



Material Safety Data Sheet

Revision Date: 14 Jan 2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product Description:

HYDREX® 100 33350-00

SAP ID(s): 20984; 20985
Chemical Family: Vinyl Ester Resin
Intended Use: Corrosion Resistant Resin

Manufacturer/Supplier:
Reichhold, Inc.
Corporate Headquarters
P.O. Box 13582
Research Triangle Park, NC 27709
USA
Tel +1-919-990-7500
Fax +1-919-767-8602

Emergency Telephone: (Chemtrec) 1-800-424-9300
Email: prodsafety@reichhold.com

2. HAZARDS IDENTIFICATION

Emergency Overview:

WARNING!

Flammable Liquid
Vapors may form explosive mixtures with air
Vapor can travel to a source of ignition (spark or flame) and flash back
Harmful if swallowed
Hazardous polymerization may occur

Appearance: Amber - Clear

Physical State: Liquid

Odor: Pungent

Primary Routes of Entry Eye contact, Ingestion, Inhalation, Skin contact, Skin absorption.

Acute Effects

Eyes: Irritating to eyes.
Skin: Harmful by skin absorption. Contact causes skin irritation. Prolonged skin contact may defat the skin and produce dermatitis.
Inhalation: Harmful by inhalation. May cause irritation of respiratory tract. Inhalation of high vapor concentrations can cause CNS-depression and narcosis.
Ingestion: Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration hazard if swallowed - can enter lungs and cause damage. Ingestion is not an anticipated route of exposure for this material in industrial use.

Chronic Effects: This material contains a chemical which is listed by the International Agency for Research on Cancer (IARC) as a group 2B cancer causing agent (possibly carcinogenic to humans).

Target Organ(s): Liver, Kidney, Central nervous system (CNS), Respiratory system.

HMIS: Health: 2* Flammability: 3 Reactivity: 1

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %	Status
Vinyl Ester Resin	Proprietary	53.5	Not Hazardous
Styrene	100-42-5	45.0	Hazardous
Silica, Amorphous, Fumed, Cryst.-Free	112945-52-5	<2.0	Hazardous

3. COMPOSITION/INFORMATION ON INGREDIENTS

Cobalt compounds	Proprietary	<0.3	Hazardous
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4. FIRST AID MEASURES

Skin Contact:	Wash off with warm water and soap. Remove contaminated clothing and shoes. If skin irritation persists, call a physician. Wash contaminated clothing before reuse.
Eye Contact:	Immediately flush eyes for at least 15 minutes. Get medical attention.
Inhalation:	Remove person to fresh air. If signs/symptoms continue, get medical attention. Keep patient warm and at rest. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Get medical attention immediately.
Ingestion:	DO NOT INDUCE VOMITING. ASPIRATION HAZARD. This material may enter the lungs during vomiting. Never give anything by mouth to an unconscious person. GET IMMEDIATE MEDICAL ATTENTION.

5. FIRE-FIGHTING MEASURES

Flammability:	Flammable liquid.
Suitable Extinguishing Media:	Carbon dioxide (CO ₂), Foam, Dry chemical, Water spray.
Hazardous Combustion Products:	Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases.
Fire/Explosion Hazard:	Flammable. Vapors may form explosive mixtures with air. Flash back possible over considerable distance. This material may polymerize (react) when its container is exposed to heat (as during a fire). This polymerization increases pressure inside a closed container and may result in the violent rupture of the container. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death.
Protective Equipment and Precautions for Firefighters:	Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use. Evacuate all persons from the fire area to a safe location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. DO NOT extinguish a fire resulting from the flow of this flammable liquid until the flow of liquid is effectively shut off. This precaution will help prevent the accumulation of an explosive vapor-air mixture after the initial fire is extinguished. Use water spray to cool fire-exposed containers.
NFPA Rating:	Health 2 Flammability 3 Instability 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Remove all sources of ignition. Evacuate personnel to safe areas. Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Environmental Precautions:	Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Prevent product from entering drains. Soak up with inert absorbent material and dispose of as hazardous waste.

Methods for Containment: Prevent spilled material from 1) contaminating soil, 2) entering sanitary sewers, storm sewers, and drainage systems, and 3) entering bodies of water or ditches that lead to waterways. Prevent spreading over a wide area (e.g. by containment or oil barriers).

Methods for Clean-up: Soak up with inert absorbent material. Remove from surface water (e.g. by skimming or siphoning). Dispose of contaminated material as waste according to item 13.

7. HANDLING AND STORAGE

Handling: Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use. Ensure adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion-proof equipment. Consult your supplier of promoters and catalysts for additional instructions on proper mixing and usage. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioner or properly disposed.

Storage: Keep away from heat and sources of ignition. No smoking. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 77°F (25°C).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits

Components with workplace control parameters.

Styrene (CAS #: 100-42-5)

ACGIH TLV - TWA	20 ppm
ACGIH TLV - STEL	40 ppm
OSHA PEL - TWA	100 ppm
OSHA PEL (Ceiling)	200 ppm
Industry PEL	While the federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hour TWA and a Short Term Exposure Limit (STEL) of 100 ppm, 15 minute exposure.
Canada - Alberta OELs	85 mg/m ³ (TWA) 170 mg/m ³ (STEL)
Ontario OEL (TWA)	35 ppm
Ontario OEL (STEL)	100 ppm
British Columbia OELs	50 ppm (TWA) 75 ppm (STEL)
NIOSH IDLH	700 ppm Immediately dangerous to life or health (IDLH)
Mexico OEL	425 mg/m ³ (STEL)

Silica, Amorphous, Fumed, Cryst.-Free (CAS #: 112945-52-5)

OSHA PEL - TWA	20 MPPCF 0.8 mg/m ³ The exposure limit is calculated from the equation, 80/(%SiO ₂), using a value of 100% SiO ₂ . Lower values of % SiO ₂ will give higher exposure limits.
Ontario OEL (TWA)	10 mg/m ³
British Columbia OELs	1.5 mg/m ³ (TWA) 4 mg/m ³ (TWA)
NIOSH IDLH	3000 mg/m ³ Immediately dangerous to life or health (IDLH)

Cobalt compounds (CAS #:)

ACGIH TLV - TWA	0.02 mg/m ³
Canada - Alberta OELs	0.02 mg/m ³ (TWA)
British Columbia OELs	0.02 mg/m ³ (TWA)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Legend

TLV - Threshold Limit Value
 TWA - Time weighted average
 STEL - Short Term Exposure Limit
 IDLH - Immediately Dangerous to Life or Health
 ACGIH - American Conference of Industrial Hygienists
 OSHA - Occupational Safety and Health Administration
 NIOSH - National Institute for Occupational Safety and Health
 OEL - Occupational Exposure Limit
 PEL - Permissible Exposure Limit

Engineering Controls: Use general ventilation to maintain airborne concentrations to levels that are below regulatory and recommended occupational exposure limits. Local ventilation may be required during certain operations. Use explosion-proof equipment.

Personal Protective Equipment

Eye/face Protection: Wear safety glasses with side shields and a faceshield or goggles and a faceshield. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin Protection: Wear chemical-resistant gloves such as polyvinyl alcohol or Viton. Gloves made of nitrile rubber or polyvinyl chloride (PVC) may be used for splash protection and brief or intermittent contact with styrenated polyester resin. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. Impervious clothing. Rubber or plastic boots.

Respiratory Protection: None required if hazards have been assessed and airborne concentrations are maintained below the exposure limits listed in Section 8. Wear an approved air-purifying respirator with organic vapor cartridges and particulate filters where airborne concentrations may exceed exposure limits in Section 8 and/or there is exposure to dust or mists due to sanding, grinding, cutting, or spraying. Use an approved positive-pressure air-supplied respirator with emergency escape provisions if there is any potential for an uncontrolled release, airborne concentrations are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber - Clear
Odor:	Pungent
Odor Threshold:	0.2 ppm (Styrene)
Physical State:	Liquid
pH:	Not applicable
Flash Point:	32°C / 89°F
Flash Point Method:	Seta closed cup
Autoignition Temperature:	490°C / 914°F (Styrene)
Boiling Point/Range:	146°C / 295°F (Styrene)
Melting Point/Range:	-30°C / -23°F (Styrene)
Flammability Limits in Air	
Lower:	1.1% (Styrene)
Upper:	6.1% (Styrene)
Specific Gravity:	1.04 - 1.12 @ 25°C
Solubility:	Insoluble in H ₂ O
Evaporation Rate:	< 1 (BuAc = 1)
Vapor Pressure:	6.12 mmHg @ 20°C (Styrene) 8.16 hPa (Styrene)
Vapor Density:	3.6 (Styrene) (Air = 1.0)
Percent volatile:	45.0 %
VOC Content:	486 g/l (calculated) product as supplied

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal conditions. Stable under recommended storage conditions.
Conditions to Avoid:	Heat, flames and sparks. Contamination by those materials referred to under Incompatible materials.
Incompatible Materials:	Strong acids. Strong oxidizing agents. Metal salts. Polymerization catalysts.
Hazardous Decomposition Products:	Hydrocarbons. Carbon monoxide. Carbon dioxide (CO ₂). Thermal decomposition can lead to release of irritating gases and vapours.
Hazardous Polymerization:	Polymerization can occur. Hazardous polymerization will occur if contaminated with peroxides, metal salts and polymerization catalysts. Product will undergo hazardous polymerization at temperatures above 150 F (65 C).

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Styrene

LD50 Oral	5000 mg/kg - rat
LC50 Inhalation	2770 ppm - rat (4 hours)

Silica, Amorphous, Fumed, Cryst.-Free

LD50 Oral	> 5000 mg/kg - rat
LD50 (Dermal)	> 5000 mg/kg - rabbit
LC50 Inhalation	> 0.139 mg/l (4 hours) - rat

Eye Effects: Studies indicate that exposures to concentrations of styrene above 200 ppm cause irritation of the eyes. Styrene causes transient moderate eye irritation without corneal involvement.

Chronic Toxicity

Styrene

IARC Group 2B - Possibly Carcinogenic to Humans

Cobalt compounds

IARC Group 2B - Possibly Carcinogenic to Humans

Legend: IARC - International Agency for Research on Cancer

Repeated dose toxicity: In humans, styrene may cause a transient decrease in color discrimination and effects on hearing. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to defatting properties of the product. May cause damage to the kidneys, liver, eyes, brain, respiratory system, central nervous system through prolonged or repeated exposure if inhaled.

Mutagenic Effects: Styrene has given mixed positive and negative results in a number of mutagenicity tests. Styrene was not mutagenic without metabolic activation but gave negative and positive mutagenic results with metabolic activation.

Developmental Toxicity: Results from studies in experimental animals indicate little or no potential for styrene to produce developmental toxicity.

Target Organ(s): Liver, Kidney, Central nervous system (CNS), Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Styrene

Bioconcentration factor (BCF)	13.5 - 64
Log Pow	3.16
Freshwater Algae	ErC50 (72h) 4.9 mg/l (Pseudokirchneriella subcapitata)
Toxicity to Aquatic Invertebrates	LC50 (48h) 23 mg/l (Daphnia magna)
Freshwater Fish	LC50 (96h) 32 mg/l (pimephales promelas)

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Hazardous waste. Can be incinerated, when in compliance with local regulations.
Contaminated Packaging:	Empty containers should be taken for local recycling, recovery or waste disposal.
US EPA Waste Number:	D001 (IGNITABLE): When discarded in its purchased form, this material would be regulated under 40 CFR 261.21 as EPA Hazardous Waste Number D001 based on the characteristic of ignitability.

14. TRANSPORT INFORMATION

DOT

UN-No	UN1866
Proper Shipping Name:	RESIN SOLUTION
Hazard Class	3
Packing Group	III
NAERG:	127

TDG

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION
Hazard Class	CLASS 3
Packing Group	PGIII
NAERG:	127

IATA

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION
Hazard Class	3
Packing Group	III
NAERG:	127

IMDG/IMO

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION
Hazard Class	CLASS 3
Packing Group	PG III
EmS No.	F-E, S-E

15. REGULATORY INFORMATION

International Inventories

TSCA Inventory Status:	All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.
Canadian Inventory Status:	All components of this material are listed on the Canadian Domestic Substances List (DSL).
Australian Inventory Status:	This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances.
Korean Inventory Status:	This product contains only chemicals which are currently listed on the Korean Chemical Substances List.
Philippine Inventory:	This product contains only chemicals that are currently listed on the Philippine Inventory of Chemicals and Chemical Substances.
Japan ENCS:	This product contains only chemicals that are currently listed on the Japanese Inventory of Existing and New Chemical Substances.
Chinese IECS:	This product contains only chemicals that are currently listed on the Chinese Inventory of Existing Chemical Substances.
New Zealand Inventory:	This product contains only chemicals which are currently listed on the New Zealand Inventory of Chemicals.

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Component	CAS-No	Weight %	SARA 313 Status
Styrene	100-42-5	45.0	Listed.
Cobalt compounds		<0.3	Listed.

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

TSCA 12(b) - Export Notification:

This material does not contain any components that are subject to the US Toxic Substances Control Act (TSCA) Section 12(b) Export Notification requirements.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following HAPs:

Component	CAS-No	Weight %	HAPS data
Styrene	100-42-5	45.0	Listed.
Cobalt compounds		<0.3	Listed.

CERCLA

This product contains the following reportable quantities:

Component	CERCLA/SARA	CERCLA 302 EHS RQs

Styrene	1000 lbs	Not Listed
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State Regulations**California Proposition 65**

W A R N I N G: This material contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

B2 Flammable liquid
 D2A Very toxic materials
 D2B Toxic materials
 F Dangerously reactive material

Component	CAS-No	WHMIS Ingredient Disclosure List
Styrene	100-42-5	0.1%
Silica, Amorphous, Fumed, Cryst.-Free	112945-52-5	1%

16. OTHER INFORMATION

Prepared By: Reichhold Product Regulatory Department

Revision Date: 14 Jan 2011

Revision Number: 1

Revision Summary: General update

Former date: 03 December 2007

This information is provided in good faith and is correct to the best of Reichhold's knowledge as of the date hereof and is designed to assist our customers; however, Reichhold makes no representation as to its completeness or accuracy. Our products are intended for sale to industrial and commercial customers. We require customers to inspect and test our products before use and to satisfy themselves as to suitability for their specific applications. Any use which Reichhold customers or third parties make of this information, or any reliance on, or decisions made based upon it, are the responsibility of such customer or third party. Reichhold disclaims responsibility for damages, or liability, of any kind resulting from the use of this information. THERE ARE NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIS INFORMATION OR TO THE PRODUCT IT DESCRIBES. IN NO EVENT SHALL REICHOLD BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

End of MSDS