

SAFETY DATA SHEET

Revision Date: 19/Feb/2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Identifier Product Description:

HYDREX® 100 33350-00

Other means of identification SAP ID(s): Material Code: Chemical Family

20984 ; 20985 33350-00 Vinyl Ester Resin

Recommended use of the chemical and restrictions on useIntended Use:Corrosion Resistant ResinUses advised againstNo information available

Details of the supplier of the safety data sheet 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

2. HAZARDS IDENTIFICATION

Emergency Telephone

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors) Skin corrosion/irritation Serious eye damage/eye irritation Skin sensitization Carcinogenicity Reproductive toxicity Specific target organ toxicity (single exposure) Specific target organ toxicity (repeated exposure) Chronic aquatic toxicity Flammable liquids Category 4 Category 2 Category 2A Category 1 Sub-category 1B Category 2 Category 3 Category 1 Category 3 Category 3 Category 3

(Chemtrec) 1-800-424-9300

Label elements

Emergency Overview Statements

Danger

Hazard Statements Harmful if inhaled Causes skin irritation Causes serious eye irritation May cause an allergic skin reaction May cause cancer Suspected of damaging fertility or the unborn child May cause respiratory irritation Causes damage to hearing through prolonged or repeated exposure if inhaled Harmful to aquatic life with long lasting effects Flammable liquid and vapor



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 Use only outdoors or in a well-ventilated area Wash face, hands and any exposed skin thoroughly after handling Contaminated work clothing should not be allowed out of the workplace Do not breathe mist, vapors, spray Do not eat, drink or smoke when using this product Keep away from heat/sparks/open flames/hot surfaces. - No smoking Keep container tightly closed Ground/bond container and receiving equipment Use explosion-proof electrical/ventilating/lighting equipment Use only non-sparking tools Take precautionary measures against static discharge Keep cool Wear protective gloves/protective clothing/eye protection/face protection

Avoid release to the environment

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/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 advice/attention If skin irritation or rash occurs: Get medical advice/attention IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician Do not induce vomiting In case of fire: Use CO2, dry chemical, or foam to extinguish

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to industrial incineration plant Dispose of in accordance with federal, state and local regulations

Hazards not otherwise classified (HNOC)

Other Information

May be harmful in contact with skin

Unknown acute toxicity	55.1% of the mixture consists of ingredient(s) of unknown toxicity.
Unknown aquatic toxicity	55.4% of the mixture consists of components(s) of unknown hazards to the aquatic
	environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight-%	Trade Secret
Vinyl Ester Resin	Proprietary	53.5	
Styrene	100-42-5	45.0	
Silica, Amorphous, Fumed, CrystFree	112945-52-5	<2.0	
Cobalt compounds	Proprietary	<0.3	*

* The exact percentage (concentration) of composition has been withheld as a trade secret. If CAS number is "proprietary", the specific chemical identity has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

Eye Contact	Immediately flush eyes for at least 15 minutes. Get medical attention.
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.
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 if swallowed - can enter lungs and cause damage. This material may enter the lungs during vomiting. Never give anything by mouth to an unconscious person. GET IMMEDIATE MEDICAL ATTENTION.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and	Inhalation of high vapor concentrations can	cause CNS-depression and narcosis.
Effects		

Indication of any immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Carbon dioxide (CO2), Foam, Dry chemical, Water spray

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous combustion products	Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases
Combustion/Explosion Hazards	Flammable. Vapors may form explosive mixture with air. Flash back possible over considerable distance. 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. Closed containers may rupture when exposed to extreme heat.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Remove all sources of ignition. Evacuate personnel to safe areas. Use personal protective equipment as required. 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		
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. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.	
Methods and material for containment and cleaning up		
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

Precautions for Safe Handling

Handling Do not breathe vapor or mist. Avoid contact with eyes, skin and clothing. Wash hands before breaks and immediately after handling the product. Take off contaminated clothing and wash before reuse. 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.

Conditions for safe storage, including any incompatibilities

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		20 ppm TWA
		A4 Not Classifiable as a Human Carcinogen
OSHA PEL		100 ppm TWA
		200 ppm Ceiling
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 Sho
Canada - Alberta OELs		40 ppm STEL
Carlada - Alberta OELS		170 mg/m ³ STEL
		20 ppm TWA
		85 mg/m ³ TWA
Canada - Ontario OELs		35 ppm TWA
		100 ppm STEL
Canada - British Columbia OEL	.S	50 ppm TWA
		75 ppm STEL
NIOSH IDLH		700 ppm Immediately dangerous to life or health IDLH
Mexico OEL		100 ppm STEL
		$425 \text{ mg/m}^{\circ} \text{STEL}$
		$215 \text{ mg/m}^3 \text{ TWA}$
		(skin)
Silica, Amorphous, Fumed, Cryst	L-Free (CAS #: 112945-52-	5)
OSHA PEL		20 mppcf, 80 mg/m³/%SiO2 TWA
NIOSH IDLH		3000 mg/m ³ - Immediately dangerous to life or health (IDLH)
STEL - Short Term Exposure Limit IDLH - Immediately Dangerous to L ACGIH (American Conference of G OSHA - Occupational Safety and H NIOSH - National Institute for Occu OEL - Occupational Exposure Limit PEL - Permissible Exposure Limit SKIN: Skin Absorption	ife or Health overnmental Industrial Hygie 'ealth Administration pational Safety and Health	enists)
Appropriate engineering controls	<u>3</u>	
Engineering Controls	Use general ventilation tregulatory and recomme	to maintain airborne concentrations to levels that are below ended occupational exposure limits. Local ventilation may be
Individual protoction management		
individual protection measures, s	such as personal protectiv	<u>e equipment</u>
Eye/face Protection	Safety glasses with side goggles. Ensure that ey location.	e-shields. If splashes are likely to occur:. Tight sealing safety ewash stations and safety showers are close to the workstation
Skin Protection	Wear protective nitrile ru chloride (PVC) may be u styrenated polyester res breakthrough time which consideration the specif danger of cuts, abrasior	ubber or Viton [™] gloves. Gloves made of nitrile rubber or polyvinyl used for splash protection and brief or intermittent contact with sin. Please observe the instructions regarding permeability and h are provided by the supplier of the gloves. Also take into fic local conditions under which the product is used, such as the h. Impervious clothing. Rubber or plastic boots.

None required if hazards have been assessed and airborne concentrations are maintained **Respiratory Protection** 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 **General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Odor **Odor Threshold Physical State** pH Flash Point **Flash Point Method: Autoignition Temperature** Boiling point / boiling range Melting point / Freezing point Flammability Limit in Air Lower Upper **Specific Gravity** Solubility **Evaporation Rate** Vapor Pressure Vapor Density

Explosive Properties Oxidizing Properties Percent Volatile, wt.% **VOC Content:** Viscositv Partition Coefficient (n-octanol/water) **Decomposition temperature**

Amber - Clear Pungent 0.2 ppm (Styrene) Liquid No information available 32 °C / 89 °F Seta closed cup 490°C / 914°F (Styrene) 146°C / 295°F (Styrene) No information available

1.1% (Styrene) 6.1% (Styrene) 1.04 - 1.12 @ 25°C Insoluble in H₂O < 1 (BuAc = 1) 5 mmHg @ 20°C (Styrene) 6.7 hPa (Styrene) 3.6 (Air = 1) (Styrene) (Air = 1.0) No information available No information available 45.0 % 486 g/l (calculated) product as supplied 450 - 650 cps @ 25°C No information available No information available

10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical Stability

Stable under normal conditions. Stable under recommended storage conditions.

Possibility of Hazardous Reactions

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).

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.

<u>Hazardous Decomposition Products</u> Hydrocarbons. Carbon monoxide. Carbon dioxide (CO2). Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Primary Routes of Entry	Eye contact, Ingestion, Inhalation, Skin Contact, Skin absorption
Acute toxicity Styrene Oral LD50 Dermal LD50 Inhalation LC50 Silica, Amorphous, Fumed, CrystF Oral LD50	= 5000 mg/kg (Rat) > 2000 mg/kg (Rat) = 11.8 mg/l (4 H) (Rat) ree = 3160 mg/kg (Rat)
Information on toxicological effects	_
Symptoms	Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.
Delayed and immediate effects as w	ell as chronic effects from short and long-term exposure
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.
Sensitization	No information available.
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.
Carcinogenicity	
Styrene ACGIH IARC NTP Cobalt compounds	Group A4 - Not classifiable as a human carcinogen. Group 2B - Possibly Carcinogenic to Humans Reasonably anticipated to be human carcinogen
Legend	ACGIH (American Conference of Governmental Industrial Hygienists) NTP - National Toxicology Program IARC - International Agency for Research on Cancer
Reproductive Toxicity	No information available.

Neurological Effects	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Target organ(s)	Liver, Kidney, Central nervous system (CNS), Respiratory system.
Aspiration Hazard	No information available.
Numerical measures of toxicity - F	Product Information
Unknown acute toxicity	55.1% of the mixture consists of ingredient(s) of unknown toxicity.
The following values are calculate ATEmix (oral) ATEmix (dermal) ATEmix (inhalation-vapor)	d based on chapter 3.1 of the GHS document . 5094 mg/kg 2038 mg/kg 12 mg/L
	12. ECOLOGICAL INFORMATION
Ecotoxicity Styrene Log Kow Bioconcentration factor (BCE)	2.95 74
Algae	EC50 = 1.4 mg/L (Pseudokirchneriella subcapitata) (72h)
Fish	LC50 0.40 - 4.3 mg/L (Pseudokirchinenenia subcapitata) (72h) LC50 3.24 - 4.99 mg/L (Pimephales promelas) (96 h) flow-through LC50 19.03 - 33.53 mg/L (Lepomis macrochirus) (96 h) static LC50 6.75 - 14.5 mg/L (Pimephales promelas) (96 h) static LC50 58.75 - 95.32 mg/L (Poecilia reticulata) (96 h) static
Water Flea	EC50 3.3 - 7.4 mg/L 48 h

Water Flea
Cobalt compounds
Algae

EC50 = 0.639 mg/L

Unknown aquatic toxicity

55.4% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods	
Disposal Considerations	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 Proper Shipping Name Hazard Class Packing Group NAERG:	UN1866 RESIN SOLUTION 3 III 127
TDG UN-No Proper Shipping Name Hazard Class Packing Group NAERG:	UN1866 RESIN SOLUTION CLASS 3 PG III 127
<u>MEX</u> UN-No Proper Shipping Name Hazard Class Packing Group NAERG:	UN1866 RESIN SOLUTION 3 PG III 127
IATA_ UN-No Proper Shipping Name Hazard Class Packing Group NAERG:	UN1866 RESIN SOLUTION 3 III 127
IMDG/IMO UN-No Proper Shipping Name Hazard Class Packing Group EmS-No	UN1866 RESIN SOLUTION CLASS 3 PG III 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

US Federal Regulations

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.

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 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

Clean Water Act

This product contains the following listed substances:

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Styrene 100-42-5	1000 lb			Listed

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	
Cobalt compounds		<0.3	Listed

CERCLA

This product contains the following reportable quantities:

Component	40 CFR 302.4 RQ	40 CFR 355 EHS TPQs
Styrene	1000 lb	
	454 kg	

Chemical Weapons Convention (CWC)

This product does not contain any listed substances.

State Regulations

California Proposition 65

WARNING: This material contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. The California Safe Drinking Water and Toxic Enforcement Act of 1986 requires that clear and reasonable warning be given prior to exposing any person to this chemical.

Canada

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

16. OTHER INFORMATION

NFPA Rating	Health 2	Flammability 3	Instability 1
Prepared By	Reichhold Product Regula Phone Number: 919-990-	atory Department 7500	
Revision Date:	19/Feb/2015		
Revision Summary:	This data sheet contains of 2, 3, 4, 5, 11, 14, 15	ata sheet contains changes from the previous version in section(s): 5, 11, 14, 15	

Former date: 14 January 2011

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End of Material Safety Data Sheet