

# Material Safety Data Sheet

Material Name: PENNCOAT® 401 RESIN GRAY

IDs:

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

Product Trade Name PENNCOAT 401 RESIN GRAY

### Manufacturer Information

Ergon Armor (601) 933-3540  
Corrosion Engineering  
P.O. Box 1639 (800) 424-9300  
Jackson, MS 39215-1639

## \*\*\* Section 2 - Composition / Information on Ingredients \*\*\*

CAS #	Component	Percent
NE	Pentaglycidylethers of cyclosilicon	70-90
13463-67-7	Titanium dioxide	5-15
108-10-1	Methyl isobutyl ketone	1-5
78-93-3	Methyl ethyl ketone	20-30

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Glycidol derivatives.

## \*\*\* Section 3 - Hazards Identification \*\*\*

### Emergency Overview:

Pigmented, opaque, viscous liquid with a ketone odor.

WARNING!

MAY CAUSE EYE IRRITATION.

MAY CAUSE ALLERGIC SKIN REACTION.

PROLONGED EXPOSURE TO HIGH VAPOR CONCENTRATIONS CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION INCLUDING HEADACHE, DIZZINESS, WEAKNESS, CONFUSION, NAUSEA, AND LOSS OF CONSCIOUSNESS.

### Potential Health Effects:

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be practically non-toxic if swallowed or absorbed through skin, non-irritating to skin and slightly irritating to eyes. Repeated exposure may cause an allergic skin reaction. Prolonged or repeated contact may remove oils from the skin and may dry skin and cause irritation, redness and rash. High vapor concentrations may be irritating to the eyes and respiratory tract, and may result in central nervous system (CNS) effects such as weakness, headache, dizziness, nausea, drowsiness, stomach ache, loss of coordination and, in severe exposures, loss of consciousness and death. Grossly excessive and prolonged exposure may lead to lung injury (non-progressive lung fibrosis). Mild to severe lung injury may occur if this material is drawn into the lungs (aspirated) during swallowing, or during vomiting after swallowing. Symptoms of injury may include increased breathing and heart rate, coughing and related signs of respiratory distress.

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## \*\*\* Section 4 - First Aid Measures \*\*\*

### Eye Contact:

Immediately flush with plenty of water. Get medical attention if irritation persists.

### If On Skin

Immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

### Ingestion:

Induce vomiting as directed by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

## \*\*\* Section 5 - Fire Fighting Measures \*\*\*

Flash Point: 152 deg F (66.7 C)

Method Used: TCC

Flammability  
Classification:

Upper Flammable  
Limit (UFL): N/A

Lower Flammable  
Limit (LFL): N/A

### Fire & Explosion Hazards:

Closed containers of this material may explode when subjected to heat from surrounding fire. Cool exposed containers with water. Avoid breathing fumes from fire exposed material.

### Extinguishing Media:

Use water spray, carbon dioxide, foam or dry chemical.

### Fire-Fighting Instructions:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

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## \*\*\* Section 6 - Accidental Release Measures \*\*\*

### Spill or Leak

Isolate hazard area and deny entry to unnecessary or unprotected personnel. Contain spilled liquid with sand or earth. Clean up spill immediately, observing precautions in the Personal Protection section of MSDS. Avoid runoff into storm sewers and ditches which lead to waterways.

## \*\*\* Section 7 - Handling and Storage \*\*\*

### Handling Procedures:

Do not get in eyes, on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Empty container may contain hazardous residues.

### Storage Procedures:

Avoid excessive heat. Store out of direct sunlight in a cool, well-ventilated place.

## \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

### Component Exposure Limits

#### Titanium dioxide

ACGIH: TLV-TWA 10 mg/m<sup>3</sup>  
OSHA: PEL-TWA 15 mg/m<sup>3</sup>

#### Methyl isobutyl ketone

ACGIH: TLV-TWA 205 mg/m<sup>3</sup> (50 ppm)  
ACGIH: TLV-STEL 307 mg/m<sup>3</sup> (75 ppm)  
OSHA: PEL-TWA 410 mg/m<sup>3</sup> (100 ppm)

#### Methyl ethyl ketone

ACGIH: TLV-TWA 590 mg/m<sup>3</sup>; (200 ppm)  
ACGIH: TLV-STEL 885 mg/m<sup>3</sup> (300 ppm)  
OSHA: PEL-TWA 590 mg/m<sup>3</sup>; (200 ppm)

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

### Engineering Controls:

Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to control exposure levels. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

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## PERSONAL PROTECTIVE EQUIPMENT

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a Hazard Assessment of all workplaces to determine the need for, and selection of, proper protective equipment for each task performed.

### Eyes/Face Protective Equipment:

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

### Skin Protection:

Neoprene or Polyvinyl chloride gloves should be worn when handling this material. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Wash contaminated clothing and clean protective equipment before reuse. Rinse contaminated skin promptly. Wash skin thoroughly after handling.

### Respiratory Protection:

Avoid breathing vapor or mist. Use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure may be significant, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

## \* \* \* Section 9 - Physical & Chemical Properties \* \* \*

<b>Physical State:</b>	Viscous liquid	<b>Appearance:</b>	Pigmented, opaque, liquid
<b>Odor:</b>	Mild (ketone)	<b>Vapor Pressure:</b>	N/E
<b>Vapor Density:</b>	Heavier than air	<b>Boiling Point:</b>	260 Deg C (decomposes)
<b>Melting Point:</b>	N/A	<b>Specific Gravity:</b>	1.56 @ 25/25 Deg C
<b>pH:</b>	N/A	<b>Viscosity:</b>	N/E
<b>VOC:</b>	6-7%	<b>Solubility Water:</b>	Insoluble

## \* \* \* Section 10 - Chemical Stability & Reactivity Information \* \* \*

### Chemical Stability:

This material is chemically stable under normal and anticipated storage and handling conditions.

### Incompatibility:

Avoid contact with strong acids, strong oxidizers and alkalis which may cause a violent reaction. Contact with amine compounds in uncontrolled conditions results in an exothermic reaction.

### Decomposition Products:

Oxides of carbon

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## Hazardous Polymerization:

Hazardous polymerization is not known to occur.

## \* \* \* Section 11 - Toxicological Information \* \* \*

## Acute Toxicity:

### A: General Product Information

No information available for the product.

### B: Component Analysis - LD50/LC50

#### Pentaglycidylethers of cyclosilicon

Single exposure (acute) studies indicate that this material is practically non-toxic if swallowed (rat LD50 >5,000 mg/kg) or absorbed through skin (rabbit LD50 >8,000 mg/kg), non-irritating to rabbit skin and slightly irritating to rabbit eyes. No deaths occurred in rats exposed to vapor for 8-hrs.

#### Methyl Isobutyl Ketone

Single exposure (acute) studies indicate that this material is slightly toxic to rats if swallowed (LD50 2,080-4,600 mg/kg) or to rabbits if absorbed through skin (LD50 >3,000 mg/kg), practically non-toxic to rats if inhaled (4-hr LC50 > 2,000 mg/l), slightly irritating to rabbit eyes (4.0/110.0), and practically non-irritating to rabbit skin (.25/8.0). The 5-min RD50 for mice is 13.1 mg/l. Acute inhalation of this material by laboratory animals was reported to produce irritation and anesthesia. No evidence of nervous system injury was observed in studies with rats (intraperitoneal injection of up to 200 mg/kg/day for 35 weeks), dogs (subcutaneous injection of 300 mg/kg/day for 11 months), cats (300 mg/kg/day for up to 8.5 months), guinea pigs (skin application of 582 ml over 31 weeks), and chickens (inhalation of 1000 ppm for 13 weeks). Temporary anesthesia was, however, reported in rats during the first month of treatment and hens developed reversible leg weakness. In repeat inhalation studies (rats, dogs, mice and monkeys), this material was reported to produce increased liver and kidney weights and kidney changes (hyaline droplets) in male rats following exposure (2-13 weeks) to 100 ppm or above, liver weight change in mice (13 weeks at 250 ppm or more) and kidney inflammation in one monkey (13 weeks at 100 ppm). Rat kidney changes were considered the result of this material binding to a unique protein (- 2- globulin) not found in humans or mice. Exposure to 250 ppm or more of both this material and n-hexane increased the nervous system effects of n-hexane in hens. Following repeated oral dosing (13 weeks), kidney toxicity and liver weight changes were reported in rats given 250 mg/kg/day or more. No birth defects were reported in rats or mice exposed to this material by inhalation during pregnancy, even at concentrations (up to 3000 ppm) which produced significant toxic effects in the mothers and their offspring. This material has generally produced no genetic changes in a variety of standard tests using animals and animal, bacterial or yeast cells.

#### Methyl ethyl ketone

Single exposure (acute) studies indicate that this material is no more than slightly toxic to rats if swallowed (LD50 2,700-5,600 mg/kg), practically non-toxic to rabbits if absorbed through skin (LD50 5,000-13,000 mg/kg) or rats if inhaled (4-hr LC50 11,700 ppm), and moderately irritating to rabbit eyes and skin. Repeated exposure of humans to controlled skin contact studies with this material produced no skin irritation or skin allergy. Central nervous system (CNS) effects and peripheral neuropathy have been reported in the industrial setting following

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exposure to mixtures containing this material; however, these mixtures contained other solvents known to cause nervous system injury.

Following repeated inhalation exposure, slight changes in organ weights and blood chemistry were reported in rats. No evidence of nervous system injury following long-term inhalation exposure to this material has been observed in rats, chickens, mice or cats. Animal studies have shown this material to increase the severity of, or shorten the onset of, irreversible nervous system effects due to n-hexane and methyl butyl ketone, as well as effects of chloroform and carbon tetrachloride. This material did not increase the incidence of tumors in long term skin application studies in mice. A small number of major birth defects were reported in rats exposed to this material by inhalation during pregnancy at a level (3,000 ppm) which produced toxic effects in the offspring, but not in the mothers. However, no birth defects were found in a second repeat study with rats using very similar exposure conditions, while adverse effects were noted in the mothers and their offspring. In mice exposed to 3000 ppm of this material by inhalation during pregnancy, toxic effects were observed in the mothers (mild effects only) and their offspring. This material has generally produced no genetic changes in standard tests using animals and animal or bacterial cells. A positive response was reported in one assay using yeast cells.

## **Titanium Dioxide**

Direct administration into the lungs of rats produced lung damage (fibrosis) and inflammation. Repeated inhalation produced no adverse effects in rats. In long-term inhalation studies, toxic (rhinitis, tracheitis, pneumonia) and tumorigenic (benign and malignant tumors) effects were observed in lungs of rats. The normal clearance mechanisms of the lungs were considered to have been greatly exceeded at the high exposure levels used, and this may have contributed to the observed increase in tumors. In a similar long-term inhalation study, exposure to a lower concentration produced no tumors in rats. No tumors were observed in life-time feeding studies using rats or mice. Generally, no genetic changes were observed in standard tests using bacteria or animal cells.

## **Epidemiology:**

No information available for the product.

## **Neurotoxicity:**

No information available for the product.

## **Mutagenicity:**

No information available for the product.

## **Teratogenicity:**

No information available for the product.

<b>*** Section 12 - Ecological Information ***</b>
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## **Ecotoxicity:**

### **A: General Product Information**

No information available for the product.

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## B: Component Analysis - Ecotoxicity - Aquatic Toxicity

### Methyl Isobutyl Ketone

This material is practically non-toxic to brine shrimp (24-hr LC50 1,230 mg/l), goldfish (24-hr LC50 460 mg/l), green algae (48-hr LC50 980 mg/l), Daphnia magna (48-hr EC50 170 mg/l), golden orfe (48-hr LC50 672-744 mg/l), algae (96-hr EC50 400 mg/l), fathead minnow (96-hr LC50 509-780 mg/l) and rainbow trout (96-hr LC50 600 mg/l).

### Methyl Ethyl Ketone

This material is practically non-toxic to goldfish, brine shrimp, Daphnia magna, fathead minnow, mosquito fish, bluegill sunfish and golden orfe (LC50s >1,000 mg/l).

This material inhibits fungal growth and is reported to be bacteriostatic to several microorganisms (Escherichia coli, Salmonella typhimurium, Staphylococcus aureus, Leuconostoc citrovorum and Streptococcus thermophilus) at levels of 10-100 mg/l. Growth inhibition has also been reported for freshwater algae at levels ranging from 120 mg/l (blue-green algae) to 4,300 mg/l (green algae).

## Environmental Fate:

### Methyl Isobutyl Ketone

This material is reported to be readily biodegradable in fresh water and sea water. The non-acclimated extent of bio-oxidation was 69% after 20 days, in fresh water. The biological oxygen demand (BOD) for this material over 5 days using sludge from a waste treatment plant was determined to be 76% of the theoretical oxygen demand. The measured chemical oxygen demand (COD) is expected to be low due to the low value of the octanol-water coefficient ( $\log P_{ow} = 1.38$ ).

### Methyl Ethyl Ketone

Extensive data suggests that this material is readily biodegradable. It is non-toxic to sludge microorganisms at concentrations up to 800 ug/l.

<b>*** Section 13 - Disposal Considerations ***</b>
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## US EPA Waste Numbers & Descriptions:

### A: General Product Information

Recover, reclaim or recycle when practical.

Disposal via incineration is recommended. Appropriate pretreatment and disposal in an authorized landfill is acceptable. In all cases, dispose of material in accordance with all applicable federal, state, and local laws and regulations. Consult appropriate regulatory officials or your attorney for information on such disposal.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

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## B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

### \*\*\* Section 14 - Transportation Information \*\*\*

## US DOT Information

Shipping Name: NOT regulated by DOT.

### \*\*\* Section 15 - Regulatory Information \*\*\*

## US Federal Regulations

### A: General Product Information

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

### B: Component Analysis

#### Ingredient Related Regulatory Information:

#### SARA Reportable Quantities

#### CERCLA RQ

#### SARA TPQ

Methyl isobutyl ketone

5000 LBS

Methyl ethyl ketone

5000 LBS

**SARA 311/312:** Acute: Y Chronic: N Fire: N Pressure: N Reactive: N

#### SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

Methyl ethyl ketone

Methyl isobutyl ketone

## State Regulations

### A: General Product Information

No additional information available.

### B: Component Analysis – State

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The following components appear on one or more of the following state hazardous substances lists:

## California Proposition 65 – Carcinogen

This product does contain the following chemical(s), as indicated below, currently on the California List of Known Carcinogens.

Quartz (<0.1%/wt.)

## Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

Methyl ethyl ketone

Methyl isobutyl ketone

Titanium dioxide

## New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

Methyl ethyl ketone

Methyl isobutyl ketone

Titanium dioxide

## Pennsylvania Environmental Hazard

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Methyl ethyl ketone

Methyl isobutyl ketone

## Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Methyl ethyl ketone

Methyl isobutyl ketone

Titanium dioxide

## Other Regulations

### A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

### B: Component Analysis – Inventory Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Pentaglycidylethers of cyclosilicon	NE	Yes	Yes	Yes
Methyl isobutyl ketone	108-10-1	Yes	Yes	Yes
Methyl ethyl ketone	78-93-3	Yes	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes	Yes

### C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Disclosure / Classifications
Methyl isobutyl ketone	108-10-1	1% / B2
Methyl ethyl ketone	78-93-3	1% / B2, D2B
Titanium dioxide	13463-67-7	0.1% / D2A

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<b>*** Section 16 - Other Information ***</b>
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## Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Ergon Armor bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.