

## Frequently Asked Questions

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Note: The terms rust and corrosion are sometimes used interchangeably.

Rust is what happens to ferrous metal, corrosion happens on non-ferrous metals such as aluminium.

Corrosion may be defined as the destruction or deterioration of a material because of a reaction with its environment. For steel it is often the case of the iron endeavouring to return to the original iron oxide state. Although many other metals form their oxides when corrosion occurs, rusting is a term reserved for the corrosion of steel and iron.

### 1. **What is Ship-2-Shore?**

Ship-2-Shore (S-2-S) is a state of the art rust inhibitor, lubricant, penetrant with dielectric property's, it does not contain silicones, waxes, tars or sheep oil.

Using **Fluid Thin Film Coating (FTFC)** technology, S-2-S stops **rusting** 100% as long as it is present on the metal.

### 2. **What causes rust?**

A rust cell is similar to a tiny battery. There is an anode, cathode, electrolyte and a path of current. A transfer of electrons takes place and this causes reduction in the metal thickness.

### 3. **How does S-2-S stop rusting?**

S-2-S displaces electrolytes (water for instance), scavenges oxygen from the surface and leaves an ultra-thin, semi liquid dielectric barrier coating behind that acts as a liquid insulator preventing the transfer of electrons thereby shutting down the rust cell.

### 4. **How can S-2-S be applied?**

Method of application does not effect product performance.

Use brushes, paint rollers, high pressure paint sprayers with a .012 - .015 spray tip. Specialized application equipment that uses long rods to reach into usually inaccessible areas or just pour it on, mop it around.

### 5. **What surface preparation is required before application of S-2-S?**

Heavy flaky rust scale and loose paint should be removed as it will start falling off after a few weeks taking S-2-S with it leaving a dry uncoated surface which will require a touch-up.

PLID can be applied over the heaviest of rust and debris but enough product needs to be applied to thoroughly soak the area with a little remaining on the surface.

### 6. **Can S-2-S be applied when the metal is damp eg. heavy condensation is present?**

Yes, moisture on the metal has no effect on the performance of S-2-S.

7. **Will S-2-S prevent condensation from forming?**

No. In areas that are subject to heavy condensation such as the inside of a ship the condensation will continue to occur but rusting will not.

8. **What is the recommended coating thickness?**

Coating thickness is measured in mils. 1 mil equals one thousandths of an inch (0001).

A simple measuring gauge called a mil comb is available at most paint stores, maybe free.

**PLID** - A clean rust scale free surface should be well soaked, about 1 to 2 mils. If no surface preparation is to be done and heavy rust scale exists enough product needs to be applied to soak through the rust and leave some excess material on the surface.

When applying through a small crack or opening several applications over a number of days/weeks maybe required as the necessary volume of material cannot get through the opening at one time to cover the entire inside surface.

For instance door hinges, you may spray PLID on the crack but enough material may not get through the crack in one try to lubricate the entire hinge, so several applications maybe required.

It's like trying to cover a foot ball field through a key hole.

**Industrial** - 5 to 20 mils.

Surfaces free of rust scale and heavy dirt that will not be exposed to prolonged UV exposure or water wash, 5 mils should be adequate. Surfaces in aggressive environments like direct sun exposure or rain need the heavier coating, 10 to 20 mils. When old, very dry looking metal is coated 10 - 20 mils should be applied as a lot of the coating may soak into the pores of the metal.

Rule of Thumb - The more aggressive the environment the heavier the coating.

9. **How long will an application last?**

**PLID** should last from 12 to 18 months on a flat piece of metal not exposed to direct sun and rain.

After 12 to 18 months PLID dissipate leaving no residue behind.

**Industrial and PLID** should last forever in an enclosed environment.

**Industrial** in an aggressive environment exposed to constant water wash, estimate two years.

When exposed to direct all day UV's (sun), two to three years or more.

Used in ballast water tanks that are full all the time 5 to 10 years.

When ballast tanks are empty some water usually remains in the bottom and splashes around with the motion of the ship causing water wash, the bottom of the tank and one foot up the sides may require reapplication every two to four years.

Preparation before reapplication should not be necessary.

10. **Can S-2-S be painted over?**

A light coating of PLID or Industrial can be painted over using a spray application, the paint will not be tightly adhered so it should not be done where abrasion or foot traffic is expected.

A very successful practice has been to: hand tool prepare the metal (wire brush or needle gun), apply a porous primer or paint and top coat with Industrial. Industrial soaks through and prevents rusting of the metal under the paint.

11. **Are there materials that S-2-S is not compatible with?**

S-2-S is not compatible with oxidizing agents.

Eg. chlorine, liquid nitrogen, dichromate ions, nitric acid, perchloric acid, sulphuric acid and others.

Natural rubber such as found in car door seals and butyl which is sometimes used to hold and seal auto windshields in place.

Other rubber products such as seals may swell slightly but no deterioration will occur.

If applied to old, hard rubber this may help to rejuvenate them, which is a good thing.

12. **Does S-2-S prevent the appearance of rust?**

On some highly polished steel and stainless steel a slight rust bloom or patina may appear but rust scale will not occur.

13. **Will S-2-S prevent rusting between dissimilar metals such as steel and aluminium?**

Yes. This rusting/corrosion is referred to as **galvanic corrosion**.

14. **Is S-2-S a good lubricant?**

PLID is an extreme pressure lubricant and is suitable for high load applications such as chains, fishing reels etc.

Industrial is a good general purpose lube but should not be recommended for hypoid gear cases like automobile differentials or wheel bearings.

15. **Can S-2-S be used rifles, pistols and black powder guns?**

Yes, Ship-2-Shore performs excellent as cleaner, lubricant and preservative.

<http://www.ship-2-shore.com/testimonials.htm> scroll down **Wardstrom Industrial Gas**

16. **Can S-2-S be used as a wire rope dressing?**

Yes. PLID will penetrate to the core of the wire, inhibit rust, provide lubrication.

Industrial is slow to penetrate but provides good protection. A combination of both is the best.

PLID to penetrate, Industrial for exterior protection, either format can be used alone.

17. **Can S-2-S be used to prevent corrosion of electronics and other electrical devices?**

Yes, PLID has been sprayed onto computer boards, into alternators, generators, fuse panels electrical breakers etc. with excellent results, corrosion has been prevented and these units continue to operate fine.

Industrial or PLID applied in electrical plugs has prevented corrosion and eliminated intermittent electrical problems.

**Caution:**

- a. When spraying with Aerosol the **propellant is flammable**, ensure electrical devices that may cause a spark are **turned off** when applying.  
A spark may cause an explosion or fire.
- b. Avoid spraying friction devices like drive belts and clutches.
- c. Avoid computer screens and light emitting diodes such as cell phone screens.

18. **Is S-2-S a Fire Hazard?**

Industrial and PLID are considered a **CLASS 3 flammable** which means it will burn but requires no special shipping or handling precautions.

**See MSDS** sheet.

If heated with a flame the smoke and fumes produced are non explosive.

S-2-S can be cut and welded through. **A fire watch is required.**

19. **What is the temperature range of S-2-S?**

Industrial & PLID when used as a rust inhibitor -40°F - 100°F

Industrial is temperature sensitive, when warmed to 70° is very thin and runny, when cooled to 40°F it is very thick.

20. **How do we get it off if we want to paint later?**

High pressure washing, solvents or high alkaline cleaners.  
When the application is fresh, soap and water will clean it up.  
(dish detergent works well).

21. **Is S-2-2 environment and user friendly?**

Yes.

Refer to attached 96hLC50 bioassay.

Exhibit #1

Letter from the Pest Management Regulatory Agency of Canada.

Exhibit #2

Material Safety Data (information) Sheet

Attachments #3 & #4.

If S-2-S is spilled in the water it will cause a thin slick on the surface but will dissipate into the air very quickly causing no environmental damage.

Low health hazard.

Low fire hazard.

No explosion hazard.

Soap & Water clean-up.

22. **PRECAUTIONS:**

When spraying in **enclosed environments wear an approved organic mist vapour respirator** and ensure adequate ventilation.

When spraying outdoors a painters mask should be worn.

**Refer to MSDS SHEET**

If Ingested **DO NOT INDUCE VOMITING CALL A physician** or poison control centre immediately. **See MSDS information sheets.** Attachment 1 & 2.

23. **Disclaimer of Liability**

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damage incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical and application of such products is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the sole responsibility of the user to comply with all applicable Federal, State or Province and Local Laws and Regulations.

Any questions with regards to information contained herein should be referred to:

Product & Safety Tel/Fax: 250-477-7325

## Exhibit 1

Liquid: Corrosion Control Systems Inc.  
250 477-7325

**BC Research Inc.**  
3650 Westbrook Mall  
Vancouver, BC V6S-2L2  
Tel: (604) 224-4331  
Fax: (604) 224-0540

COPY OF:

96-h LC50 Rainbow Trout Bioassay on:  
SHIP-2-SHORE

96-h LC50 1409.31(900.0,2000.0)

46-96001

SAMPLE Taken	SAMPLE pH:
SAMPLE Received: Mar. 20, 1996	SAMPLE: Dissolved Oxygen (mg/L)
Date Started: Mar. 21, 1996	SAMPLE Conductance (umho/cm):
Time Started: 11:17	

	TEST CONC'N (mg/L)	ph		DISSOLVED OXYGEN		PERCENTAGE SURVIVE			
		INITIAL	FINAL	INITIAL mg/L	FINAL mg/L	24h	48h	72h	96h
Control	0	5.7	5.8	10.1	9.9	100	100	100	100
	3000	6.0	5.9	10.1	9.7	100	0	0	0
	2000	5.9	5.9	10.1	9.9	100	20	0	0
	1200	6.2	6.0	10.1	9.9	100	90	90	80
	900	6.0	6.0	10.2	10.0	100	100	100	100
	800	6.0	6.0	10.2	9.8	100	100	100	100
	700	6.1	6.0	10.2	9.9	100	100	100	100
	600	6.1	6.0	10.2	9.8	100	100	100	100
	500	6.1	6.0	10.1	8.9	100	100	100	100
	100	5.7	5.8	10.1	9.5	100	100	100	100

COMMENTS: Fish in the 600 to 1200 mg/L concentrations showed signs of stress, i.e. moribund or loss of equilibrium. The fish in the 500 mg/L concentration only showed rapid gill movement. All fish in the 100mg/L concentration appeared and behaved normally during the test.

TEST CONDITIONS:

Number of Organisms: 10	Test Temperature (deg C): 15+/-1
Test Volume (L): 10	Test ph Adjusted: No
Preparation Time (min): 30	

Bioassay conducted according to EPS 1 RM/ 9: "Biological Test Method: Acute Lethality Test Using Rainbow Trout", July 1990

TEST ORGANISM Rainbow Trout

(Oncorhynchus mykiss)

Acclimated (deg. C): 15 + or -1

Weight (g): 0.50 + or -0.06

Length(cm): 3.9 + or -0.1

DUPLICATE REFERENCE TOXICANT (analytical grade phenol)

Tests were conducted on Mar. 21, 1996  
tests gave 96-h LC50 of 10.34 mg/L (6.8, 13.0) and 10.0 mg/L 96.8, 13.0)

DILUTION WATER (Vancouver dechlorinated hardened tap water)

Alkalinity (mg CaCO <sub>3</sub> /L): 5	Residual Chlorine (mg/L): <0.005
EDTA Hardness (mg CaCO <sub>3</sub> /l): 8	Conductance (umho/cm): 17
Total; suspended Solids(mg/L) <1	

Other parameters available on request.

ANALYST  
(Grange)?

VERIFIED BY:  
Janet Pickard

96-h LC50 is the 96-h median lethal concentration (ie.that causes 50% mortality). The 95% confidence limits are in parentheses. Values are calculated by computer following C.E. Stephan "Methods for Calculating an LC50" (ASTM STP 634. 1977).

## Exhibit 2

Pest Management Regulatory Agency of Canada.  
2250 Riverside Dr.  
Address locator 6606D2  
Ottawa, ON K 1A 0K9

May 12, 1997

Dear Mr. Laing,

This letter is in response to your fax of today, May 12, 1997. From the information that you have sent us, including the product label and MSDS, it appears that your product, Ship-2-Shore Industrial, does not require registration under the Pest Control Products Act and Regulations, since you are not claiming any pesticidal action by the product.

Please do not hesitate to contact us if we can be of any further assistance.

Sincerely,

Jennifer Griffith

Information Officer

**Note:** Original signed document available on requested. TJL

# Attachment # 1

Liquid Corrosion Control Systems Inc. Box 48205, Victoria, B.C. Canada, V8Z 7H6

Page 1

## MATERIAL SAFETY DATA SHEET

### Section 1: Product Information

Name: Ship 2 Shore / INDUSTRIAL  
Description: Corrosion Inhibitor/ Moisture Displacer / E.P. Lubricant  
Use: Corrosion Inhibitor/Penetrant/Lubricant for Marine Environments-for Non-ferrous or Ferrous as well as dissimilar metals / wherever there is excessive moisture.  
MSDS Number: 1003 LCC  
Appearance & Odor: Red - with fresh scent  
Emergency Telephone: 250-477-7325 Night 250-477-7325 (Or consult local poison control center)  
Product Information: 250-477-7325  
Effective Date: 09/01/07  
Supersedes Date: 09/01/06

### Section 2: Composition

Product is formulated from highly refined hydrocarbon base stock, emulsifying and demulsify agents, hydrocarbon solvents and unique water displacing materials and inhibitors.

### Section 3: Hazardous Ingredients

	<u>OSHA PEL</u>	<u>CAS#</u>
Base Stock	5mg/m (oil mist)	72623-85-9 72623-83-7
Hydrocarbon Solvent	100 ppm (vapor)	8008-20-6 8052-41-3

### Section 4: Chemical Characteristics

% Non-Volatiles (by weight) > 85%  
Boiling Point: > 212 degrees F.  
Vapor Pressure:(mm Hg. @ 25deg. C) 8 mm Hg.  
Vapor Density: (Air - 1) >1  
Melting Point: Not Applicable  
Solubility in Water: Slightly emulsifiable  
Evaporation Rate (Butyl Acetate = 1) <1  
Specific Gravity (Water = 1): 0.908

### Section 5: Emergency & First Aid Procedures

Skin: Remove excess by wiping and follow by washing with soap and water until there is no odour  
Eyes: Flush with copious quantities of water (15 minutes). Lift Eyelids and flush inside. Seek Physician if eyes become inflamed.  
Inhalation: Evacuate to fresh air. Apply CPR if required. If resuscitation is required, assessment by a Physician is mandatory.  
Ingestion: DO NOT INDUCE VOMITING! If vomiting occurs, take care to prevent aspiration.. Give 1/2 pint of milk to drink. Seek aid of a of Physician.  
Note to Physician: Consult standard literature re: Hydrocarbon Poisoning.

### Section 6: Health Effects Summary

Primary Route(s) of Exposure:	Eyes-YES	Skin-NO	Inhalation-YES	Ingestion-YES
Eye Contact:	Essentially non-irritating, however, vapors and/or mists can cause mild to moderate irritation. Severity of reaction depends upon duration of exposure and first aid procedures administered. Over exposure may cause eyes to become red and/or watery			
Skin Contact:	Essentially non-irritating. LD50 absorption for skin is 2000 mg/kg. Prolonged or repeated contact with the skin has not been a cause of defatting or dermatitis in normal day to day handling of material. Effects of over exposure may be dry, chapped skin.			
Inhalation:	Non-toxic, *LC50 = 5000 ppm (rat, inhalation) Can cause irritation to nose and throat and upper respiratory tract during prolonged exposure, but not normally. Exercise caution if vapours are hot. If over-exposure occurs - may cause dizziness or headaches or nausea.			
Ingestion:	* Based on toxicity of components. Virtually Non-Toxic **LD50 1400 mg/kg (rat, oral) May be harmful or fatal if swallowed. Can cause severe irritation of mouth, throat and esophagus. Can cause nausea, vomiting or gastrointestinal upset. May cause diarrhea.			
Carcinogenicity:	** Based on toxicity of Petroleum Distillate only. Non-carcinogenic as listed by: ACGIH, IARC MONOGRAPHS, or OSHA (Based on toxicity reports of component parts)			

Section 7: Reactivity Data

Product Stability: Stable  
 Incompatibility: Oxidizing Materials such as Liquid or Compressed Oxygen or Peroxides or Chlorines  
 Hazardous Decomposition: Burning produces normal bi-products of combustion including: Carbon Monoxide, Phenols or Petroleum Products  
 Hazardous Polymerization: Will NOT occur.

Section 8: Fire & Explosion Hazardous information

Flash Point: >260 degrees F. (ASTM D-56)  
 Flammable Limits: Solvent Component LEL: 1.0 UEL: 6.0  
 Extinguishing Media: CO2, Dry Chemical, Foam, Water Spray.  
 Fire Fighting Procedures: Use full protective and self-contained breathing apparatus. Cover with an extinguishing agent. Do NOT spray with water using a direct stream into the burning liquid as this may spread the fire. Use a water spray or mist to cool the fire.  
 Explosion Hazards: Treat as a combustible liquid. Do NOT flame cut, drill or weld the empty containers.  
 Fire Hazard Identification: NFPA STD. 321 Combustible Liquid, Class III 3A

Section 9: Safety Precautions for Safe Handling

Steps to be taken in case of a spill: Eliminate sources of ignition. Stop or reduce flow by means of a dyke or barricade. Absorb small spills using dry clay or a commercial absorbent. Collect residue into suitable container for proper disposal. Material may be washed into floor drains equipped with an oil interceptor.  
 Waste disposal method: Dispose in an approved landfill site or incinerate at a licensed waste reclaiming facility. Liquid waste may be removed by means of a licensed reclaimer under used oil classification.  
 Be sure to follow all Local, State, & Federal Requirements.

Section 10: Control Measures

Ventilation: Provide sufficient ventilation by means of general or mechanical means to ensure that exposure levels are kept below combustible limits.  
 Respiratory Protection: None normally needed unless atomizing in enclosed or confined spaces. Use approved organic mist vapor respirator.  
 Eye Protection: None normally required unless operator is using high pressure spraying equipment and splashing maybe likely to occur. Use approved face mask or goggles.  
 Protective Gloves: None needed  
 Protective Clothing: None Needed  
 Personal Hygiene: Wash face and hands with soap and water after use, especially before eating or smoking or using the rest room facilities. Launder soiled clothing and shoes / boots with detergent. Apply mild hand cream if hands become dry or chapped.

Section 11: Label & Transportation Information

DOT Shipping Name: Class B - Combustible Liquid  
 DOT Identification #: Not restricted

Section 12: Regulatory information SARA TITLE III INFORMATION

Section 313 - Toxic Chemicals This product does not contain any chemicals which are listed as a carcinogen and in concentrations greater than 0.1 % of the mixture pursuant to Section 313 of SARA TITLE 111.

Section 302 - EXTREMELY HAZARDOUS SUBSTANCES Pursuant to Section 302 of SARA TITLE 111, this product does not contain an extremely hazardous substance. Materials which may contain zinc compounds; contains 0.1% as Zn

Material Information System (WHMIS) This product is not known to contain greater than 1.0% of any chemical substance which is considered Extremely Hazardous.

Section 13: Users Responsibility

A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be.

Section 14: Disclaimer of Liability

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damage incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical and application of such products is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the sole responsibility of the user to comply with all applicable Federal, State and Local Laws and Regulations.

Any questions with regards to information contained herein should be referred to:

Product & Safety 250-477-7325

## Attachment # 2

Liquid: Corrosion Control Systems Inc. Box 48205, Victoria, B.C. Canada V8Z 7H6

Page 1

### Material Safety Data Sheet

#### Section 1: Product Information

**Name:** Ship-2-Shore-PLID: Penetrant-Lubricant-Inhibitor-Dielectric

Description: Lubricant / Corrosion Inhibitor / Moisture Displacer / Dielectric (38.000 Volts)/E.P. Lubrication  
Use: Corrosion Inhibitor / Penetrant / Lubricant / Ferrous and Non-ferrous metals and dissimilar metals.  
MSDS Number: 1002 LCC  
Appearance & Odour: Pale Red - with oily fragrance  
Emergency Telephone: (250) 477-7325 Night (250) 477-7325 (Or consult local poison control centre)  
Product Information: (250) 477-7325  
Effective Date: 09/01/2007  
Supersedes Date: 09/01/2006

#### Section 2: Composition

Product is formulated from highly refined hydrocarbon base stock, emulsifying and demulsifying agents and hydrocarbon solvents and unique water displacing materials and inhibitors.

<u>Section 3: Hazardous Ingredients</u>	<u>OSHA PEL</u>	<u>CAS #</u>
Base Stock	5 mg/m3 (oil mist)	72623-85-9 72623-83-7
Hydrocarbon Solvent	100 ppm (vapour)	8008-20-6
Zinc Dinonylnaphthalenesulfonate	N.av./P.D.	8052-41-3

#### Section 4: Chemical Characteristics

% Non-Volatiles (by weight)	>91%
Boiling Point:	>212 degrees F.
Vapour Pressure:(mm Hg. @ 25 deg. C)	8 mm Hg.
Vapour Density: (Air = 1)	Heavier than Air
Melting Point:	Not Applicable
Solubility in Water:	Slightly emulsifiable
Evaporation Rate (Butyl Acetate = 1)	<1
Specific Gravity (Water = 1):	0.868

#### Section 5: Emergency & First Aid Procedures

Skin: Remove excess by wiping and follow by washing with soap and water until there is no odour.

Eyes: Flush with copious quantities of water (15 minutes). Lift Eyelids and flush inside.  
Seek Physician if eyes become inflamed.

Inhalation: Evacuate to fresh air. Apply CPR if required. If resuscitation is required, assessment by a Physician is mandatory.

Ingestion: **DO NOT INDUCE VOMITING!** If vomiting occurs, take care to prevent aspiration..  
Give 1/2 pint of milk to drink. Seek aid of a Physician.

Note to Physician: Consult standard literature re: Hydrocarbon Poisoning.

#### Section 6: Health Effects Summary

Primary Route(s) of Exposure:      Eyes-YES              Skin-NO              Inhalation-YES      Ingestion-YES

**Eye Contact:** Essentially non-irritating, however, vapors and/or mists can cause mild to moderate irritation. Severity of reaction depends upon duration of exposure and first aid procedures administered. Over exposure may cause eyes to become red and/or watery

**Skin Contact:** Essentially non-irritating. LD50 absorption for skin is 2000 mg/kg. Prolonged or repeated Contact with the skin has not been a cause of defatting or dermatitis in normal day to day handling of material. Effects of over exposure may be dry, chapped skin

**Inhalation:** Non-toxic, \*LC50 = 5000 ppm (rat, oral)  
Can cause irritation to nose and throat and upper respiratory tract during prolonged exposure, but not normally. Exercise caution if vapors are hot.  
If over-exposure occurs - may cause dizziness or headaches or nausea.  
\* Based on toxicity of components.

**Ingestion:** Virtually non-toxic, \*\*LD50 1400 mg/kg (rat, oral) May be harmful or fatal if swallowed. Can cause severe irritation of mouth, throat and esophagus. Can cause nausea, vomiting or gastrointestinal upset. May cause diarrhea.  
\*\* Based on toxicity of Petroleum Distillate only.

Carcinogenicity: )  
Chronic Toxicity: ) Non-carcinogenic as listed by: ACGIH, IARC MONOGRAPHS, or OSHA (Based on toxicity reports of component parts). No  
Tetratogenicity: ) data available to indicate product or components present at greater than 1% are chronic health hazards or in concentrations of  
Mutagenicity: ) greater than 0.1% which may present carcinogenic, mutogenic or genotoxic health hazards, or present in concentrations greater  
the  
Reproductive Toxicity:) 0.1% that may cause birth defects or reproductive toxicity.

Section 7: Reactivity data

Product Stability:	Stable
Incompatibility:	Oxidizing Materials such as Liquid or Compressed Oxygen or Peroxides or Chlorines
Hazardous Decomposition:	Burning produces normal bi-products of combustion including: Carbon Monoxide, Phenols, or Petroleum Products, Oxides of carbon, nitrogen, sulphur, phosphorous, calcium, sodium, zinc, magnesium, hydrogen sulphide, hydrogen chloride, aldehydes and other products of incomplete combustion.
Hazardous Polymerization:	Will NOT occur.

Section 8: Fire & Explosion Hazardous Information

Flash Point:	260 degrees F.	(Method COC)
Flammable Limits:	Solvent component	LEL: 1.0 UEL: 6.0
Extinguishing Media:	C02, Dry Chemical, Foam, Water Spray.	
Fire Fighting Procedures:	Use full protective and self-contained breathing apparatus. Cover with an extinguishing agent. Do NOT spray with water using a direct stream directly into the burning liquid as this may spread the fire. Use a water spray or mist to cool the fire.	
Explosion Hazards:	Treat as a combustible liquid. Do NOT flame cut, drill or weld the empty containers.	
Fire Hazard Identification:	NFPA STD. 704	Health - 0 Flammability - 1 Reactivity - 0
	NFPA STD. 321 Combustible Liquid, Class III 3A	

Section 9: Safety Precautions for Safe Handling

Steps to be taken in case of a spill:	Eliminate sources of ignition. Stop or reduce flow by means of a dike or barricade. Absorb small spills using dry clay or a commercial absorbent. Collect residue into suitable container for proper disposal. Material may be washed into floor drains equipped with an oil interceptor.
Waste disposal method:	Dispose in an approved landfill site or incinerate at a licensed waste reclaiming facility. Liquid waste may be removed by means of a licensed reclaimer under used oil classification. Be sure to follow all Local, State, & Federal Requirements.

Section 10: Control Measures

Ventilation:	Provide sufficient ventilation by means of general or mechanical means to ensure that exposure levels are kept below flammable limits.
Respiratory Protection:	None normally needed unless atomizing in enclosed or confined spaces. Use approved organic mist vapour respirator.
Eye Protection:	None normally required unless operator is using high pressure spraying equipment and splashing may be likely to occur. Use approved face mask or goggles.
Protective Gloves:	None needed
Protective Clothing:	None Needed
Personal Hygiene:	Wash face and hands with soap and water after use, especially before eating or smoking or using the rest room facilities. Launder soiled clothing and shoes / boots with detergent. Apply mild hand cream if hands become dry or chapped.

Section 11: Label & Transportation Information

DOT Shipping Name:	Class B - Combustible Liquid
DOT Identification #:	Not restricted

Section 12: Regulatory Information SARA TITLE III INFORMATION

Section 313 - Toxic Chemicals This product does not contain any chemicals which are listed as a carcinogen and in concentrations greater than 0.1 % of the mixture pursuant to Section 313 of SARA

Section 302 - EXTREMELY HAZARDOUS SUBSTANCES Pursuant to Section 302 of SARA TITLE III, this product does not contain an extremely hazardous substance. Materials which may contain zinc compounds; contain 0.1% as ZN

Material Information System (WHMIS) This product is not known to contain greater than 1.0% of any chemical substance which is considered Extremely Hazardous.

Section 13: Users Responsibility

A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be.

Section 14: Disclaimer of Liability

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damage incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical and application of such products is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the sole responsibility of the user to comply with all applicable Federal, State and Local Laws and Regulations. Any questions with regards to information contained herein should be referred to: LCC Inc. Product & Safety Tel: 250 477-7325 Fax: 250 477-7325

### Attach 3

#### Ship-2-Shore - PLID Chemical Characteristics

% non volatile (by weight)	88%
Boiling Point	>212 deg F.
Vapor Pressure (mmHg. @ 25deg. F)	8mmHg
Vapor Density (air=1)	>1
Solubility in Water	Slightly Emulsifiable
Evaporation rate (Butyl Acetate = 1 )	<1
Specific Gravity (Water = 1)	0.868
Flash Point	260deg. F (COC)
Flammable Limits (Solvent component)	LEL:1.0 UEL: 6.0
Dielectric	>39,000v
Non-Toxic and Non-Carcinogenic as listed by ACGHI, IARC Monographs or OSHA	

## Applicators Guide for Inner Hulls - Ships, Barges, Tugs

S-2-S if applied indiscriminately causes a mess and is not appreciated by Lloyds, T.C., CSI's and or the customer.

We are endeavouring to obtain these organizations approval, your co-operation is appreciated.

S-2-S is a high quality, high performance rust inhibitor, applicator discretion is required so as not to make a mess.

Turning the application gun pressure to the lowest setting that will spray S-2-S will minimize misting.

### **Barge floors:**

Only the cracks, seams, crevices and the flat part of the floor should need to be coated, the top of the floor joists do not usually have a severe rust problem, this is where people walk so don't apply product here unless there is a definite reason or a cat walk or plank walks are to be installed.

### **Barge walls & Deck Heads:**

It is good practice to apply s-2-s **PLID** (thin) into the seam between the outer skin and the longitudinal, deck head, deck reinforcements and other crevices, (PLID will penetrate deeply into these areas protecting the structural integrity), top coat these areas and all other flat metal with **Industrial** (thick) using discretion if it maybe walked on.

### **Voids:**

Inspectors may need to crawl through these areas.

If the existing coating is mostly in fair condition but the lower section is rusty then apply a 10 -20 mil coat of **Industrial** to the lower section as needed.

If deemed necessary apply a light coat over the existing coating or only apply coatings to areas that have problems usually the cracks, seams, welds etc. leave a clean, uncoated path for inspectors to walk.

Note: Some barges have been coating using only S-2-S PLID(thin), the results to date (3 years) have been reported as excellent.

**Caution:** Provide ventilation and wear an approved organic mist respirator when spraying in enclosed spaces.

Refer to MSDS sheet.

## Applicators Guide

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### Ship-2-Shore (S-2-S) "Industrial & PLID

#### Ballast Tanks:

Remove flaky rust scale (needle gun is fine)

Apply Ship-2-Shore Industrial.

Apply an extra heavy coat (10 - 20 mils.) in the bottom foot or so of the tank. This area is subject to water wash when the tanks are empty, this area may need recoating every few years.

There should be no preparation required before recoating.

Very easy maintenance.

**Optional:** Apply Ship-2-Shore PLID to all cracks, seams and crevices to penetrate then coat everything with Ship-2-Shore Industrial.

The information contained here in is thought to be correct, the writer assumes no liability for errors, omissions etc.