

Aseal 192P

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| 1 | PRODUCT AND COMPANY IDENTIFICATION |
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Product Identifier: Aseal 192P
Common Name: Waterbased Phenolic
SDS Number: I54
Revision Date: 7/15/2015
Version: 1
Product Description: Waterbased Phenolic Coating
Supplier Details: Coatings for Industry, Inc.
 319 Township Line Road
 Souderton, PA 18964

Emergency: Infotrac
Contact: USA: 1-800-535-5053 / International :352-323-3500
Phone: 215-723-0919
Fax: 215-723-0911
Email: cs@cficoatings.com
Web: www.cficoatings.com

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| 2 | HAZARDS IDENTIFICATION |
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Classification of the substance or mixture**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):**

Physical, Flammable Liquids, 4
 Health, Acute toxicity, 5 Oral
 Health, Skin corrosion/irritation, 2
 Health, Respiratory or skin sensitization, 1 Skin
 Health, Serious Eye Damage/Eye Irritation, 1
 Health, Serious Eye Damage/Eye Irritation, 2 A
 Health, Specific target organ toxicity - Single exposure, 3
 Health, Carcinogenicity, 2
 Health, Specific target organ toxicity - Repeated exposure, 2

GHS Label elements, including precautionary statements**GHS Signal Word:** DANGER**GHS Hazard Pictograms:****GHS Hazard Statements:**

H227 - Combustible liquid
 H303 - May be harmful if swallowed
 H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction
 H318 - Causes serious eye damage
 H319 - Causes serious eye irritation
 H336 - May cause drowsiness or dizziness
 H351 - Suspected of causing cancer
 H373 - May cause damage to organs through prolonged or repeated exposure

GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.
 P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking

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P233 - Keep container tightly closed.
 P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
 P264 - Wash _ thoroughly after handling.
 P270 - Do not eat, drink or smoke when using this product.
 P271 - Use only outdoors or in a well-ventilated area.
 P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 P301+312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 P303+361+353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P305+351+338 - IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
 P332+313 - If skin irritation occurs: Get medical advice/attention.
 P403+235 - Store in a well ventilated place. Keep cool.
 P501 - Dispose of contents/container to licensed hazardous waste disposal service.

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| 3 | COMPOSITION/INFORMATION OF INGREDIENTS |
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Ingredients:

| Cas# | % | Chemical Name |
|------------|----------|---|
| 7732-18-5 | 26-65.9% | Water |
| 0 | 10-15% | Phenolic Resin |
| 71-36-3 | 0.5-2.5% | 1-Butanol |
| 112-34-5 | 1-2% | Diethylene glycol monobutyl ether |
| 36484-54-5 | 2-4% | Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and methyloxirane |
| 37225-26-6 | 0.1-1% | Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediy) |
| 26141-88-8 | 0.1-1% | 2-Propenoic acid, 2-methyl-, methyl ester, polymer with oxiranylmethyl 2-methyl-2-propenoate |
| 12001-26-2 | 1-4% | Mica |
| 14808-60-7 | .1-1% | Silica, crystalline quartz |
| 7757-93-9 | 15-25% | Phosphoric acid, calcium salt (1:1) |
| 13463-67-7 | 1-5% | Titanium oxide (TiO2) |
| 68186-91-4 | 1-5% | C.I. Pigment Black 28 |
| 85940-94-9 | 2-6% | Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked |
| 64742-95-6 | 0.2-2% | Aromatic hydrocarbon |
| 96-29-7 | .1-.5% | Methyl ethyl ketoxime |

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| 4 | FIRST AID MEASURES |
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Inhalation: If inhaled, remove to fresh air. Give oxygen or artificail respiration if needed. Get immediate medical attention. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Skin Contact: Promptly flush skin with water until all chemical is removed. Remove contaminated clothing and footwear immediately, and wash before reuse. Discard clothing and footwear which cannot be decontaminated.

Eye Contact: Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Then remove contact lenses, if easily removeable, and continue irrigation for not less than 15 minutes. Get immediate medical attention.

Ingestion: Rinse mouth with water. If ingested, do not induce vomiting unless directed to do so by medical personnel. Get medical attention.

Most Important Symptom(s)/Effect(s)

Acute: This product contains a blocked polyisocyanate which is considered essentially unreactive at room temperature even though it may contain a small amount of excess blocking agent. Generation of free diisocyanate and blocking agent vapors are expected in the oven during curing or during any accidental heating of this product above its unblocking temperature. The health effects and symptoms in this section apply to the free diisocyanate and blocking agent vapors thus produced, as well as

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to any exposure to solvent ingredients, if included in this product., Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips)., Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

Causes skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

, Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Note to Physician: Medical supervision of all employees who handle or come in contact with this product is recommended. This should include pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted

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FIRE FIGHTING MEASURES

Flash Point: Greater than 200 F

Extinguishing Media: Water, foam, dry chemical, CO₂.

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, formaldehyde, phenol, oxides of nitrogen (NO_x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds.

Fire Fighting Instructions: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by fire fighters. During a fire, HDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. (See Section VIII) Emits toxic fumes under fire conditions. Isolate from heat, electrical equipment, sparks, and open flame. Closed container may explode when exposed to extreme heat. Solvent vapors may be heavier than air. Stagnant air may cause vapors to build up and travel along the ground to an ignition source which may result in a flash back to the source of the vapors. Wear neoprene gloves when handling refuse from fire.

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ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate personal protective equipment during clean-up. Spilled material is a slipping hazard.

Spill Clean Up

Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up.

Disposal Considerations:

Preferred options for disposal are: Incinerate. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Decontaminate containers prior to disposal.

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HANDLING AND STORAGE**Handling Precautions:**

Avoid breathing vapors or mist. Avoid contact with eyes, skin, or clothing. Consider normal working hygiene. Launder contaminated clothing. Wash thoroughly after handling.

Storage Requirements:

Storage Temperature (min/max) : 50° F/80° F.
Protect from freezing.

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EXPOSURE CONTROLS/PERSONAL PROTECTION**Engineering Controls:**

Exhaust ventilation sufficient to keep the airborne concentrations of HDI and polyisocyanate below their respective TLV and manufacturer's suggested guidelines must be utilized. Curing ovens in particular must be ventilated to prevent emissions into the workplace and to keep solvent levels in the oven below the lower explosive limits. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

Personal Protective Equipment:

Respiratory Protection: During spray painting applications, at least an air purifying respirator with an organic vapor cartridge and spray painting prefilter must be worn. Consider type of application and environmental concentrations. The use of a positive pressure supplied air respirator is mandatory when: airborne concentrations are not known; levels are greater than 10 times the appropriate TLV; or if spraying is performed in a confined space or area with limited ventilation. Take into account other materials being used concurrently. Observe OSHA regulations for respirator use (29 CFR 1910.134). If oven off-gasses are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne solvent, MEKO, or isocyanate vapors. Therefore, when airborne concentrations of isocyanate, solvents, or MEKO exceed the TLV but are below 10 times these limits, at least an air purifying (organic vapor) respirator is required. If airborne concentrations are unknown, or exceed 10 times the TLV, or operations are performed in a confined space, a supplied air respirator must be worn. Refer to Patty's Industrial Hygiene and Toxicology - Volume 1 (3rd edition) Chapter 17 and Volume III (1st edition) Chapter 3 - for guidance concerning appropriate air sampling strategy to determine airborne concentrations.

Eye Protection:

Wear eye/face protection such as chemical splash proof goggles or face shield.

Skin Protection:

Avoid skin contact. Wear impermeable gloves and suitable protective clothing. Since this product is absorbed through the skin, care must be taken to prevent skin contact and contamination of clothing.

Hand Protection:

Nitrile or fluorinated rubber gloves. Consider the porosity and elasticity data of the glove manufacturer and the specific conditions in the work place. Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility etc) is noticed.

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Additional Advice:

Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

Safety showers and eyewash stations should be available. Educate and train employees in the safe use of product. Follow all label instructions.

Components with workplace control parameters**Exposure Limits**

The following exposure limits for hexamethylene-1,6-diisocyanate (HDI) do not apply to the product in its supplied form; however, when the product is heated (i.e, during processing, thermal decomposition conditions or unblocking), there is a potential for the release of hexamethylene-1,6-diisocyanate (HDI) vapors.

Hexamethylene-1,6-Diisocyanate (822-06-0)

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 0.005 ppm

1-Butanol (71-36-3)

TWA 20 ppm USA. ACGIH Threshold Limit Values (TLV)
Eye & Upper Respiratory Tract irritation

TWA 50 ppm USA. OSHA - TABLE Z-1 Limits for
150 mg/m³ Air Contaminants - 1910.1000
Skin notation

TWA 100 ppm USA. Occupational Exposure Limits
300 mg/m³ (OSHA) - Table Z-1 Limits for Air Contaminants
The value in mg/m³ is approximate.

TWA 50 ppm USA. NIOSH Recommended
150 mg/m³ Exposure Limits
Potential for dermal absorption

Diethylene glycol monobutyl ether (112-34-5)

ACGIH TWA Inhalable fraction and vapor 10 ppm

Mica (12001-26-2)

TWA 3.0 mg/m³ USA. ACGIH Threshold Limit Values (TLV)

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000): (PEL) 3mg/m³

Silica, crystalline quartz (14808-60-7)

TWA 0.025 mg/m³ USA. ACGIH Threshold Limit Values (TLV)
Suspected human carcinogen

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TWA 0.025 mg/m3 USA. ACGIH Threshold Limit Values (TLV)
 Lung cancer Pulmonary fibrosis Suspected human carcinogen

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000): PEL 0.1 mg/m3

Phosphoric acid, calcium salt (1:1) (7757-93-9)

Total dust TWA (USA) 15 mg/m3 TWA
 Respirable fraction TWA (USA) 5 mg/m3.

Methyl ethyl ketoxime (96-29-7)

TWA 10 ppm USA. Workplace Environmental Exposure Levels (WEEL)
 Dermal Sensitization Notation

C.I. Pigment Black 28 (Copper Chromite Black Spinel) (68189-91-4)

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000):
 CHROMIUM (III) AND COMPOUNDS: (PEL) 1 mg/m3 (as Cr)
 COPPER DUSTS AND MISTS (PEL) 1 mg/m3 (as Cu) Dust and mist.
 0.1 mg/m3 (as Cu) Fume.

US. ACGIH Threshold Limit Values:
 CHROMIUM (III) AND COMPOUNDS: (TWA) 0.5 mg/m3 (as Cr)
 COPPER DUSTS AND MISTS: (TWA) 1 mg/m3 (as Cu) Dust and mist.
 0.2 mg/m3 (as Cu) Fume.

US. NIOSH: Pocket Guide to Chemical Hazards:
 CHROMIUM (III) AND COMPOUNDS (TWA) 0.5 mg/m3 (as Cr)
 COPPER DUSTS AND MISTS (TWA) 1 mg/m3 (as Cu) Dust and mist

Titanium Dioxide (13463-67-7)

PEL: (OSHA) 15 mg/m3 8 hr. TWA Total dust.
 TLV : (ACGIH) 10 mg/m3 TWA

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit

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| 9 | PHYSICAL AND CHEMICAL PROPERTIES |
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| Appearance: | Gray | Odor: | Pungent |
| Physical State: | Liquid | Percent Volatile: | 49-54% by weight |
| Spec Grav./Density: | 1.25-1.35 | Flash Point: | Greater than 200 F |

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| 10 | STABILITY AND REACTIVITY |
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| Chemical Stability: | Stable, however unblocking occurs at 212-266°F. Once unblocked, this product can react with water, alcohols, amines, metal compounds or surface active metals. |
| Conditions to Avoid: | Avoid storage temperatures above 122°F to prevent unintentional unblocking. Avoid contact with oxidizing agents. Avoid high temperatures, fire conditions. |
| Materials to Avoid: | Incompatible or can react with finely divided metal powders (e.g., aluminum and magnesium) and potent oxidizers like fluorine (F ₂) and related compounds (e.g., chlorine trifluoride, ClF ₃). Contact with incompatibles can cause fire, an explosion |
| Hazardous Decomposition: | Thermal decomposition may generate carbon monoxide, carbon dioxide and oxides of nitrogen, traces of HCN and HDI, formaldehyde, and phenol. Heating above 300 deg. C. (572 deg. F., may cause evolution of particulate matter, which can cause polymer fume fever. |
| Hazardous Polymerization: | Will not occur. |

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| 11 | TOXICOLOGICAL INFORMATION |
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Likely Routes of Exposure:

Skin Contact, Inhalation, Eye Contact

Health Effects and Symptoms

Acute: This product contains a blocked polyisocyanate which is considered essentially unreactive at room temperature even though it may contain a small amount of excess blocking agent. Generation of free diisocyanate and blocking agent vapors are expected in the oven during curing or during any accidental heating of this product above its unblocking temperature. The health effects and symptoms in this section apply to the free diisocyanate and blocking agent vapors thus produced, as well as to any exposure to solvent ingredients, if included in this product. Inhalation, skin absorption, or ingestion may cause methemoglobin formation resulting in a reduced ability of the blood to carry oxygen; a symptom of this may be cyanosis (purplish-blue coloring of skin, fingernails, and lips). Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

Causes skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Inhalation of the solvents may cause central nervous system depression with symptoms of nausea, lightheadedness, drowsiness, dizziness and loss of co-ordination.

Chronic: Suspected of causing cancer. May cause lymph node damage. As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure limits or guidelines.

These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Prolonged vapor contact with the eyes may cause conjunctivitis.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling solvents may be harmful or fatal.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Silica, crystalline quartz (14808-60-7)

Information on toxicological effects

Acute toxicity:

Oral LD50 no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

A. SILICOSIS

The major concern is silicosis, caused by the inhalation of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years (15 to 20 or more) of prolonged repeated inhalation of relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath and cough. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.

Acute Silicosis can occur after the repeated inhalation of very high concentrations of respirable crystalline silica over a short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough, weakness and weight loss. Acute silicosis is fatal.

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that "crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)". For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "A Review of Human Carcinogens: Arsenic, Metals, Fibres and Dusts " (2011).

The American College of Occupational and Environmental Medicine ("ACOEM") notes: "In 1996, [IARC] re-classified silica as a Class I human lung carcinogen, based on sufficient animal and human data. Although the degree of increased risk varies (with relative risks ranging from 1.3 to 6.9), the risk appears to be greatest in workers with silicosis who smoke. The cancer risk to silica-exposed workers without silicosis (especially if they are not smokers) is less clear despite continuing research, some of which has yielded disparate results." ACOEM, "Medical Surveillance of Workers Exposed to Crystalline Silica", June 2005.

The EU Scientific Committee for Occupational Exposure Limits (SCOEL) concluded in June 2002 (SCOEL Sum Doc. 94-final): "The main effect in humans of inhalation of respirable silica dust is silicosis. There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk."

C. AUTOIMMUNE DISEASES

Several studies have reported excess cases of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis -- among silica-exposed workers.).

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to Additional Information: tuberculosis bacteria. Individuals with chronic silicosis have a three-fold higher risk of contracting tuberculosis than similar individuals without silicosis.

E. KIDNEY DISEASE

Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica-exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis", Nephron, Volume 85, pp. 14-19 (2000).

F. NON-MALIGNANT RESPIRATORY DISEASES

The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below, for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

Sources of information:

The **NIOSH Hazard Review - Occupational Effects of Occupational Exposure to Respirable Crystalline Silica** published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The *NIOSH Hazard Review* should be consulted for additional information, and citations to published studies on health risks and diseases associated with occupational exposure to respirable crystalline silica. The *NIOSH Hazard Review* is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or through the NIOSH web site, www.cdc.gov/niosh/topics/silica, then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica".

RTECS: VV7330000

Phosphoric acid, calcium salt (1:1) (7757-93-9)

Information on toxicological effects

Acute toxicity:

LD50 Oral - rat - female - 7,940 mg/kg

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation: Skin - rabbit Result: No skin irritation (OECD Test Guideline 404)

Serious eye damage/eye irritation: Eyes - rabbit Result: No eye irritation (OECD Test Guideline 405)

Respiratory or skin sensitisation: no data available

Germ cell mutagenicity: no data available

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Carcinogenicity:

IARC: 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. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Specific target organ toxicity - single exposure: no data available

Specific target organ toxicity - repeated exposure: no data available

Aspiration hazard: no data available

Additional Information:

RTECS: Not available

C.I. Pigment Black 28 (Copper Chromite Black Spinel) (68189-91-4)

Information on toxicological effects

Acute toxicity:

Inhalation: LD50 (Rat) > 11.1 mg/l Shepherd Color Test Data

Oral: LD50 (Rat) > 10000 mg/kg Shepherd Color Test Data

Dermal: no data available

Skin corrosion/irritation: Contact with skin may cause irritation.

Serious eye damage/eye irritation: May irritate eyes.

Respiratory or skin sensitisation: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: CHROMIUM COMPOUND (CAS 7440-47-3) 3 Not classifiable as to carcinogenicity to humans.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Specific target organ toxicity - single exposure: no data available

Specific target organ toxicity - repeated exposure: no data available

Aspiration hazard: no data available

Additional Information:

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Titanium Dioxide (13463-67-7)

Inhalation 4 h LC50 : > 6.82 mg/l , Rat

Dermal LD50 : > 10,000 mg/kg , Rabbit

Oral LD50 : > 5,000 mg/kg , Rat

Skin irritation : Slight or no skin irritation, Rabbit

Eye irritation : Slight or no eye irritation, Rabbit

Sensitisation : Did not cause sensitisation on laboratory animals., Mouse

Did not cause sensitisation on laboratory animals., Guinea pig

Repeated dose toxicity : Oral Rat: No toxicologically significant effects were found.

Inhalation Rat: No toxicologically significant effects were found.

Carcinogenicity : In lifetime inhalation studies rats were exposed for 2 years to respectively 10, 50 and 250 mg/m³ of respirable TiO₂. Slight lung fibrosis was observed at 50 and 250 mg/m³ levels. Microscopic lung tumours were also observed in 13 percent of the rats exposed to 250 mg/m³, an exposure level that caused lung overloading and impairment of rat lungs clearance mechanisms. In further studies, these tumours were found to occur only under particle overload conditions in a uniquely sensitive species, the rat, and have little or no relevance for humans. The pulmonary inflammatory response to TiO₂

particles exposure was also found to be much more severe in rats than in other rodent species. In February 2006, IARC has re-evaluated Titanium dioxide as pertaining to Group 2B: "possibly carcinogenic to humans", based upon inadequate evidence in humans and sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide. IARC evaluation guidelines consider the generation of tumours, in 2 different studies within the same animal species, to be adequate criteria for an assessment of sufficient evidence. The conclusions of several epidemiology studies on more than 20000 TiO₂ industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO₂ dust on the human lung.

Mortality from

other chronic diseases, including other respiratory diseases, was also not associated with exposure to TiO₂ dust. Based upon all available study results, DuPont scientists conclude that titanium dioxide will not cause lung cancer or chronic respiratory diseases in humans at concentrations experienced in the workplace.

Mutagenicity : Did not cause genetic damage in animals.

Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Hexane, 1,6-diisocyanato-, homopolymer, Methyl ethyl ketone oxime-blocked (85940-94-9)

Information on toxicological effects

Acute Oral Toxicity

LD50: > 2000 mg/kg (rat, male/female) (Directive 84/449/EEC, B.1)

Studies of a comparable product.

Acute Dermal Toxicity

LD50: > 2667 mg/kg (rat, male/female) (OECD Test Guideline 402)

Studies of a comparable product.

Skin Irritation

rabbit, OECD Test Guideline 404, irritating

Eye Irritation

rabbit, OECD Test Guideline 405, Non-irritating

Sensitization

Skin sensitisation according to Buehler (epicutaneous test):: positive (guinea pig, OECD Test Guideline 406)

Skin sensitisation according to Magnusson/Kligmann (maximizing test):: positive (guinea pig, OECD Test Guideline 406)

Repeated Dose Toxicity

14 day, Subacute inhalation toxicity, rat: NOAEL: 30.5 mg/m³, (Rat)

90 d, Inhalative: NOAEL: 5 mg/m³, (rat, male/female, 6 hours a day, 5 days a week)

Findings: Irritation to nasal cavity and to lungs.

Mutagenicity

Genetic Toxicity in Vitro:

Point mutation in mammalian cells (HPRT test): negative (Chinese hamster V79 cell line, Metabolic Activation: with/without)

Toxicological studies at the product

Alseal 192P

Chromosome aberration test in vitro: negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without)

Toxicological studies at the product

Developmental Toxicity/Teratogenicity rat, female, Inhalative, 6 hours/day (Exposure duration: day 6 - 19 of gestation), NOAEL (teratogenicity): 150 mg/m³, NOAEL (maternal): 25 -150 mg/m³ Did not show teratogenic effects in animal experiments

Aromatic Hydrocarbon (64742-95-6)

Information on toxicological effects

Acute Oral Toxicity

LD50: > 5000 mg/kg (rat, male/female) (OECD Test Guideline 401)

Acute Inhalation Toxicity

LC50: > 7.63 mg/l, 4 h (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: > 2000 mg/kg (rabbit, male/female) (OECD Test Guideline 402)

Skin Irritation

rabbit, OECD Test Guideline 404, Exposure Time: 4 h, irritating

Eye Irritation

rabbit, OECD Test Guideline 405, Non-irritating

Sensitization

Buehler Test: negative (guinea pig, OECD Test Guideline 406)

Mutagenicity

Genetic Toxicity in Vitro:

Ames test: negative (Metabolic Activation: with/without)

In vitro mammalian cell gene mutation test: negative (Metabolic Activation: with/without)

Genetic Toxicity in Vivo:

Sister Chromatid Exchange: positive (mouse, male/female, intraperitoneal): positive

Sister Chromatid Exchange: positive (rat, male/female, inhalation): positive

Methyl ethyl ketoxime (96-29-7)

Information on toxicological effects

Acute Oral Toxicity

LD50: 2528 mg/kg (rat)

Alseal 192P

Studies of a comparable product.

Acute Inhalation Toxicity

LC50: > 4.83 mg/l, 4 h (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: ca. 180 - 1800 mg/kg (rabbit, male/female)

Skin Irritation

rabbit, Exposure Time: 4 h, irritating

Eye Irritation

rabbit, OECD Test Guideline 405, Corrosive

Sensitization

dermal: sensitizer (Guinea pig, Maximization Test)

Buehler Test: positive (guinea pig, OECD Test Guideline 406)

Repeated Dose Toxicity

28 Days, inhalation: NOAEL: 25 ppm, (Rat)

Changes in the spleen and hematopoiesis.

13 weeks, oral: LOAEL: 312-625 ppm in drinking water, (rat, Male/Female)

Changes in the spleen and hematopoiesis.

90 d, Oral: NOAEL: 125 mg/kg, LOAEL: 40 mg/kg, (rat, male/female, 5 days/week)

28 d, inhalation (vapour): NOAEL: 25 mg/l, LOAEL: 102 mg/l, (rat, male/female, 6 hours a day, 5 days a week)

Mutagenicity

Genetic Toxicity in Vitro:

Ames: Negative results were reported in various in vitro studies. (Salmonella typhimurium, Metabolic Activation: with/without)

Chromosome aberration test: negative (Chinese hamster ovary (CHO) cells)

Mammalian cell - gene mutation assay: Negative results were reported in various in vitro studies. (Mouse lymphoma cells (L5178Y/TK), Metabolic Activation: with/without)

Unscheduled DNA synthesis: Negative results were reported in various in vitro studies. (rat hepatocytes)

Genetic Toxicity in Vivo:

Cytogenetic assay: Negative results were reported in various in vivo studies. (Rat, Male/Female, oral)

Negative results were reported in various in vivo studies.

Cytogenetic assay: Negative results were reported in various in vivo studies. (Rat, Male/Female, oral)

Negative results were reported in various in vivo studies.

Alseal 192P

Carcinogenicity

Rat, Male/Female, inhalation, 26 Months, 6 hrs/day 5 days/week, Under exposure conditions of this study, MEKO caused an increased incidence of hepatocellular carcinoma and adenoma in male rats at doses of 75 ppm and greater. Rat, Male/Female, inhalation, 26 Months, 6 hrs/day 5 days/week, positive

Toxicity to Reproduction/Fertility

Two generation study, oral, daily, (Rat, Male/Female) NOAEL (parental): < 10 mg/kg, NOAEL (F1): < 10 mg/kg, No effects on Reproductive parameters observed at doses tested.

Developmental Toxicity/Teratogenicity

No Teratogenic effects observed at doses tested.

Neurological Effects

In an oral 90 day neurotoxicity study with MEKO in rats, no consistent or apparant treatment related change in neurobehavioral function or nervous system structure were seen at dose levels of 40 and 125 mg/kg/day. Transient neurobehavioral changes occurred following dosing with 400 mg/kg/day, immediately after dosing, but these had resolved by the next day. No progressive long term, irreversible neurotoxicity was observed. The NOEL for neurotoxicity was set at 125 mg/kg/day.

Additional Information:

RTECS: EL9275000

1-Butanol (71-36-3)

Information on toxicological effects

Acute toxicity:

LD50 Oral - rat - 790 mg/kg Remarks: Liver:Fatty liver degeneration. Kidney, Ureter, Bladder:Other changes. Blood:Other changes.

LC50 Inhalation - rat - 4 h - 8000 ppm

LD50 Dermal - rabbit - 3,400 mg/kg

Skin corrosion/irritation: Skin - rabbit Result: Skin irritation - 24 h

Serious eye damage/eye irritation: Eyes - rabbit Result: Eye irritation

Respiratory or skin sensitisation: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: 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.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Specific target organ toxicity - single exposure: May cause respiratory irritation. May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure: no data available

Aspiration hazard: no data available

Additional Information:

RTECS: EO1400000

drying, cracking of the skin, Skin irritation
Liver - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence

Diethylene glycol monobutyl ether (112-34-5)

Information on toxicological effects

Acute toxicity:

LD50 Oral - rat - male - 7,291 mg/kg (OECD Test Guideline 401)

Inhalation: no data available

LD50 Dermal - rabbit - male - 2,764 mg/kg (OECD Test Guideline 402)

Skin corrosion/irritation: Skin - rabbit Result: Mild skin irritation - 1 h (OECD Test Guideline 404)

Serious eye damage/eye irritation: Eyes - rabbit Result: Irritating to eyes. (OECD Test Guideline 405)

Respiratory or skin sensitisation: Maximisation Test - guinea pig Result: Does not cause skin sensitisation. (OECD Test Guideline 406)

Germ cell mutagenicity: Ames test *S. typhimurium* Result: negative
OECD Test Guideline 477 *Drosophila melanogaster* - male and female

Carcinogenicity:

IARC: 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.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Reproductive toxicity - rat - male and female - Dermal:

No adverse effect has been observed in chronic toxicity tests.

no data available

Developmental Toxicity - rabbit - Dermal:

No adverse effect has been observed in chronic toxicity tests.

Specific target organ toxicity - single exposure: no data available

Specific target organ toxicity - repeated exposure: no data available

Aspiration hazard: no data available

Additional Information:

Repeated dose toxicity - rat - male and female - Oral - No observed adverse effect level - 250 mg/kg RTECS: KJ9100000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Phenolic Resin

No data available

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ECOLOGICAL INFORMATION**Silica, crystalline quartz (14808-60-7)**

Information on ecological effects

Ecotoxicological Information:

Crystalline silica (quartz) is not known to be ecotoxic; i.e., no data suggests that crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.

Phosphoric acid, calcium salt (1:1) (7757-93-9)

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

Results of PBT and vPvB assessment PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects: no data available

C.I. Pigment Black 28 (Copper Chromite Black Spinel) (68189-91-4)

Ecotoxicity: Not expected to be harmful to aquatic organisms.

Persistence and degradability: The product is not expected to be biodegradable.

Bioaccumulative potential: The product does not contain any substances expected to be bioaccumulating.

Mobility in soil: No data available.

Mobility in general: No data available.

Other adverse effects: None known.

Titanium Dioxide (13463-67-7)

96 h LC50: Pimephales promelas (fathead minnow) > 1,000 mg/l

72 h EC50 : Pseudokirchneriella subcapitata (green algae) 61 mg/l

48 h EC50: Daphnia magna (Water flea) > 1,000 mg/l

Biodegradability : Pigments are practically not biodegradable.

Bioaccumulation : Does not bioaccumulate.

Methyl ethyl ketoxime (96-29-7)

Information on ecological effects

Biodegradation:

Aerobic, 70 %, Exposure time: 14 Days

70 %, Exposure time: 14 d, i.e. readily biodegradable

Bioaccumulation

ca. 0.5 - 1 BCF

Acute and Prolonged Toxicity to Fish

Alseal 192P

LC50: 48 mg/l (Bluegill (*Lepomis macrochirus*), 96 h)

LC50: 320 mg/l (Golden orfe (*Leuciscus idus*), 96 h)

LC50: 760 mg/l (Guppy (*Poecilia reticulata*), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 750 mg/l (Water flea (*Daphnia magna*), 48 h)

Toxicity to Aquatic Plants

EC50: 83 mg/l, (Green algae (*Scenedesmus subspicatus*), 72 h)

Toxicity to Microorganisms

EC50: 281 mg/l, (*Pseudomonas putida*, 17 h)

1-Butanol (71-36-3)

Information on ecological effects

Toxicity:

Toxicity to fish LC50 - *Pimephales promelas* (fathead minnow) - 1,840 mg/l - 96 h.

Toxicity to daphnia and other aquatic invertebrates EC50 - *Daphnia magna* (Water flea) - 1,983 mg/l - 48 h.

Persistence and degradability: Bioaccumulative potential:

Bioaccumulation *Oncorhynchus mykiss* (rainbow trout) - 24 h - 921 mg/l

Bioconcentration factor (BCF): 0.38

Mobility in soil: no data available

Results of PBT and vPvB assessment PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects: no data available

Diethylene glycol monobutyl ether (112-34-5)

Information on ecological effects

Toxicity:

Toxicity to fish static test LC50 - *Lepomis macrochirus* - 1,300 mg/l - 96 h.
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates static test EC50 - *Daphnia magna* (Water flea) - > 100 mg/l - 48 h.
(Directive 67/548/EEC, Annex V, C.2.)

Toxicity to algae static test EC50 - *Desmodesmus subspicatus* (*Scenedesmus subspicatus*) - >: 100 mg/l - 96 h (OECD Test Guideline 201)

Toxicity to bacteria LC50 - *Pseudomonas putida* - 1,170 mg/l - 16 h.

Persistence and degradability: Biodegradability aerobic - Exposure time 28 d Result: 91.7 % - Readily biodegradable. (OECD Test Guideline 301B)

Alseal 192P

Bioaccumulative potential: Does not bioaccumulate.

Mobility in soil: no data available

Results of PBT and vPvB assessment PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects: no data available

Hexane, 1,6-diisocyanato-, homopolymer, Methyl ethyl ketone oxime-blocked (85940-94-9)

Biodegradation

9 %, i.e. not readily degradable

Aromatic Hydrocarbon (64742-95-6)

Biodegradation

i.e. readily biodegradable

Data based on the safety data sheet (SDS) by the supplier.

Acute and Prolonged Toxicity to Fish

LC50: 9.22 mg/l (Oncorhynchus mykiss (rainbow trout), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 6.14 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: 2.9 mg/l, (Pseudokirchneriella subcapitata (green algae), 72 h)

Toxicity to Microorganisms

EC50: 1 - 10 mg/l

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| 13 | DISPOSAL CONSIDERATIONS |
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Preferred options for disposal are: Incinerate. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Decontaminate containers prior to disposal.

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| 14 | TRANSPORT INFORMATION |
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Non-hazardous for air, sea and road freight.

Aiseal 192P

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| 15 | REGULATORY INFORMATION |
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Component (CAS#) [%] - CODES

Water (7732-18-5) [26-65.9%] TSCA

Phenolic Resin (0) [10-15%] TSCA

RQ(5000LBS), 1-Butanol (71-36-3) [0.5-2.5%] CERCLA, MASS, NJHS, OSHAWAC, PA, SARA313, TOXICRCRA, TSCA, TXAIR, TXHWL

Diethylene glycol monobutyl ether (112-34-5) [1-2%] HAP, TSCA

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and methyloxirane (36484-54-5) [2-4%] TSCA

Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl) (37225-26-6) [0.1-1%] TSCA

2-Propenoic acid, 2-methyl-, methyl ester, polymer with oxiranylmethyl 2-methyl-2-propenoate (26141-88-8) [0.1-1%] TSCA

Mica (12001-26-2) [1-4%] MASS, OSHAWAC, PA, TXAIR

Silica, crystalline quartz (14808-60-7) [.1-1%] MASS, NRC, OSHAWAC, PA, TSCA, TXAIR

Phosphoric acid, calcium salt (1:1) (7757-93-9) [15-25%] TSCA

Titanium oxide (TiO₂) (13463-67-7) [1-5%] MASS, OSHAWAC, PA, TSCA, TXAIR

C.I. Pigment Black 28 (68186-91-4) [1-5%] TSCA

Hexane, 1,6-diisocyanato-, homopolymer, Me Et ketone oxime-blocked (85940-94-9) [2-6%] TSCA

Aromatic hydrocarbon (64742-95-6) [0.2-2%] TSCA

Regulatory CODE Descriptions

RQ = Reportable Quantity
TSCA = Toxic Substances Control Act
CERCLA = Superfund clean up substance
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHA = OSHA workplace Air Contaminants
PA = PA Right-to-Know List of Hazardous Substances
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICRCRA = RCRA Toxic Hazardous Wastes (U-List)
TXAIR = TX Air Contaminants with Health Effects Screening Level
TXHWL = TX Hazardous Waste List
HAP = Hazardous Air Pollutants
NRC = Nationally Recognized Carcinogens

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| 16 | OTHER INFORMATION |
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