

Performance Elastomers

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont Performance Elastomers L.L.C.
Material Safety Data Sheet

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"KALREZ" PERFLUOROELASTOMER SEMIFINISHED PARTS & SHAPES (LEAD
CONTAINING)
KRZ043 Revised 27-MAY-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"KALREZ" is a registered trademark of DuPont Performance Elastomers L.L.C..

Tradenames and Synonyms

"KALREZ" 1058, 3065,

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
PERFLUOROELASTOMER		>60
PERFLUOROALKYLPOLYETHER		<15
ACCELERATORS AND CURATIVES		<6
FILLERS MAY INCLUDE:		
POLYAMIDE FIBERS		0-20
POLYTETRAFLUOROETHYLENE	9002-84-0	0-20
AMORPHOUS SILICA	7631-86-9	0-10
CARBON BLACK	1333-86-4	<20
* LEAD OXIDE	1317-36-8	<4
PRESENT IN REINFORCED SHEETS/SLABS ONLY:		
"NOMEX" HT29-42 REINFORCING SHEET		
HEATED ABOVE 400 DEG C (752 DEG F) CAN EVOLVE AS		
DEGRADATION PRODUCT:		
Hydrogen Fluoride	7664-39-3	<1

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

See Toxicological Information section for animal data.

PERFLUOROELASTOMER

No data available for cured perfluoroelastomer.

(HAZARDS IDENTIFICATION - Continued)

ADDITIONAL HEALTH EFFECTS

INHALATION Inhalation of fumes from overheating or burning "KALREZ", or from smoking tobacco or cigarettes contaminated with polymer may cause polymer fume fever, a flu-like illness with chills and fever. Symptoms may not occur for several hours after exposure, and go away in 24-48 hours even in absence of treatment.

Inhalation of low concentrations of hydrogen fluoride can initially include symptoms of choking, coughing, and severe eye, nose and throat irritation. Possibly followed after a symptomless period of 1 to 2 days by fever, chills, difficulty in breathing, cyanosis, and pulmonary edema. Acute or chronic overexposure to HF can injure the liver and kidneys. Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures to hydrogen fluoride.

PERFLUOROALKYLPOLYETHER

Human health effects of overexposure by skin contact may include skin irritation with discomfort or rash. Eye contact may cause irritation with discomfort, tearing or blurring of vision. Inhalation of smoke or fumes from burning material may cause polymer fume fever, a flu-like illness with fever, chills, and sometimes cough, of approximately 24-48 hours duration. Smokers should avoid contamination of tobacco products, and should wash their hands before smoking. Otherwise no acceptable information is available to confidently predict the effects of excessive human exposure to this compound.

POLYTETRAFLUOROETHYLENE

Inhalation of PTFE dust may cause generalized irritation of the nose, throat and lungs with cough, difficulty breathing or shortness of breath.

Heating PTFE above 300 degrees C may liberate a fine particulate fume. Inhalation may produce polymer fume fever, a temporary flu-like condition with fever, chills, nausea, shortness of breath, chest tightness, muscle or joint ache, and sometimes cough and elevated white blood cell count. The symptoms are often delayed 4 to 24 hours after exposure. These signs are generally temporary, lasting 24-48 hours and resolve without further complications. However, some individuals with repeated episodes of polymer fume fever have reported persistent pulmonary effects. Protection against polymer fume fever should also provide protection against any potential chronic effects.

(HAZARDS IDENTIFICATION - Continued)

Exposure to decomposition products from PTFE heated above 400 degrees C may cause pulmonary inflammation, hemorrhage or edema. These more serious consequences of exposure may occur from extreme thermal decomposition of PTFE which can liberate fume particles, and toxic gases (carbonyl fluoride, hydrogen fluoride, and other fluorinated gases) especially under conditions of poor ventilation and/or confined spaces. These decomposition products may initially produce chest tightness or pain, chills, fever, nausea, with shortness of breath, cough, wheezing and progression into pulmonary edema. Edema may be delayed in onset and requires medical treatment. In severe cases, if medical intervention is delayed, pulmonary edema may become life threatening. Recovery is generally complete within a few days; in some rare cases, persistent lung function abnormalities have been reported.

Compared to nonsmokers, polymer fume fever symptoms appear to be more prevalent and serious in smokers. Smokers must avoid contamination of tobacco with residual polymer from their hands or from fumes, and should wash their hands before smoking.

Significant skin permeation, and systemic toxicity, after contact with the dust appears unlikely. There are no reports of human sensitization from contact with the dust.

If PTFE dusts contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Individuals with pre-existing diseases of the lungs or cardiovascular system may have increased susceptibility to the reduction in blood oxygen that may develop after excessive exposures to thermal decomposition products.

AMORPHOUS SILICA

Inhalation of Amorphous Silica may cause drying of mucous membranes and irritation of nose, throat, and lungs with nosebleeds, cough, difficulty breathing or shortness of breath. Based on animal experiments, long term exposures to high doses could lead to pulmonary inflammation and subsequent development of chronic lung disease. Amorphous Silica does not induce the lung effects associated with crystalline silica.

No adverse effects are expected from incidental skin contact with Amorphous Silica dust.

Eye contact with Amorphous Silica may cause eye irritation with tearing, pain or blurred vision.

Epidemiology studies have not shown any evidence of fibrosis in workers exposed to Amorphous Silica dust levels ranging from 2 to 7 mg/m³.

(HAZARDS IDENTIFICATION - Continued)

Increased susceptibility to the effects of Amorphous Silica may be observed in persons with pre-existing disease of the lungs.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

LEAD OXIDE

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. Ingestion of large amounts may cause CNS depression. May be harmful if swallowed. Ingestion of large quantities may cause severe hemolytic anemia and hemoglobinuria.

Inhalation: May cause respiratory tract irritation. May cause effects similar to those described for ingestion. May be harmful if inhaled.

Chronic: Prolonged or repeated exposure may cause adverse reproductive effects. Chronic exposure may cause visual disturbances.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

(HAZARDS IDENTIFICATION - Continued)

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK	2B			
LEAD OXIDE	2A	X		A3

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

Flush skin with water after contact. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Not a probable route. However, in case of accidental ingestion, call a physician.

FIRE FIGHTING MEASURES

Flammable Properties

Fire and Explosion Hazards:

Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbonyl fluoride, carbon monoxide, low molecular weight fluorocarbons, lead oxide/lead.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

(FIRE FIGHTING MEASURES - Continued)

A fire could form hydrogen fluoride fumes which react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from a fire involving these types.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Shovel or sweep up. Dispose of in an approved container.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Avoid contact with eyes, skin or clothing. Avoid breathing vapor or dust.

Storage

Keep container closed to prevent contamination. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use sufficient ventilation to keep employee exposure below recommended limits. Use local ventilation to control fumes from hot processing.

Avoid contamination of cigarettes or tobacco with polymer.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when the possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

RESPIRATORS: Wear a NIOSH approved respirator if there is potential for exposure to airborne dusts, mists or vapors.

RESPIRATORS

When temperatures exceed 400 C (752 F) and ventilation is inadequate to maintain concentrations below exposure limits, use a positive pressure air supplied respirator. Air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential for contact with hot/molten material, wear heat resistant impervious clothing and footwear.

Exposure Guidelines

Applicable Exposure Limits

POLYTETRAFLUOROETHYLENE

PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

AMORPHOUS SILICA

PEL (OSHA) : 80 mg/m³ / % SiO₂ - 8 Hr TWA
 TLV (ACGIH) : 10 mg/m³, total dust, 8 Hr. TWA
 Notice of Intended Changes (2005)
 Withdraw entry and adopted TLV
 AEL * (DuPont) : 3 mg/m³, 8 & 12 Hr. TWA, respirable dust

CARBON BLACK

PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 Includes Channel, Lamp, and Thermal
 Black

LEAD OXIDE

PEL (OSHA) : 0.05 mg/m³, 8 Hr. TWA, as Pb
 for > 8 Hrs. exposure, limit in mg/m³ =
 0.4 divided by hours worked.
 TLV (ACGIH) : 0.05 mg/m³ 8-hour TWA, lead, elemental
 and inorganic compounds as Pb, A3
 AEL * (DuPont) : 0.05 mg/m³, 8 Hr. TWA, Skin
 0.05 mg of lead/dL of blood
 "See Human Health Effects Section"

Hydrogen Fluoride

(Applicable Exposure Limits - Continued)

PEL (OSHA) : 3 ppm, 8 Hr. TWA, as F
TLV (ACGIH) : 0.5 ppm, 8 Hr. TWA, as F
Ceiling 2 ppm, as F
AEL * (DuPont) : 3 ppm, 15 minute TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Solubility in Water : Insoluble
Odor : None.
Form : Slab, Sheet, Rod, Tubing
Color : Black.

STABILITY AND REACTIVITY

No Information Available

TOXICOLOGICAL INFORMATION

Animal Data

See Hazards Identification section for potential health effects.

PTFE

Animal testing indicates that PTFE is not a skin irritant.

Repeated exposure to PTFE by ingestion caused no significant toxicological effects. Possible effects on white blood cell counts were found in rats fed 25% PTFE in the diet for 90 days, however any changes were within normal variability and were considered to be of no toxicological significance.

In rats, single exposure to dusts of undegraded PTFE by inhalation caused irritation of the lungs. Exposure to thermal decomposition products of PTFE caused lung injury whose severity depends upon the temperature and exposure conditions. Birds appear to be especially susceptible to the toxic effects of fluoropolymer decomposition products. In rats, exposure to freshly formed low molecular weight polymer fragments (fume) produced by continuous heating of the polymer above 400 degrees C may produce acute pulmonary inflammation. When the concentration of fluoropolymer fragment fumes increases, deaths may occur from pulmonary edema and hemorrhage. Exposure to fume aged for several minutes, markedly reduces the toxicity. At higher temperatures involving

(TOXICOLOGICAL INFORMATION - Continued)

gross thermal decomposition of the polymer, deaths occurred due to pulmonary edema from lethal concentrations of fluoropolymer fume and/or fluorinated gas decomposition products.

No adequate animal data are available to define the carcinogenicity or developmental hazards of PTFE. No adequate reports of genetic testing were found. No animal data are available to define the reproductive toxicity of PTFE.

Amorphous Silica

Oral LD50: >10,000 mg/kg in rats

Animal testing indicates Amorphous Silica is a mild eye irritant. It is a negligible to slight skin irritant when tested as a 50% aqueous paste. The dust is not expected to be a skin irritant. Animal testing indicates Amorphous Silica is not a skin sensitizer.

Single, repeated and long-term exposure by ingestion to Amorphous Silica caused no significant toxicological effects.

Single exposure by inhalation to Amorphous Silica caused no significant toxicological effects. Repeated exposure caused pulmonary changes including reversible inflammation. Long-term exposure caused pulmonary changes including reversible inflammation, vascular obstruction and emphysema.

Animal testing indicates Amorphous Silica does not have carcinogenic or reproductive effects. No animal data are available to define the developmental toxicity of Amorphous Silica. Amorphous Silica has not produced genetic damage in bacterial cultures. It has not been tested for genetic toxicity in mammalian cell cultures or in animals.

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents

(TOXICOLOGICAL INFORMATION - Continued)

"lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

LEAD OXIDE

LD50/LC50:

CAS# 1317-36-8

ACGIH: A3 - Animal Carcinogen (as Pb) (listed as Lead, inorganic compounds).

California: carcinogen; initial date 10/1/02 (listed as Lead compounds).

OSHA: Possible select carcinogen (listed as Lead, inorganic compounds).

IARC: Group 2B carcinogen (listed as Lead, inorganic compounds).

Epidemiology: No information available.

Teratogenicity: Lead has been shown to cause teratogenic effects.

Reproductive Effects: Lead has been shown to cause reproductive effects.

Neurotoxicity: Lead has been shown to cause neurotoxic effects.

Mutagenicity: No information available.

PERFLUOROELASTOMER

No data available for perfluoroelastomer.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water.

DISPOSAL CONSIDERATIONS

Waste Disposal

"Kalrez" perfluoroelastomer semifinished parts and shapes generally may be disposed of by landfill or incineration, but any disposal method selected must be in accordance with applicable federal, state/provincial and local regulations. If incineration is employed, the incinerator must be capable

(DISPOSAL CONSIDERATIONS - Continued)

of scrubbing out acidic combustion products. Note: Semifinished parts and shapes made from compounds 1058 and 3065 contain lead oxide and particular requirements may apply (see, e.g., 40 C.F.R. 261.24). A waste generator should perform a waste characterization before disposing and manage and dispose in accordance with all potentially applicable laws and regulations including the Resource Conservation and Recovery Act.

TRANSPORTATION INFORMATION

Shipping Information

DOT
Proper Shipping Name : Not regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - Carbon black. Some types may contain: amorphous silica, polytetrafluoroethylene.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM - Carbon Black, Lead Compounds.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - Carbon black, lead compounds. Some types may contain: amorphous silica.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont Performance Elastomers Medical Application Policy (H-69237).

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS