metals	Any Dispatcher	601 S. Myrtle St. Seattle, WA 98108	206-682-0040
Wood Waste and Recycled Wood Waste	Waste Management	Any Dispatcher	1001 Fannin St. Houston, TX 77002	206-762-3000
Abrasive Blasting	Kleen Industrial Services	Any Dispatcher	1110 E. Alexander Ave, Tacoma, WA 98421	253-382-2168
Used Batteries	Emerald Services	Any Dispatcher	7343 E. Marginal Way Seattle, WA 98108	206-832-3000
Universal Waste	Emerald Services	Any Dispatcher	7343 E Marginal Way Seattle, WA 98108	206-832-3000
Non Regulated Waste Oil	Marine Vacuum Services	Any Dispatcher	1516 S Graham St, Seattle, WA 98108	206-762-0240

Contingency Plans

Alternative solid waste handling procedures have been developed for facility inoperable periods, or if delays in transporting solid waste occur. Remnant solid waste will be put into appropriate solid waste containers and stored in the area(s) designated for solid waste containment. The containers will be covered and held until such time that collection and transport of solid waste material could resume.



Conditions of Being
Moored

Conditions of Being Moored

- 1) There will be no discharge from any overboards other than s/w cooling lines that are necessary for machinery operation. **WASHING OF DECKS IS NOT ALLOWED.** The owner will be responsible for any accidental discharge of fluids from the vessel.
- 2) **There will be no hot work performed on the vessel by anyone other than Marine Fluid Systems, Inc.**
- 3) There will be no fluids or their containers, of any type, removed from the vessel during its stay at Marine Fluid Systems, Inc. without being immediately removed by the owner or the owner's agent. Marine Fluid Systems, Inc. will dispose of any unattended fluids or their containers found on the premises and the vessel owner agrees to pay our disposal fees.
- 4) Garbage will not be offloaded without the consent of Marine Fluid Systems, Inc. The owner and/or agent agree to pay all charges and fees in connection with their garbage disposal.
- 5) One vehicle per vessel will be allowed to park in the parking lot, all others must park outside the yard. **There is absolutely no parking within the yard, on the dock, or any fire lanes. Any vehicle found in violation will be removed by any means possible at the owner's expense. Marine Fluid Systems, Inc. will not be responsible for damages to any vehicles including damages sustained while loading & unloading vehicles or damage sustained while moving vehicles from no parking zones.**
- 6) Children under the age of 16 are not allowed in the yard without permission from yard management. There will be no visitors allowed in the yard at any time without permission of yard manager. **Alcohol and drugs or any persons under the influence of either are strictly forbidden.** Owner assumes responsibility for the behavior and actions of crewmembers and guests.
- 7) Sub-contractors will be allowed only with the permission of Marine Fluid Systems, Inc.
- 8) Regular business hours are from 7:00am to 3:30pm Monday through Friday. The gates will be closed and locked outside of these hours. Access to the yard outside of these hours may be arranged.
- 9) All vessels will supply Marine Fluid Systems, Inc. with current proof of insurance for workmen's compensation, for crewmembers, and liability.
- 10) There will be no painting, sanding, or grinding of any kind over the water or in areas open to the outside without the written consent of Marine Fluid Systems, Inc.
- 11) There will be no persons allowed to live on the vessel during dry dock.
- 12) **Marine Fluid Systems, Inc.'s shops and equipment are off limits to all ship crew.**
- 13) All items left on the premises after departure will be disposed of at the sole discretion of Marine Fluid Systems, Inc. Owner and/or agent agree to pay all cost.
- 14) All crewmembers will familiarize themselves with MFSI's "Storm Water Pollution Prevention Plan" which is available for review in the yard office. A copy will be supplied to the vessel upon request.

Moorage Rates:

- Moorage is .30 per/ft/day
- Utilities are 50.00 per day
- Environmental fee is 360.00 per visit

Marine Fluid Systems, Inc. is not responsible for valuables left onboard. We do not have 24 hr. security. We suggest that all valuables be removed such as medical kits, cd players, binoculars, and anything that is easily removed.

Terms:

Violation of any of these conditions will be grounds for the termination of moorage and/or any agreement between Marine Fluid Systems, Inc. and the vessels owner and/or agent, at the sole discretion of Marine Fluid Systems, Inc.

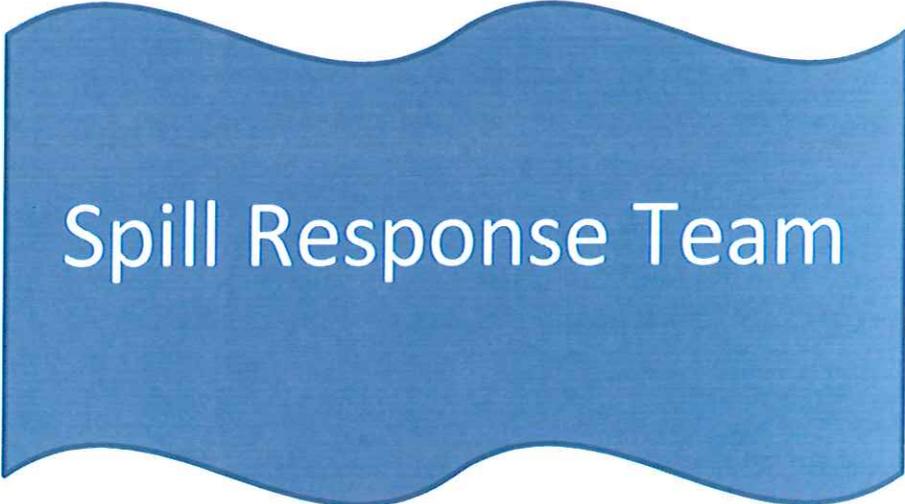
Owner and/or agent agree as follows: Charges for services rendered will be paid in full prior to the vessels departure. Charges accrued during dry dock will be paid before the vessel is launched. If launch is delayed for non-payment, lay days will continue to be charged until the vessel is launched. Owner will pay for lost revenue as result of such launch delay. In the event that collection procedures are required, the owner will pay all collection cost including attorney's fees and interest in the amount of 1.5% per month until payment is made in full.

I have read and understand these "Conditions of Being Moored"

Name _____ Signature _____

Position/Title _____ Date _____

Company/Vessel _____



Spill Response Team

Spill Response Team

Facility Manager:

Gregory Bostwick

Production Superintendent & Safety Director:

Jorge Mendez

MFSI Employees

Amando Garita

Antonio Bautista

Briam Ramirez

Edmundo Garcia

Jordan VanHollebeke

Kevin Mendez

Leo Fajardo

Tim Lundquist

Trinidad Sanchez



Permits

Issuance Date: February 14, 2018
Effective Date: April 1, 2018
Expiration Date: March 31, 2023

**National Pollutant Discharge Elimination System
Waste Discharge Permit No. WA0032174**

State of Washington
DEPARTMENT OF ECOLOGY
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.

Marine Fluid Systems, Inc.
801 NW 42nd Street #202
Seattle, WA 98107

is authorized to discharge in accordance with the Special and General Conditions that follow.

Facility Location:
801 NW 42nd Street
Seattle, WA 98107

Receiving Water:
Lake Washington Ship Canal

Treatment Type: BMPs prior to launch

SIC Code: 3731

Industry Type:
Shipyard Repairs and Maintenance

NAICS Code: 336611



Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology



King County

MAJOR DISCHARGE AUTHORIZATION

King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855

NUMBER 518-06

for

Marine Fluid Systems

Facility address: 801 NW 42nd Street, Seattle, Washington

Mailing address: 801 NW 42nd Street, Seattle, Washington

Phone: 206-706-0858

Emergency (24-hour) phone: 206-300-9833

Industry type: Boat/Shipyard

SIC code: 3731 **EPA Id. No.:** WAD 102895778

Discharge to: West Point

*Note: This authorization is valid only for the specific discharges shown below:

Discharge process: Wastewater generated by Boat/Shipyard operation

Effective date: August 12, 2020

Expiration date: August 11, 2025

DESCRIPTION OF SAMPLE SITES AND DISCHARGE VOLUMES

Sample Site No.	Description	Maximum Volume (gallons per day)	
		Industrial	Total
A1076	Sample tap on wastewater treatment system	22,000	22,000

Permission is hereby granted to discharge industrial wastewater from the above-identified facility into the King County sewer system in accordance with the effluent limitations and monitoring requirements set forth in this authorization.

If the industrial user wishes to continue to discharge after the expiration date, an application must be filed for re-issuance of this discharge authorization at least 90 days prior to the expiration date. For information concerning this King County Discharge Authorization, please call Industrial Waste Compliance Investigator Dave Haberman at 206-477-5465.

24-HOUR EMERGENCY NOTIFICATION

West Point Treatment Plant: 206-263-3801
Washington State Department of Ecology: 425-649-7000