Toxicological profile for

Vinyl alcohol-vinyl acetate copolymer

This ingredient has been assessed to determine potential human health effects for the consumer. It was considered not to increase the inherent toxicity of the product and thus is acceptable under conditions of intended use.

1. Name of substance and physico-chemical properties

1.1. IUPAC systematic name

Acetic acid ethenyl ester, polymer with ethenol

1.2. Synonyms

Vinyl acetate vinyl alcohol polymer; Acetic acid ethenyl ester, polymer with ethenol; Polyvinyl acetate polyvinyl alcohol copolymer, minimum number average molecular weight (in amu), 50,000 (ChemIDplus); Acetic acid, vinyl ester, polymer with vinyl alcohol; Vinyl acetate-vinyl alcohol copolymer

1.3. Molecular formula

(C4-H6-O2.C2-H4-O)x (ChemIDplus)

1.4. Structural Formula

No data available to us at this time.

1.5. Molecular weight (g/mol)

Minimum average molecular weight (in amu) 50,000 (ChemIDplus)

1.6. CAS registration number

25213-24-5

1.7. Properties

1.7.1. Melting point

(°C): No data available to us at this time.

1.7.2. Boiling point

(°C): >100 [>212°F]; 72.7 (US Army Center for Health Promotion and Preventive Medicine, 2009).

1.7.3. Solubility

Insoluble (US Army Center for Health Promotion and Preventive Medicine, 2009).

1.7.4. pKa

No data available to us at this time.

1.7.5. Flashpoint

(°C): >93.3 [200°F]

1.7.6. Flammability limits (vol/vol%)

No data available to us at this time.

1.7.7. (Auto)ignition temperature

(°C): No data available to us at this time.

1.7.8. Decomposition temperature

(°C): No data available to us at this time.

1.7.9. Stability

Stable

1.7.10. Vapor pressure

90.2 mg Hg at 20°C (US Army Center for Health Promotion and Preventive Medicine, 2009).

1.7.11. log Kow

No data available to us at this time.

2. General information

2.1. Exposure

Products that contain this ingredient

Brand	Category	Form	Percent
Titebond All Purpose White Glue	Arts & Crafts	paste	>1
Titebond Original Wood Glue	Arts & Crafts	liquid	>3
Prestone Power Steering Fluid for Asian Vehicles	Auto Products	liquid	
Finish Quantum Powerball with Baking Soda-Old Product	Auto Products	gel capsule	2.5-10.0
Finish Quantum Electrasol Powerball-Old Product	Auto Products	gel capsule	2.5-10.0
Finish Quantum Powerball, Lemon Sparkle-Old Product	Auto Products	gel capsule	2.5-10.0
Titebond II Premium Wood Glue	Home maintenance	liquid	
Quikrete Concrete Bonding Adhesive No. 9902-08/23/2011	Home maintenance	liquid	
Franklin Laminate Flooring Glue	Home maintenance	paste	>3
Titebond Home/School Glue	Inside the Home	liquid	
OxiClean Extreme Power Crystals Dishwasher Detergent-11/02/2015	Inside the Home	powder	0.1-1.0

As taken from US Department of Health and Human Services, 2017

“Polyvinyl alcohol” (CAS RNs 9002-89-5/25213-24-5) is used as a film forming and viscosity controlling ingredient in cosmetics in the EU. As taken from CosIng (Cosmetic substances and ingredients database). Available at http://ec.europa.eu/growth/tools-databases/cosing/

National Occupational Exposure Survey (1981 - 1983)
Estimated Numbers of Employees Potentially Exposed to Acetic Acid Ethenyl Ester, Polymer with Ethenol (CAS RN 25213-24-5) by occupation*:

Code	Occupation Description (1980)	Total # Employees (Male & Female)	Total # Female Employees
095	REGISTERED NURSES	952	845
185	DESIGNERS	277	208
216	ENGINEERING TECHNICIANS, N.E.C.	173	
224	CHEMICAL TECHNICIANS	4,171	1,701
235	TECHNICIANS, N.E.C.	512	183
328	PERSONNEL CLERKS, EXCEPT PAYROLL AND TIMEKEEPING	57	57
357	MESSENGERS	278	
364	TRAFFIC, SHIPPING, AND RECEIVING CLERKS	265	138
453	JANITORS AND CLEANERS	602	
518	INDUSTRIAL MACHINERY REPAIRERS	1,604	22
519	MACHINERY MAINTENANCE OCCUPATIONS	271	
575	ELECTRICIANS	338	
585	PLUMBERS, PIPEFITTERS, AND STEAMFITTERS	433	
633	SUPERVISORS, PRODUCTION OCCUPATIONS	525	343
634	TOOL AND DIE MAKERS	393	
646	LAY-OUT WORKERS	1,827	1,522
653	SHEET METAL WORKERS	88	
667	TAILORS	2,500	1,386
676	PATTERNMAKERS, LAY-OUT WORKERS, AND CUTTERS	289	
683	ELECTRICAL AND ELECTRONIC EQUIPMENT ASSEMBLERS	9	7
696	STATIONARY ENGINEERS	23	
726	WOOD LATHE, ROUTING, AND PLANING MACHINE OPERATORS	761	457
735	PHOTOENGRAVERS AND LITHOGRAPHERS	666	104
739	KNITTING, LOOPING, TAPING, AND WEAVING MACHINE OPERATORS	841	778
743	TEXTILE CUTTING MACHINE OPERATORS	364	
744	TEXTILE SEWING MACHINE OPERATORS	20,044	19,982
747	PRESSING MACHINE OPERATORS	5,857	5,782

749	MISCELLANEOUS TEXTILE MACHINE OPERATORS	1,944	1,053
753	CEMENTING AND GLUING MACHINE OPERATORS	616	
754	PACKAGING AND FILLING MACHINE OPERATORS	69	69
756	MIXING AND BLENDING MACHINE OPERATORS	1,289	115
759	PAINTING AND PAINT SPRAYING MACHINE OPERATORS	183	
765	FOLDING MACHINE OPERATORS	858	801
766	FURNACE, KILN, AND OVEN OPERATORS, EXC. FOOD	686	18
769	SLICING AND CUTTING MACHINE OPERATORS	124	57
777	MISCELLANEOUS MACHINE OPERATORS, N.E.C.	3,683	387
783	WELDERS AND CUTTERS	296	
796	PRODUCTION INSPECTORS, CHECKERS, AND EXAMINERS	2,063	2,063
799	GRADERS AND SORTERS, EXCEPT AGRICULTURAL	57	57
856	INDUSTRIAL TRUCK AND TRACTOR EQUIPMENT OPERATORS	188	
859	MISCELLANEOUS MATERIAL MOVING EQUIPMENT OPERATORS	256	
873	PRODUCTION HELPERS	402	
878	MACHINE FEEDERS AND OFFBEARERS	187	
887	VEHICLE WASHERS AND EQUIPMENT CLEANERS	131	69
888	HAND PACKERS AND PACKAGERS	870	870
889	LABORERS, EXCEPT CONSTRUCTION	196	91
TOTAL		58,217	39,165

*(1) The estimates for each occupation apply across the surveyed industries in which the agent was observed. Not all industries were surveyed, and not all agents were observed in all surveyed industries. (2) When using the estimates, standard errors associated with estimates should be considered. (3) Potential exposures to a chemical agent are categorized as actual (i.e., the surveyor observed the use of the specific agent) or tradename (i.e., the surveyor observed the use of a tradename product known to contain the specific agent). The estimates presented in the table combine both categories.

As taken from NIOSH, available at https://web.archive.org/web/20111028102822/http://www.cdc.gov/noes/noes2/t0902occ.html

2.2. Combustion products

No data available to us at this time.

2.3. Ingredient(s) from which it originates

“Prepared by partial hydrolysis of polyvinyl acetate polymer and consists of methyl acetate, vinyl acetate monomer, polyvinyl alcohol and impurities” (US Army Center for Health Promotion and Preventive Medicine, 2009).

3. Status in legislation and other official guidance

‘Acetic acid ethenyl ester, polymer with ethenol’ (CAS RN 25213-24-5) is listed in the US EPA Toxic Substances Control Act (TSCA) inventory and is exempt from reporting under the US EPA CDR (Chemical Data Reporting) rule. The Chemical Data Reporting (CDR) Rule requires companies that manufacture (including import) certain chemicals at certain volumes in the U.S. to report to EPA every four years through its CDR.

The TSCA inventory and 2016 CDR full exempt list are available at https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do

Vinyl acetate vinyl alcohol polymer (CAS RN 25213-24-5) is listed by the US Environmental

Protection Agency as an inert ingredient in pesticide products under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), List 4B.

As taken from US EPA, 2018a available at **Error! Hyperlink reference not valid.** https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/substancesearch/search.do?synId=643650&displaySynonym=

Acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5) is listed as an approved ingredient in food and non-food use pesticide products (US EPA Inert Finder Database, 2018). For food use, it is regulated under 40 CFR Part 180.960 (Polymers; exemptions from the requirement of a tolerance) (US EPA, 2018b).

“Vinyl acetate vinyl alcohol polymer” (CAS RN 25213-24-5) is included on the US EPA Safer Chemical Ingredients List (US EPA, 2018c).

Acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5) is pre-registered under REACH (“envisaged registration deadline 31 May 2018”) (ECHA, 2018a).

“Acetic Acid Ethenyl Ester co-Polymer with Ethenol” (CAS RN 25213-24-5) is not classified for packaging and labelling under Regulation (EC) No. 1272/2008 (ECHA, 2018b).

Polyvinyl acetate/vinyl alcohol copolymer appears on the list of “Permitted Additives to Tobacco Products in the United Kingdom" (Department of Health, 2003) at a maximum level permitted for inclusion in cigarettes/RYO of 1.0% w/w tobacco.

Acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5) is listed in the New Zealand Inventory of Chemicals and may be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right (NZ EPA, 2006).

4. Metabolism/Pharmacokinetics

4.1. Metabolism/metabolites

No data available to us at this time.

4.2. Absorption, distribution and excretion

No data available to us at this time.

4.3. Interactions

No data available to us at this time.

5. Toxicity

5.1. Single dose toxicity

No data available to us at this time.

5.2. Repeated dose toxicity

No data available to us at this time.

5.3. Reproduction toxicity

No data available to us at this time.

5.4. Mutagenicity
No data available to us at this time.

5.5. Cytotoxicity
No data available to us at this time.

5.6. Carcinogenicity
No data available to us at this time.

5.7. Irritation/immunotoxicity
No data available to us at this time.

5.8. All other relevant types of toxicity
No data available to us at this time.

6. Functional effects on

6.1. Broncho/pulmonary system
No data available to us at this time.

6.2. Cardiovascular system
No data available to us at this time.

6.3. Nervous system
No data available to us at this time.

6.4. Other organ systems, dependent on the properties of the substance
No data available to us at this time.

7. Addiction
JTI is not aware of any information that demonstrates that this ingredient has any addictive effect.

8. Burnt ingredient toxicity

Endpoint	**Tested level (ppm)**	**Reference**
Smoke chemistry	-	JTI Internal Report
In vitro genotoxicity	-	JTI Internal Report
In vitro cytotoxicity	-	JTI Internal Report

In comparison with a CSC of a reference cigarette with sideseam adhesives/cigarette paper corresponding to representative specifications for the majority of commercial cigarettes no differences were observed either in the bacterial mutagenicity, cytotoxicity or mammalian cell genotoxicity of the smoke condensate prepared from cigarettes with sideseam adhesives/cigarette paper containing Acetic Acid Ethenyl Ester, Polymer with Ethanol at 0.1 mg/cig. The smoke chemistry data between test and reference cigarette revealed small changes towards both higher and lower yields per cigarette over all analytical groups. These differences were well within the variability of the analytical methods (JTI NTM Study Report(s)).

9. Heated/vapor emissions toxicity

No data available to us at this time.

10. Ecotoxicity

10.1. Environmental fate

The Ecological Categorization Results from the Canadian Domestic Substances List state that vinyl alcohol-vinyl acetate copolymer is persistent in the environment:

Media of concern leading to Categorization	Not Applicable
Experimental Biodegradation half-life (days)	Not Available
Comment (persistency)	90% in the Zahn Wellens Test (OECD 302B); the 28-day BODs with unacclimated cultures indicated essentially no degradation (RE)

Data accessed January 2015 on the OECD website: http://webnet.oecd.org/CCRWeb/Search.aspx

10.2. Aquatic toxicity

The Ecological Categorization Results from the Canadian Domestic Substances List state that vinyl alcohol-vinyl acetate copolymer is not inherently toxic to aquatic organisms:

Rational for iT	Monomer
Pivotal value for iT (mg/l)	14
Comment iT	HC GPE;

Data accessed January 2015 on the OECD website: http://webnet.oecd.org/CCRWeb/Search.aspx

10.3. Sediment toxicity

No data available to us at this time.

10.4. Terrestrial toxicity

No data available to us at this time.

10.5. All other relevant types of ecotoxicity

The Ecological Categorization Results from the Canadian Domestic Substances List simply state that vinyl alcohol-vinyl acetate copolymer is not bioaccumulative in the environment.

Data accessed January 2015 on the OECD website: http://webnet.oecd.org/CCRWeb/Search.aspx

11. References for conventional products

- ChemIDplus. Accessed April 2018. Available at https://chem.nlm.nih.gov/chemidplus/
- CosIng (Cosmetic substances and ingredients database). Record for polyvinyl alcohol (CAS RNs 9002-89-5/25213-24-5). Undated, accessed April 2018. Available at http://ec.europa.eu/growth/tools-databases/cosing/
- Department of Health (2003). Permitted Additives to Tobacco Products in the United Kingdom. Department of Health, London. October 2003. Available at: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@ab/documents/digitalasset/dh_095251.pdf
- ECHA (2018a). European Chemicals Agency. Information on Chemicals. Record for acetic acid ethenyl ester, polymer with ethenol. Last updated 7 February 2018 Available at: https://echa.europa.eu/information-on-chemicals/pre-registered-substances
- ECHA (20158b). European Chemicals Agency. Classification and Labelling (C&L) Inventory database. Last updated 7 April 2018. Available at: https://echa.europa.eu/information-on-chemicals/cl-inventory-database
- JTI Internal Report
- JTI NTM Study Report(s).
- NIOSH. National Institute for Occupational Safety and Health. National Occupational Exposure Survey (1981-1983). Record for acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5). Available at https://web.archive.org/web/20111028102822/http://www.cdc.gov/noes/noes2/t0902occ.html
- NZ EPA (2006). New Zealand Inventory of Chemicals. Record for acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5). Date added to inventory: 1 December 2006. Accessed April 2018. Available at: https://www.epa.govt.nz/database-search/new-zealand-inventory-of-chemicals-nzioc/view/1974
- OECD. Organisation for Economic Cooperation and Development. The Global Portal to Information on Chemical Substances (eChemPortal). Acetic acid ethenyl ester, polymer with ethenol (CAS RN 25213-24-5). Accessed January 2015. Available at: http://webnet.oecd.org/CCRWeb/Search.aspx
- US Army Center for Health Promotion and Preventive Medicine. (2009). Environmental health assessment for work unit PYRO 06-08 pyrotechnic perchlorate elimination/mitigation program for M118/M119 simulators. Toxicology report No. 87-XE-074Z-09C. September 2009. Available at http://www.dtic.mil/dtic/tr/fulltext/u2/a508431.pdf
- US Department of Health and Human Services (2017). Household Products Database. Last updated September 2017. Accessed April 2018. Available at https://hpd.nlm.nih.gov/index.htm
- US EPA 2016 Chemical Data Reporting (CDR) Full Exempt list. Accessed April 2018. Available at https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do
- US EPA (2018a). Substance Registry Services. Last updated 26 March 2018. Accessed April 2018. Available at https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/substancesearch/search.do?synId=643650&displaySynonym=
- US EPA (2018b). US Environmental Protection Agency. Electronic Code of Federal Regulations - eCFR. Current as of 5 April 2018. Available at https://www.ecfr.gov/cgi-bin/ECFR?page=browse

- US EPA (2018c). Safer Chemical Ingredients List. Last updated 6 February 2018. Accessed April 2018. Available at https://www.epa.gov/saferchoice/safer-ingredients
- US EPA Inert Finder Database (2018). Last updated 2 January 2018. Accessed April 2018. Available at https://iaspub.epa.gov/apex/pesticides/f?p=INERTFINDER:1:0::NO:1::
- US EPA TSCA inventory. Accessed April 2018. Available at https://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/searchbylist/search.do

12. Other information

No data available to us at this time.

13. Last audited

May 2018

SAFETY DATA SHEET

Prepared according to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union Reach Regulation, Directives 67/548/EC & 1999/45/EC and CLP Regulation 1272/2008/EC

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	***PF-25 Binder Concentrate***
PRODUCT USE:	Various uses
UN NUMBER:	None
DANGEROUS GOODS CLASS:	Non-Regulated Material
MANUFACTURER'S NAME:	**Modine Manufacturing Co.**
ADDRESS:	1500 DeKoven Avenue, Racine, WI 53403-2552 USA
BUSINESS PHONE:	1-262-636-1200
EMERGENCY PHONE:	1-800-424-9300 (Chemtrec 24 Hr)
DATE OF CURRENT REVISION:	17 April 2018
DATE OF LAST REVISION:	27 March 2016

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:
Product Description: This product is a clear viscous liquid with a mild odor.
Health Hazards: Contact may cause eye irritation. Prolonged exposure may cause irritation to skin and respiratory system. Ingestion can cause irritation to the digestive tract.
Flammability Hazards: Non-Flammable
Reactivity Hazards: None
Environmental Hazards: The environmental effects of this product have not been investigated, however release of a significant amount may have adverse environmental effects.
Emergency Considerations: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

GHS LABELING AND CLASSIFICATION:
This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 AND the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC, 2015/830/EU and subsequent Directives.

EU HAZARD CLASSIFICATION PER DIRECTIVE 1272/2008/EC:
Index Number:
CAS# 25213-24-5 is not listed in ESIS
EC# 231-791-2 This substance is not classified in the Annex VI
Substances not listed either individually or in group entries must be self classified.

Component(s) Determining Hazards:
Vinyl Alcohol Polymers

GHS Classifications:
Skin Irritation Category 2
Eye Irritant Category 2B
STOT SE Category 3

Signal Word: Warning!

Hazard Symbol:

Hazard Statement:
H315: Causes skin irritation
H320: Causes eye irritation
H335: May cause respiratory irritation

Prevention Statement:
P280: Wear protective gloves/protective clothing, eye protection/face protection.
P264: Wash hands thoroughly after handling.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P271: Use only outdoors or in a well-ventilated area.

Response Statement:
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312: Call a POISON CENTER/doctor if you feel unwell.
P302+P352: IF ON SKIN: Wash with plenty of water.
P321: Specific treatment (see section 4 of this SDS)
P332+P313: If skin irritation occurs: Get medical advice/attention.
P362+P364: Take off contaminated clothing and wash it before reuse.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Storage Statement:
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.

Disposal Statement:
P501: Dispose of contents / containers in accordance with local / regional / national / international regulations.

HEALTH HAZARDS OR RISKS FROM EXPOSURE:
Primary Routes(s) Of Entry: Skin Contact, Eye Contact, Inhalation, Ingestion
EYE HAZARDS: Contact may cause eye irritation.
SKIN HAZARDS: Prolonged exposure may cause irritation.
INGESTION HAZARDS: Can cause irritation to digestive tract if large quantities are ingested.
INHALATION HAZARDS: May cause irritation to nose, throat and lungs.

3. COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	AMOUNT	HAZARD SYMBOLS	GHS HAZARD CLASSIFICATION
Vinyl Alcohol Polymers	25213-24-5	Not Listed in ESIS	20 - 30%		SKIN IRRITANT CAT 2 EYE IRRITANT CAT 2B STOT SE CAT 3 (RESP IRRIT)
Water	7732-18-5	231-791-2	>70%	None	NOT CLASSIFIED
Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens)					

NOTE: This product has been classified in accordance with the hazard criteria of 29CFR1910.1200 and the CPR and this SDS contains all the information required by the CPR, EU Regulation 1272/2008 and the Japanese Industrial Standard *JIS Z 7250: 2000*.

4. FIRST-AID MEASURES

EYE CONTACT: If chemical contacts the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Remove contact lenses, if worn. Seek medical attention if irritation develops and persists.

SKIN CONTACT: Wash contacted area with soap and water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Seek medical attention if irritation develops and persists.

INHALATION: If chemical is inhaled, or breathing is difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

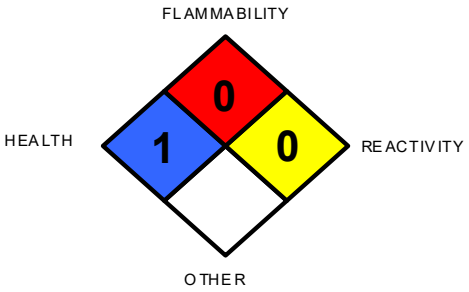
INGESTION: If chemical is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of the label and SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Non-Flammable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS (in air by volume, %): Lower NA% Upper NA%
FIRE EXTINGUISHING MATERIALS: Media suitable for surrounding fire. Carbon dioxide, foam, dry chemical, halon, water spray, sand, limestone powder.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None known
Explosion Sensitivity to Mechanical Impact: Not Sensitive
Explosion Sensitivity to Static Discharge: Not Sensitive
SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING



Hazard Scale: **0** = Minimal **1** = Slight
2 = Moderate
3 = Serious **4** = Severe

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Proper protective equipment should be used. Personnel should be trained for spill response operations.
SPILLS: Contain spill if safe to do so. Prevent entry into drains, sewers, and other waterways. Soak up with absorbent material and place in an appropriate container for disposal. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.
U.S. Regulations (CERCLA) requires reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.
Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations and those of Canada and its Provinces, those of Australia, Japan and EU Member States (see Section 13, Disposal Considerations)

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product.
STORAGE AND HANDLING PRACTICES: Store containers in a cool, dry location. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Keep containers closed when not in use.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Component Name	CAS#	ACGIH-TLV's	OSHA PEL's	NIOSH- TLV's	Other
Vinyl Alcohol Polymers	25213-24-5	10 mg/m³ Dust	15 mg/m³ Dust	Not Listed	Not Listed
Water	7732-18-5	Not listed	Not Listed	Not Listed	Not Listed

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the established limits.

Currently, International exposure limits are not established for all the components of this product. Please check with competent authority in each country for the most recent limits in place.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Not normally required with this product. If exposure limits are exceeded, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Splash goggles or safety glasses with side shields recommended to prevent contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian Standards, and the European Standard EN166, Australian Standards, or relevant Japanese Standards.

HAND PROTECTION: Use chemical resistant gloves as appropriate to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138, the European Standard DIN EN 374, the appropriate Standards of Canada, Australian Standards, or relevant Japanese Standards.

BODY PROTECTION: Use body protection appropriate for task. Coveralls, rubber aprons, or chemical protective clothing made from natural rubber are generally acceptable, depending upon the task. If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY: Not Available
EVAPORATION RATE (n-BuAc=1): Not Available
SPECIFIC GRAVITY @ 20°C: 1.05
SOLUBILITY IN WATER: Complete
VAPOR PRESSURE: Not Available
pH: 5 - 7
BOILING POINT: >212°F
FREEZING POINT: Not Available
APPEARANCE, ODOR and COLOR: This product is a clear viscous liquid with a mild odor
% VOLATILE: <2%
LBS/GALLON: 8.80 Lbs/gallon

10. STABILITY and REACTIVITY

STABILITY: Stable under ordinary conditions of use and storage

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces oxides of carbon and acrylic monomers.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizing agents and acids.

HAZARDOUS DEPOLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

CAS# 25213-24-5:

Oral LD50 Rat: = >5000 mg/kg

Acute toxicity	Based on available data, the classification criteria are not met
Skin corrosion / irritation	Skin Irritation Category 2
Serious eye damage / irritation	Eye Irritation Category 2B
Respiratory or skin sensitization	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Carcinogenicity	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Specific Target Organ Toxicity (Single Exposure) Category 3
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met

SUSPECTED CANCER AGENT: The components of this product are not listed by agencies tracking the carcinogenic potential of chemical compounds as follows:

Carcinogenity	
NTP Regulated	No
IARC Regulated	No
OSHA Regulated	No

IRRITANCY OF PRODUCT: Contact with this product can be irritating to eyes, respiratory system and skin

SENSITIZATION TO THE PRODUCT: This product is not known to cause human skin or respiratory sensitization.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: The components of this product are not reported to produce mutagenic effects in humans.

Embryotoxicity: The components of this product are not reported to produce embryotoxic effects in humans.

Teratogenicity: The components of this product are not reported to produce teratogenic effects in humans.

Reproductive Toxicity: The components of this product are not reported to produce reproductive effects in humans.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

TOXICITY: No specific data is available for this product.

MOBILITY IN SOIL: No Data

PERSISTENCE/DEGRADABILITY: No specific data is available for this product.

ENVIRONMENTAL STABILITY: No specific data is available for this product.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No specific data is available for this product.

BIOACCUMULATION/ACCUMULATION: These products have not been tested for bio-accumulation potential.

WATER ENDANGERMENT CLASS: Not Established

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

EU Waste Code: To be determined based on usage and contamination.

14. TRANSPORTATION INFORMATION

US DOT, IATA, IMO, ADR:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS: This product is classified (per 49 CFR 172.101) by the U.S. Department of Transportation, as follows.

PROPER SHIPPING NAME:	Non-Regulated Material
HAZARD CLASS NUMBER and DESCRIPTION:	None
UN IDENTIFICATION NUMBER:	None
PACKING GROUP:	None
DOT LABEL(S) REQUIRED:	None

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER: None

RQ QUANTITY: None

MARINE POLLUTANT: None of the components of this product are designated by the Department of Transportation to be Marine Pollutants (49 CFR 172.101, Appendix B).

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): This product is not considered as dangerous goods.

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): This product is not considered as dangerous goods.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product is not considered by the United Nations Economic Commission for Europe to be dangerous goods.

SAFETY DATA SHEET

15. REGULATORY INFORMATION

UNITED STATES REGULATIONS:

SARA REPORTING REQUIREMENTS	The components of this product are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.
TSCA	All components in this product mixture are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312: Acute Health: Yes; Chronic Health: No; Fire: No; Reactivity: Yes

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): This product does not contain a component above the 0.1% level which is listed as a California Proposition 65 chemical.

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: All of the components of this product are on the DSL Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: Complies with WHMIS 2015

EU HAZARD INFORMATION:

See section 2 for full details

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS or exempt.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac: Listed or Exempt from listing
Australian Inventory of Chemical Substances (AICS): Listed or Exempt from listing
Korean Existing Chemicals List (ECL): Listed or Exempt from listing
Japanese Existing National Inventory of Chemical Substances (ENCS): Listed or Exempt from listing
Philippines Inventory if Chemicals and Chemical Substances (PICCS): Listed or Exempt from listing
Swiss Giftliste List of Toxic Substances: Listed or Exempt from listing
U.S. TSCA: Listed

SAFETY DATA SHEET

16. OTHER INFORMATION

PREPARED BY: Chris Eigbrett

MSDS to GHS Compliance
www.msdstoghs.com

All chemicals may pose unknown hazards and should be used with cautions. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Modine Manufacturing Co. assumes no responsibility for the completeness or accuracy of the information contained herein. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and protection of the environment.

End of SDS Sheet

REVISION LOG:

Date of Revision:	Reason for Current Revision:
10-June-2014	Transitioned to GHS format
20-July-2015	Established revision log in Section 16. Regulatory information updated, complies with WHMIS 2015.
27-March-2016	Updated Annex, GHS Elements, and removed DIRECTIVE 1999/45/EC information from Section 2. Composition information and current GHS Classifications in Section 3. Composition information in Section 8. Prepared By information in Section 16.
17-April-2018	Performed compliance review.