PRODUCT NAME(S): Rhino 1501 Epoxy Hardener (Part B)

SECTION 1 – IDENTIFICATION

Manufacturer's Info:
Rhino Linings Corporation
9747 Businesspark Avenue
San Diego, CA, 92131

Information phone: (858) 450 0441
Emergency contact: CHEMTREC (800) 424 9300

Product name: **Rhino 1501 Epoxy Hardener (Part B)**

SECTION 2 – HAZARD(S) IDENTIFICATION

OSHA Hazard Communication Standard:
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

GHS-Label Elements: **Signal Word:** DANGER

Pictogram(s):

GHS 08 GHS 07

Classification of the substance or mixture:

Hazard Class	Category	Hazard Statement Codes	Hazard Statements
Acute Toxicity, Oral	5	H303	May be harmful if swallowed
Skin corrosion / irritation	2	H315	Causes skin irritation
Serious eye damage / Eye irritation	2A	H319	Causes serious eye irritation
Skin Sensitization	1	H317	May cause an allergic skin reaction
Carcinogenicity	1B	H350	May cause cancer by inhalation and skin absorption
Reproductive Toxicity	2	H361	Suspected of damaging fertility or the unborn child
Specific target organ toxicity, single exposure	3	H335 H336	May cause respiratory irritation May cause drowsiness or dizziness
Specific target organ toxicity, repeated exposure	1 2	H372 H373	Causes damage to kidney, blood, skin, adrenal glands and bones through prolonged or repeated exposure May cause respiratory irritation and lung damage through prolonged or repeated exposure by inhalation
Flammable Liquids	4	H227	Combustible liquid

Precautionary Statements:

Prevention:	P201	Obtain special instruction before use.
	P202	Do not handle until all safety precautions have been read and understood.
	P281	Use personal protective equipment as required.
	P260	Do not breathe mist/vapors.
	P270	Do not eat, drink, and smoke when using this product.
	P271	Use only outdoors or in a well-ventilated area.
	P264	Wash exposed area with plenty of water and soap thoroughly after handling.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Response:	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
	P362	Take off contaminated clothing and wash before reuse.
	P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
	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.
	P314	Get medical advice/attention if you feel unwell.
	P308 + P313	IF exposed or concerned: Get medical advice/attention.
	P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:	P403 + P233 + P235	Store in a well-ventilated place. Keep container tightly closed. Keep cool.
	P405	Store locked up.

Disposal: P501 Dispose of contents/container to hazardous or special waste collection point in accordance with local/regional/national/international regulations.

Hazards not otherwise classified: See Section 11 for additional information.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS #	EC #	Concentration, %
Titanium Dioxide	13463-67-7	236-675-5	30 – 60
Confidential Component 1	Trade Secret	Trade Secret	1 – 15
Confidential Component 2	Trade Secret	Trade Secret	0.1 – 5
Propylene Glycol Monomethyl Ether	107-98-2	203-539-1	0.1 – 5
Silicon dioxide, amorphous	7631-86-9	231-545-4	0.1 – 5
Confidential Component 3	Trade Secret	Trade Secret	0.1 – 5
Polyoxypropylenediamine	9046-10-0	None	0.01 – 2
Tetraethylenepentamine	112-57-2	203-986-2	0.01 – 2
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	265-155-0	0.02 – 0.60
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	265-169-7	0.02 – 0.60
Confidential Component 4	Trade Secret	Trade Secret	0.02 – 0.60

SECTION 4 – FIRST-AID MEASURES

Description of First Aid measures:

Inhalation: Remove exposed person to fresh air and keep at rest in a position comfortable for breathing.
If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
In case of inhalation of decomposition products in a fire, symptoms may be delayed.
Get medical advice/attention if experiencing respiratory problems.

Skin: Wash material off of the skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes immediately and wash them before reuse. Get medical advice/attention if irritation develops.

Eye: Immediate medical attention required. Rinse cautiously with water for several minutes, especially under the eyelids. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Do not rub eyes in order to prevent cornea injury.

Ingestion: Remove exposed person to fresh air and keep at rest in a position comfortable for breathing. Remove dentures if any. If the exposed person is conscious, rinse mouth with water and then give plenty of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Do not induce vomiting unless directed to do so by medical personnel.
If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Get medical advice/attention if symptoms occur.

Most important symptoms/effects, acute and delayed: See Section 11 for more details.

General advice for First Aid responders: No action should be taken involving any personal risk or without suitable training. If potential for exposure exist refer to Section 8 for specific personal protective equipment. Show this SDS to physician.

Note to physician: Specific antidotes or neutralizers do not exist. Treatment should be supportive and based on the judgment of the physician in response to the reaction of the patient. Application of corticosteroid cream has been effective in treating skin irritation. Recommended medical monitoring for at least 24 hours.

SECTION 5 – FIRE-FIGHTING MEASURES

Suitable extinguishing media: Those recommended for Class B fuels: Alcohol-resistant foam, dry chemical or carbon dioxide fire extinguishers.

Unsuitable extinguishing media: Direct water stream may cause frothing, splattering of burning material and spreading of fire.

Specific hazards arising from the chemical: Flammable Liquid, Category 4 per GHS. Keep away from extreme heat or open flame. If heated above its flash point, product will release flammable vapors which can burn in the open or be explosive in confined spaces if exposed to ignition source. Vapors may be heavier than air and travel considerable distance to a source of ignition and flash back. Mists or sprays may be flammable below regular flash points.
Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area. Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. If released, product may float and ignite on surface of water.

- Propylene glycol monomethyl ether, CAS #: 107-98-2: Flash Point: 31°C (88°F); Flammable Liquid, Category 3 per GHS; Flammable Liquid, Class IC per OSHA 29 CFR 1910.106

Hazardous combustion products: carbon and nitrogen oxides, nitric acid, ammonia, amines, nitrosamines, formaldehyde, hydrogen cyanide, lower molecular weight organic molecules. Nitrogen oxide can react with water vapors to form corrosive nitric acid.

Special Protective Equipment and Precautions for fire-fighters: Wear NIOSH or OSHA approved self-contained breathing apparatus in positive pressure mode with full face piece and full protective gear. Isolate the scene by removing all persons from the incident area. Prevent static discharge. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. No action should be taken involving any personal risk or without suitable training.

Water contaminated with this material must be contained and prevented being discharged to any waterway, sewer or drain. Fire water run-off, if not contained, may cause environmental damage. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Keep unnecessary and unprotected personnel from entering. Ensure adequate ventilation/exhaust extraction. Avoid breathing vapors or mist during clean up. Eliminate all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Use protective equipment as described in Section 8. Do not touch or walk through spilled material; spilled material may cause a slipping hazard.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Inform the relevant authorities if the product has caused environmental pollution. See Section 12 for more details.

Methods and materials for containment and cleaning up: Product is flammable. Eliminate all sources of ignition. Use clean non-sparking tools to collect absorbed material. All equipment used when handling this product must be grounded. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor; but may not prevent ignition in closed spaces.
Remove mechanically; cover the remainder with non-combustible absorbent material (e.g. sand, earth, vermiculite or diatomaceous earth). Following absorption, transfer into properly labeled chemical waste containers. If necessary, repeat application of absorbent material until all liquid has been removed from the surface. Remove residual with warm, soapy water. Scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. After cleaning, remove waste container and keep in a well ventilated area. Properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.
For major spills: Stop leak if without risk. Approach release from upwind. Remove all ignition sources. Use spark-proof tools and explosion-proof equipment. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or contain and collect with an absorbent material as described in the previous paragraph.
For minor spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly with soap and water to remove residual contamination.
Never return spills to original containers for re-use.

Residues from spill cleanup may continue to be regulated under provisions of RCRA and require storage and disposal as hazardous waste. For major spills, see Section 1 for the Emergency contact; for further disposal measures, see Section 13.

SECTION 7 – HANDLING AND STORAGE

Precautions for safe handling: Product is flammable. Check atmosphere for explosiveness and oxygen deficiencies. Eliminate all sources of ignition. Ground and bond containers and equipment before transferring to avoid static sparks. All equipment must conform to applicable electrical code. Use clean non-sparking tools. Carefully vent any internal pressure before removing closure. Handle empty containers with care; vapor/residue may be ignited and explode.
Avoid exposure to heat and air. Use adequate ventilation to keep airborne levels below the exposure limits. Do not inhale vapors and mists. Wear respiratory protection if material is heated, mixed, sprayed or used in a confined space. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash hands thoroughly after handling. Hands and/or face should be washed before eating, drinking and smoking and at the end of the shift. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities: Store in original or approved alternative container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Do not store in aluminum, copper, galvanized iron and galvanized steel.
Store locked up. Keep container tightly closed and sealed until ready for use. Protect it against physical damage and moisture. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Flammable mixtures may exist within the vapor space of containers at room temperature. Keep liquid away from heat, sparks and flame. Do not cut, drill, grind, weld or perform similar operations on or near containers. Ground and bond containers and equipment. Use appropriate containment to avoid environmental contamination.

Storage stability: Stable under normal conditions.
Storage temperature: 65 - 80°F (18 - 27°C)

Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200. Employees and consumers should be warned of health risks associated with product use. See Section 8 for additional information on hygiene measures.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters/Occupational exposure limit values: Not available for mixture. Results for components are listed in Section 15.

Appropriate engineering controls: Use only with adequate ventilation. Provide process enclosures, local exhaust ventilation or other engineering controls to maintain recommended PEL. All equipment must conform to applicable electrical code. Use clean non-sparking tools.

Personal protective equipment:

Eye/face protection:

When directly handling liquid product, eye protection is required. Examples of eye protection include safety glasses and goggles. Contact lenses should not be worn when working with chemicals.

Skin/body protection:

Product easily penetrates the skin and may carry other dissolved chemicals into the body; therefore glove selection is very important. Butyl rubber, fluoroelastomer, neoprene, or thick (15 mil) latex gloves are recommended. Commonly used nitrile gloves may protect from brief contact, but have been found to degrade rapidly with exposure to the product.
Body should be covered with appropriate clothing (apron, arm covers or full body suit) depending on the task being performed and the risks involved. Appropriate footwear should be also selected based on the task being performed and the risks involved.

Respiratory protection:

Use local or general ventilation to control exposures below applicable exposure limits. When ventilation is inadequate, use either an atmosphere supplying respirator or NIOSH or OSHA approved air-purifying respirator that is recommended for use in solvent- containing areas. Respirator must be properly fitted and its selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Additional Protective Measures: Educate and train employees in safe handling of this product. Follow all label instructions. As a general hygiene practice, wash hands and face after use. Clean water should always be readily available for emergency skin and eye washing. Emergency eyewash fountains and safety shower should be in close proximity.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White Liquid
Odor:	Strong
Odor threshold:	Not available
pH:	Not available
Melting point/ freezing point:	Not available for mixture; PMGE: -97°C (-143°F); CC2: -15°C (5°F)
Initial boiling point and boiling range:	Not available for mixture; PMGE: 120°C (248°F) at 760 mmHg; CC2: ~205°C (401°F)
Flash point:	Not available for mixture; PMGE: 31°C (88°F); CC2: 101°C (214°F); closed cup
Evaporation rate:	Not available
Flammability (solid, gas):	Not available
Upper/ lower flammability or explosive limits:	Not available for mixture; PMGE: 16% (V) / 1.8% (V); CC2: 13% / 1.3%
Vapor pressure:	Not available for mixture; PMGE: 14.5 hPa mmHg (10.9 mmHg) at 25°C (77°F)
Vapor density:	Not available for mixture; PMGE: 3.12; CC2: 3.7 (air = 1)
Relative density:	Not available for mixture; PMGE: 0.92 @ 25°C
Solubility (water):	soluble in water
Partition coefficient n-octanol/water:	Not available for mixture; PMGE: log Pow: 0.37 (Measured); CC2: 1.05
Auto-ignition temperature:	>200°C; PMGE: 287°C (549°F); CC2: 435°C (815°F)
Decomposition temperature:	Not available
Viscosity:	Not available

PMGE: Propylene Glycol Monomethyl Ether; CC2: Confidential Component 2

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: Vapors may form explosive mixture with air. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Reaction of the product with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations leads to formation of N-Nitrosamines, many of which are known to be potent carcinogens. No further data available.

Chemical stability: Stable under recommended storage conditions.

Conditions to avoid: Excessive heat (temperatures exciding the flash point), open flame and sparks, mist formation.

Incompatible materials: Strong oxidizing agents, alkali metals; nitrous acid and other nitrosating agents, organic (i.e. acetic and citric acid) and mineral acids, peroxides, sodium hypochlorite. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces.

Hazardous decomposition products: Depend upon temperature, air supply and presence of other materials. Can include, but are not limited to carbon and nitrogen oxides, nitric acid, ammonia, amines, nitrosamines, formaldehyde, hydrogen cyanide, lower molecular weight organic molecules. Nitrogen oxide can react with water vapors to form corrosive nitric acid.

SECTION 11 – TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Skin and Eye Contact, Inhalation and Ingestion.

Symptoms of exposure:

Acute toxicity:

Oral: May be harmful if swallowed. Adverse symptoms may include abdominal pain, nausea and diarrhea.

Dermal: May be harmful in contact with skin. Adverse symptoms may include pain, redness, blistering, dryness and cracking.

Inhalation: May be harmful if inhaled, especially if handled at elevated temperatures; it may give off-gas, vapor or mist that is very irritating to the respiratory system. Adverse symptoms may include nausea, headache, and difficulties with breathing, respiratory arrest, dizziness and drowsiness.

Skin corrosion / irritation:

Irritating to skin. Skin contact may result in dermatitis, either irritative or allergic with symptoms of reddening, itching, and swelling.

Serious eye damage / eye irritation:

May cause serious eye damage. Adverse symptoms may include stinging, tearing, redness, swelling and burning.

Specific target organ toxicity, single exposure:

This product contain component that may target organs after single exposure:

- Propylene Glycol Monomethyl Ether, CAS #: 107-98-2: May cause drowsiness or dizziness
- Polyoxypropylenediamine, CAS #: 9046-10-0: May cause respiratory irritation
- Amorphous silica, CAS #: 7631-86-9: May cause respiratory irritation
- Aluminum hydroxide, CAS #: 21645-51-2: May cause respiratory irritation

Aspiration hazard: Not an aspiration hazard.

Chronic toxicity:

Respiratory and Skin Sensitizer:

This product contains component known or reported to be a skin or respiratory sensitizer.

- Tetraethylenepentamine, CAS #: 112-57-2: skin sensitizer.
- 1,2-Benzisothiazol-3(2H)-one, 2634-33-5: skin sensitizer.

Germ cell mutagenicity:

This product contains component which cause concern due to possible mutagenic effects, but for which the available information is not adequate for making a satisfactory assessment.

Carcinogenicity:

This product contains components that are reported to be carcinogens:

- Distillates (petroleum), hydrotreated heavy naphthenic, CAS #: 64742-52-5
- Distillates (petroleum), solvent-dewaxed heavy paraffinic, CAS #: 64742-65-0
- Titanium Dioxide, CAS #: 13463-67-7: IARC: Group 2B (Possibly Carcinogenic to Humans); ACGIH: Not classifiable as human carcinogen
- Amorphous Silica, CAS #: 7631-86-9: IARC: Group 3 (Not Classifiable as to its Carcinogenicity to Humans)
- Petroleum solvents: IARC: Group 3 (Not Classifiable as to its Carcinogenicity to Humans)

Note: Negative effects of the components classified as carcinogen and/or reproductive toxicants are minimized since they are dispersed in a liquid as opposed to an inhalable fine powder form. However, precautions should be taken to avoid breathing mists created by heating, mixing or spraying and dust from cutting or grinding of cured product containing these components.

Reproductive toxicity:

This product contains components that are suspected of damaging fertility or the unborn child:

Distillates (petroleum), hydrotreated heavy naphthenic, CAS #: 64742-52-5
Distillates (petroleum), solvent-dewaxed heavy paraffinic, CAS #: 64742-65-0

Specific target organ toxicity, repeated exposure:

Kidney, liver, stomach, skin, respiratory and nervous system, adrenal glands and bones.

Medical conditions aggravated by overexposure:

Kidney, liver, respiratory and nervous system, eye and skin disorders if product is handled without adequate protection.

Toxicity test results: Not available for mixture. Results for components, where available:

Titanium Dioxide, CAS #: 13463-67-7	Acute toxicity Oral LD50 (Rat): >5,000 mg/kg; a very insoluble compound. The studies in several species, including man, show neither significant absorption nor tissue storage following ingestion of titanium dioxide. Inhalation LC50 (Rat): >6.82 mg/L Skin corrosion/irritation (Rabbit): Slight or no skin irritation. Not dermally absorbed by humans. Serious eye damage/eye irritation (Rabbit): Slight or no eye irritation. Chronic Toxicity Sensitization (Mouse): Not sensitizing on laboratory animals. Germ cell mutagenicity: Non genotoxic. Carcinogenicity: IARC: Group 2B: Possibly carcinogenic to humans; No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by NTP, ACGIH and OSHA. Titanium dioxide is a frequently used compound in lung clearance studies, where a biologically inert substance is required, however inhalation of high concentrations of fine or ultrafine titanium dioxide particles has been shown to result in pulmonary inflammation, fibrosis, and lung

	tumors in rats. The same inhalation effects were not observed in mice and hamsters and may be a rat-specific threshold phenomenon, dependent upon lung overloading at high exposure concentrations and possibly of little relevance to humans. Epidemiological data suggest that there is no carcinogenic effect associated with workplace exposure to titanium dioxide dust. STOT, RE: Inhalation: Lung fibrosis; potential occupational carcinogen
Confidential Component 2, CAS #: Trade Secret	Acute toxicity: Oral (Rat): LD50: 1,230 mg/kg; Harmful if swallowed. May cause abdominal pain, nausea, vomiting and diarrhea. May cause nervous system effects with dizziness, incoordination, headache, numbness, confusion. Dermal (Rabbit): LD50: 2,000 mg/kg Inhalation (Rat) (vapor), 4hrs: LC50: >5,000 mg/m^3; Harmful if inhaled. May cause respiratory tract irritation with symptoms of coughing, sore throat, runny nose. May cause nervous system effects including nausea, dizziness, lightheadedness, incoordination, headache, numbness, confusion. Skin corrosion/irritation (Rabbit), 24hrs: non-irritant (OECD Test Guideline 404) May be absorbed through the skin. If sufficient amounts are absorbed, systemic toxicity may occur with symptoms similar to those noted for inhalation. Prolonged or repeated contact may cause dermatitis with symptoms of red, itchy, dry skin; may cause an allergic reaction in sensitive individuals. Serious eye damage/eye irritation (Rabbit), 24hrs: causes serious eye irritation. (OECD Test Guideline 405). May cause moderate irritation with symptoms of reddening, tearing and stinging. Prolonged vapor contact may cause conjunctivitis. STOT, SE: Product not classified based on available data. Aspiration hazard: No data available. Chronic toxicity: Respiratory or skin sensitization (guinea pig): non-sensitizer. Germ cell mutagenicity: Not classified as mutagenic. in vitro: Ames: negative (Salmonella typhimurium, with/without metabolic activation. Chromosome aberration test: positive (Chinese hamster ovary cells without metabolic activation). Positive and negative results were seen in various in vitro studies. in vivo: Micronucleus assay: negative results were reported in various studies (mouse, male, intraperitoneal). Carcinogenicity: Not classified as carcinogenic. No carcinogenic effects were observed at the doses tested (rat, male/female, oral, 2 yrs, daily) (mouse, male/female, oral, 2 yrs, daily). Reproductive toxicity: Not classified as reproductive toxin. No effects on reproductive parameters observed at doses tested (Fertility Screening, oral, rat, female, NOAEL (parental): 5 mg/kg). Three generation study (oral, rat, male/female) NOAEL (parental): >750 mg/kg, NOAEL (F1): >750 mg/kg, NOAEL (F2): >750 mg/kg; Developmental Toxicity/Teratogenicity: No fetotoxicity and no teratogenic effects observed at the doses tested (rat, male/female, oral daily, NOAEL: 750 mg/kg). STOT, RE: Repeated ingestion may cause liver and kidney damage and blood disorders. Prolonged/repeated inhalation may cause lung damage; Liver - Irregularities - Based on Human Evidence, Central nervous system depression, stupor, narcosis
Propylene Glycol Monomethyl Ether, CAS #: 107-98-2	Acute Toxicity: Oral LD50 (Rat): 4,016 mg/kg. Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Oral (Mouse): 11,700 mg/kg; Behavioral effects: Convulsions or effect on seizure threshold. Ataxia. Lungs, Thorax, or Respiration effects: Dyspnea. Dermal LD50 (Rabbit): >2,000 mg/kg. Prolonged skin contact is unlikely to result in absorption of harmful amounts. No deaths occurred at this concentration. Inhalation LC50 (Rat), 6hrs, vapor: >25.8 mg/L. Brief exposure (minutes) is not likely to cause adverse effects. The odor is objectionable at 100 ppm; higher levels produce eye, nose, and throat irritation and are intolerable at 1,000 ppm. Anesthetic effects are seen at or above 1,000 ppm. Skin corrosion/irritation (Rabbit): Prolonged and/or repeated contact may cause slight skin irritation with local redness. Serious eye damage/eye irritation (Rabbit), 24hrs: May cause slight temporary eye irritation. Corneal injury is unlikely. STOT, SE: May cause drowsiness or dizziness by inhalation. Target Organs: Central nervous system. Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard. Chronic toxicity: Sensitization, skin and respiratory (Guinea pigs): Did not cause allergic skin reactions. For respiratory sensitization: No relevant data found. Germ cell mutagenicity: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. Carcinogenicity: Did not cause cancer in laboratory animals. Reproductive toxicity: In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals; Teratogenicity: Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals. STOT, RE: Symptoms of excessive exposure may be anesthetic or narcotic effects (dizziness and drowsiness). In animals, effects have been reported on the following organs: Kidney. Liver.
Amorphous silica, CAS #: 7631-86-9	Acute Toxicity Oral LD50 (Rat): 3,160 mg/kg Skin corrosion/irritation: not irritating Serious eye damage/eye irritation: can cause moderate eye irritation and may cause abrasion to the cornea. STOT, SE: Category 3. May cause respiratory irritation. Chronic toxicity Carcinogenicity: IARC: Group 3 (Not Classifiable as to its Carcinogenicity to Humans) STOT, RE: pneumoconiosis. Inhalation (Rat): 1) LPTC: 154 mg/m^3/6 hour/4 week- intermittent (Lung, Thorax, or Respiration: Structural or functional change in trachea or bronchi; Biochemical: Enzyme inhibition, change in blood or tissue levels: Dehydrogenases; Metabolism (intermediary): Other proteins 2) LPTC: 5.41 mg/m^3/5 day- intermittent (Lung, Thorax, or Respiration: Other changes; Changes in lung weight; Biochemical: Metabolism (intermediary): Effect on inflammation or mediation of inflammation 3) LPTC: 1.39 mg/m^3/5 day- intermittent (Nutritional and Gross Metabolic: Weight loss or decreased weight gain)
Confidential Component 3, CAS #: Trade Secret	Skin corrosion/irritation: causes skin irritation. Serious eye damage/eye irritation: Causes serious eye irritation. STOT, SE: Category 3. May cause respiratory irritation.
Polyoxypropylenediamine, CAS #: 9046-10-0	Acute Toxicity: Oral LD50 (Rat): 2,885 mg/kg (OECD Test Guideline 401); May cause burns to mouth, throat and stomach. Dermal LD50 (Rabbit): 2,980 mg/kg(OECD Test Guideline 402); Causes severe burns. pain or irritation, redness, blistering. Inhalation LC50 (Rat), Vapor: >0.74 mg/L (OECD Test Guideline 403); May give off gas that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Skin corrosion/irritation (Rabbit): Corrosive (OECD Test Guideline 404) Serious eye damage/eye irritation (Rabbit): Corrosive (OECD Test Guideline 405) Causes serious eye damage. Pain, watering, redness. STOT, SE: No data available Aspiration hazard: No data available Chronic Toxicity: Sensitization, skin and respiratory: No data available

	Germ cell mutagenicity: Not mutagenic in a standard battery of genetic toxicological tests. In vitro: Bacteria and Mammals Cells: Negative; In vivo: Mammals: Negative Carcinogenicity: No data available Reproductive toxicity (Rat, male/female): Negative (OECD Test Guideline 421) STOT, RE: (Rat, Male/Female), 90days: sub-chronic NOAEL/Dermal: 250 mg/kg/d (OECD Test Guideline 411) 28days: sub-chronic NOAEL/Oral: 239 mg/kg/d (OECD Test Guideline 407)
Tetraethylenepentamine, CAS #: 112-57-2	Acute Toxicity Oral LD50 (Rat): 2,140 mg/kg Dermal LD50: (Rabbit): >660 mg/kg (Estimated) Inhalation LC50 (Rat): no data available. Skin corrosion/irritation (Rabbit): Corrosive. Severe skin irritation. Serious eye damage/eye irritation (Rabbit): Corrosive. Severe eye irritation. STOT, SE: no data available Aspiration hazard: no data available Chronic Toxicity Sensitization: skin sensitizer (occurred in laboratory animals after repeated exposures). Germ cell mutagenicity: Mutagenic in a bacterial assay. Did not cause chromosome damage in an in vivomicronucleus assay. It may be mutagenic, the data is inconclusive. Carcinogenicity: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, NTP, OSHA and ACGIH. Reproductive toxicity: no data available STOT, RE: no data available
Distillates (petroleum), hydrotreated heavy naphthenic, CAS #: 64742-52-5	Acute Toxicity: Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion. Oral LD50 (Rat): >5,000 mg/kg Dermal LD50 (Rabbit): >5,000 mg/kg Inhalation LC50 (Rat): >5 mg/L: harmful if inhaled. Inhalation of vapors or mists may cause irritation to the respiratory system. Skin corrosion/irritation (Rabbit): Causes skin irritation. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin. Expected to be resulting in disorders such as oil acne/folliculitis. Serious eye damage/eye irritation (Rabbit): causes serious eye irritation or damage. STOT, SE: No data available. Aspiration hazard: Category 1. May be fatal if swallowed and enters airways. Chronic toxicity: Sensitization, skin and respiratory: Not expected to be a skin sensitizer. Germ cell mutagenicity: Not considered a mutagenic hazard. Carcinogenicity: Category 1B. May cause cancer. Reproductive toxicity: Category 2. Suspected of damaging fertility or the unborn child by skin absorption. STOT, RE: Category 1. Causes damage to adrenal glands and bones through prolonged or repeated exposure by skin absorption.
Distillates (petroleum), solvent-dewaxed heavy paraffinic, CAS #: 64742-65-0	Aspiration hazard: Category 1. May be fatal if swallowed and enters airways. Carcinogenicity: Category 1B. May cause cancer. Reproductive toxicity: Category 2. Suspected of damaging fertility or the unborn child by skin absorption. STOT, RE: Category 1. Causes damage to adrenal glands and bones through prolonged or repeated exposure by skin absorption.
Confidential Component 4, CAS #: Trade Secret	Can induce skin sensitization. However, based on several patch test studies and experience, formulations which contain <500 ppm are unlikely to induce skin sensitization. Harmful if swallowed. Causes skin irritation. Causes serious eye damage.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability: Not known.
Bioaccumulative potential: Not known.

Mobility in soil: Not known.
Other adverse effects: Not known.

Ecotoxicity test results: Not available for the mixture. Results for components, where available:

Components	Test Results
Titanium Dioxide, CAS #: 13463-67-7	Aquatic toxicity: Fish LC0 (orfe, freshwater fish), 48h: >1,000 mg/L. Ecological Data: Persistence and degradability: Methods for the determination of biodegradability are not applicable to inorganic substances. Bioaccumulative potential: The product is practically insoluble in water and not biodegradable. Mobility in soil: No data available. PBT and vPvB assessment is not required for inorganic substances. Titanium dioxide is a stable compound that is insoluble in water and therefore would not be expected to be present in drinking water. Based on the lack of absorption as well as no identified toxicological effects of concern in animal testing, there are also no risk concerns for non-target terrestrial organisms resulting from the use of titanium dioxide as an inert ingredient.
Confidential Component 2, CAS #: Trade Secret	Acute toxicity: (Category 2), H401 - Toxic to aquatic life. An environmental hazard. Fish (Bluegill), 96hrs: LC50: 10 mg/L; (Fathead minnow), 96hrs: LC50: 460 mg/L Aquatic invertebrates (Daphnia magna), 24hrs: EC50: 55 mg/L; 48hrs: 230 mg/L (OECD Test Guideline 202) Aquatic plants (algae), 96hrs: EC50: 640 mg/L Microorganisms (Bacteria), 30-min: EC50: 71.4 mg/L Ecological Data: Persistence and degradability: Readily biodegradable; 92-96% in 28 days (OECD Test Guideline 301C) Bioaccumulative potential: Bioaccumulation is not expected (BCF = 0.31); Octanol/water partition coefficient (Log Pow): 1.05 Mobility in soil: High mobility; will readily leach through soil. PBT/vPvB assessment not available as chemical safety assessment not required/not conducted. Results of PBT and vPvB assessment: Product not classified as Persistent, Bioaccumulative. (EC reg. 453/2010)

Propylene Glycol Monomethyl Ether, CAS #: 107-98-2	Acute Toxicity: Material is practically non-toxic to aquatic organisms. (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). Fish (fathead minnow), 96hrs: LC50: 20,800 mg/L (OECD Test Guideline 203 or Equivalent, static). (Golden orfe), 96hrs: LC50: 6,812 mg/L (DIN 38412, static test) (Rainbow trout), 96hrs: LC50: ≥1,000 mg/L (OECD Test Guideline 203 or Equivalent, semi-static test) Aquatic Invertebrates (Daphnia magna), 48hrs: LC50: 21,100 - 25,900 mg/L (OECD Test Guideline 202, static) Aquatic Plants (green algae), 7days: ErC50: 1,000 mg/L (OECD Test Guideline 201 or Equivalent, static test, Growth rate inhibition) Microorganisms (activated sludge): IC50>1,000 mg/L (static test) Ecological data: Persistence and degradability: Readily biodegradable. Passes OECD test(s) for ready biodegradability. 10-day Window: Pass 96% in 28 days. (OECD Test Guideline 301E or Equivalent) ThOD: 1.95 mg/mg; COD: 1.84 mg/g Photodegradation: Atmospheric half-life: 7.8 Hour (Estimated, half-life (indirect photolysis); Sensitizer: OH radicals) Bioaccumulative potential: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Partition coefficient: n-octanol/water(log Pow): 0.37 at 20°C (Measured); Bioconcentration factor (BCF): < 2 Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50). Partition coefficient(Koc): 0.2 - 1.0 (Estimated)
Confidential Component 3, CAS #: Trade Secret	Aquatic Acute 1 H400 Aquatic Chronic 1 H410
Polyoxypropylenediamine, CAS #: 9046-10-0	Aquatic toxicity: An environmental hazard. Toxic to aquatic life with long lasting effects. Acute Toxicity: Fish, 96hrs: EC50: >15 mg/L (OECD 203, semi- static); 96hrs: 772 mg/L (OECD Test Guideline 203, static) Aquatic invertebrates (Daphnia magna), 48hrs: EC50: 80 mg/L (OECD Test Guideline 202, Immobilization test, static) Aquatic plants (green algae), 72hrs: ErC50: 15 mg/L (OECD Test Guideline 201, Growth Inhibition Test) Chronic Toxicity: Bacteria, 3hrs: EC50: 750 mg/L (OECD 208, Seedling Emergence and Seedling Growth Test, Static) Aquatic plants (Algae), 72 hours: NOEC: 0.32 mg/L (OECD Test Guideline 201, Growth Inhibition Test, Static) 72 hours: NOECb: 100 mg/L (ISO 10253:2006, Marine algal growth inhibition test , Static) Activated Sludge (Bacteria), 3hrs: NOEC 310 mg/L (OECD Test Guideline 209, Respiration Inhibition Test, Static) Ecological Data: Persistence and degradability: Not readily biodegradable; 0% in 28 days (OECD Test Guideline 301B) Aquatic half-life: Fresh water 360 days; Photolysis: 0.02 to 0.03 days Bioaccumulative potential: low; LogPow: 1.34; Mobility in soil: Not available.
Tetraethylenepentamine, CAS #: 112-57-2	Acute Toxicity Fish (guppy), 96hrs: LC50: 420 mg/L Aquatic invertebrates (Daphnia magna), 48hrs: EC50: 24 mg/L Aquatic plants (green algae), 72hrs: EC50: 2mg/L
Distillates (petroleum), hydrotreated heavy naphthenic, CAS #: 64742-52-5	Acute Toxicity: Poorly soluble mixture. May cause physical fouling of aquatic organisms. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Fish: LL/EL/IL50: >100 mg/L; Practically nontoxic. Aquatic Invertebrates: LL/EL/IL50: >100 mg/L; Practically nontoxic. Algae: LL/EL/IL50: >100 mg/L; Practically nontoxic. Microorganisms: LC/EC/IC50: >100 mg/L; Practically nontoxic. Chronic toxicity: Fish: NOEC/NOEL: >100 mg/L (based on test data) Aquatic Invertebrates: NOEC/NOEL: 1-10 mg/L (based on test data) Ecological data: Persistence and degradability: Major constituents are expected to be readily biodegradable, but the product contains components that may persist in the environment. Bioaccumulative potential: No data available. Mobility in soil: Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile. Result of the PBT and vPvB assessment: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB. Other Adverse Effects: Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential. Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.
Confidential Component 4, CAS #: Trade Secret	Acute aquatic toxicity: Category 1. Very toxic to aquatic life. Acute Toxicity: Fish (fathead minnow), 96hrs: LC50: 5-50 mg/L (OECD Test Guideline 203, static). Aquatic Plants (algae), 72hrs: EC50: 0.37 mg/L (OECD Test Guideline 201) Ecological data: Biodegradation: there is evidence of photodegradation in water and soil. Breaks down in sewage treatment at concentrations <5ppm. Bioaccumulative potential: not likely to bioaccumulate.

SECTION 13 – DISPOSAL CONSIDERATIONS

Product Disposal: The generation of waste should be avoided or minimized wherever possible. If product becomes a waste, it does not meet criteria of hazardous waste as defined in 40 CFR 261, Subpart C and D. Do not discharge into sewer system. Spill cleanup residues are subject to RCRA storage and disposal requirements.
Dispose waste in compliance with local, state and federal regulations via licensed waste disposal contractor. Preferred method of disposal is burning in a chemical incinerator equipped with an afterburner and scrubber; extra care should be taken in igniting as this material is highly flammable.

Container disposal: Even after emptying, container may retain residues. Do not heat or cut empty container with electric or gas torch since highly toxic vapors and gases can be formed. Empty containers should be completely drained and safely stored until appropriately reconditioned or disposed through licensed contractor in accordance with government regulations.

This material and its container must be disposed of in a safe way.

SECTION 14 – TRANSPORT INFORMATION

Land transport, U.S. DOT: Non-regulated
Sea transport, IMDG: Non-regulated
Air transport, IATA/ICAO: Non-regulated

SECTION 15 – REGULATORY INFORMATION

U.S. Regulations:
OSHA HCS: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29CFR 1910.1200.
TSCA Regulations:
All components of this product are listed or are exempt from TSCA Inventory requirements under 40 CFR 720.30.
EPCRA Section 302 (40 CFR Part 355) (Emergency Response Planning, Extremely Hazardous Substance):
No components are subject to the reporting.
EPCRA Section 304 (40 CFR Part 355) (Emergency Release Notification Requirements):
No components are subject to the reporting.
EPCRA Sections 311 & 312 (Hazardous Chemical Inventory Reporting, Hazard Categories):
Fire Hazard, Acute Health Hazard, Chronic Health Hazard
EPCRA Section 313 (40 CFR Part 372) (Toxic Chemical Release Inventory Reporting):
No components are subject to the reporting.
CERCLA Sections 102-103 (40 CFR Part 302) (Hazardous Substances Release Notification):
No components are subject to the reporting.
Clean Air Act:

- Ozone Depleting Substances (ODS): This product does not contain and is not manufactured with ozone depleting substances.
- Hazardous Air Pollutants, OSHA, Section 112(b), Table Z-1, Z-2, Z-3:

Substance		Regulatory Limits			Recommended Limits	
		OSHA PEL		Cal/OSHA PEL (as of 4/26/13)	NIOSH REL (as of 4/26/13)	ACGIH® 2015 TLV®
		ppm	mg/m³	8-hour TWA, mg/m³	Up to 10-hour TWA, mg/m³	8-hour TWA, mg/m³
Titanium Dioxide, CAS #: 13463-67-7	Total dust	-	15	10 (as PNOR)	2.4 mg/m³ (fine) 0.3 mg/m³ (ultrafine), Ca See Appendix A & C	10
Amorphous Silica, CAS #: 7631-86-9	Total dust	20	80 : (%SiO_2)	6	6	See TLV® book Appendix G
	Respirable fraction			3		
Petroleum distillates (Naphtha), CAS: NA		500	2,000	1,600 ppm	350 mg/m³ (C) 1,800 mg/m³ (15 min)	See TLV® book Appendix H

ppm-parts per million; Ca - Potential occupational carcinogens; (C) – Ceiling; Appendix A, C and D refers to Appendixes of Hazardous Air Pollutants List, Section 112(b) of Clean Air Act

NIOSH IDLH: Titanium dioxide, CAS #: 13463-67-7: 5000 mg/m³, Ca

Occupational Exposure Limits:

- Propylene glycol monomethyl ether, CAS #: 107-98-2:
  ACGIH TLV TWA: 50 ppm; ACGIH TLV STEL: 100 ppm; Remarks Upper Respiratory Tract irritation Eye irritation 2015 Adoption Not classifiable as a human carcinogen;
  NIOSH REL TWA: 100 ppm, 360mg/m3; NIOSH REL ST: 150 ppm, 540mg/m3
- Tetraethylenepentamine, CAS #: 112-57-2:
  WEEL TWA: 1 ppm 5mg/m³

Clean Water Act:

- Section 307(a) (Toxic pollutants): No components are listed.
- Section 311(b)(2): Table 116.4A (Hazardous chemicals) / Table 117.3 (RQ): No components are listed.

NFPA rating: Health: 2 Fire: 2 Reactivity: 1 Special: 0
HMIS rating: Health: 2* Flammability: 2 Physical hazard: 1

State Regulations:
California Prop. 65 Components:
This product contains chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Titanium dioxide (airborne, unbound particles of respirable size), CAS #: 13463-67-7
- causes cancer; Date listed: September 2, 2011

Instruction: for regulatory information on components of this mixture, check the appropriate state websites.

International Regulations/Inventories:
Canadian Regulations: All components of this product are listed or are exempt from the DSL.
WHMIS Classification (Controlled Products Regulations): Class D-2B: Material causing other toxic effects (Toxic)

WHMIS Label Information:  Class B3: Combustible Liquid

SECTION 16 – OTHER INFORMATION

LEGEND

GHS	Globally Harmonized System
CAS	Chemical Abstracts Services
EC	European Community
EPA	Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
NIOSH	National Institute of Occupational Safety and Health
PEL	Permissible Exposure Limits
TLV	Threshold Limit Value
REL	Recommended Exposure Limit
TWA	Time-Weighted Average
STEL	Short-term exposure limit
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
COD / BOD	Chemical Oxygen Demand / Biological Oxygen Demand
PACs / PAH	Polycyclic Aromatic Compounds / Polycyclic Aromatic Hydrocarbon Content
STOT, SE	Specific Target Organ Toxicity following Single Exposure
STOT, RE	Specific Target Organ Toxicity following Repeated Exposure
DOT	Department of Transportation
IMDG	International maritime dangerous goods code
IATA, ICAO	International Air Transport Association, International Civil Aviation Organization
TSCA	Toxic Substances Control Act
EPCRA	Emergency Planning and Community Right-to-Know Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
RQ	Reportable Quantity
TQ	Threshold Quantity
TPQ	Threshold Planning Quantity
EHS	Extremely Hazardous Substances
DSL	Domestic Substance List
WHMIS	Workplace Hazardous Materials Information System

Latest revision date: February 10, 2016 – Preparation of SDS in accordance to the GHS requirements
Date of the previous revision: September 21, 2011

Disclaimer: The data set forth in this sheet are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. Rhino Linings Corporation makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereof.