

Material Safety Data Sheet / 01 A311 MSDS



ISO9001, ISO14001, ISO45001
Certificate Ref: 11738

1 - Identification of Substance / Preparation Product Code:

Product Code	A311
Manufacturer/Supplier	Advanced Seals & Gaskets Ltd
Address	Polymer Works
Phone Number	+44 (0) 1384 252555
Fax Number	+44 (0) 1384 252373

2 - Composition / Information on Ingredients:

CAS#	Component / EC#	Percent
9010-98-4	NEOPRENE	31.3
1333-86-4	CARBON BLACK	25.4
1332-58-7	KAOLIN	15
64742-68-3	CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM)	12
123-77-3	AZODICARBONAMIDE	4
1314-13-2	ZINC OXIDE	2.7
8002-13-9	RAPESEED OIL	2.3
101-25-7	DINITROSO-PENTAMETHYLENETETRAMINE	2
1309-64-4	ANTIMONY OXIDE	1.3
21645-51-2	ALUMINUM HYDROXIDE	1.3
57-11-4	STEARIC ACID	0.9
63393-89-5	COURMARONE-INDENE RESINS	0.6
7704-34-9	SULFUR	0.5
Not Available	CONFIDENTIAL 1	0.3
1309-48-4	MAGNESIUM OXIDE	0.2
Not Available	CONFIDENTIAL 2	0.2

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Zinc compounds, Aluminium compounds, Aluminium oxides, Antimony compounds, Antimony oxides, Antimony compounds, inorganic, n.o.s., magnesium inorganic compounds.

3 - Hazards Identification:

Emergency Overview

Physical Form	Sponge
Major Health Hazards	Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, allergic reactions, cancer

Potential Health Effects

Inhalation

Short Term	Irritation, allergic reactions, nosebleed, dizziness, stomach pain, loss of voice, fainting, difficulty breathing, bluish skin color, impaired fertility, lung damage, heart damage, birth defects,
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Long Term	Irritation, allergic reactions, lack of sense of smell, nausea, weight loss, chest pain, difficulty breathing, wheezing, asthma, headache, hearing loss, lung damage, blood disorders, liver damage, cancer, nosebleed, stomach pain, loss of voice, impaired fertility, heart damage, birth defects
Skin	
Short Term	Irritation, allergic reactions, skin disorders
Long Term	Irritation, allergic reactions, skin disorders, cancer
Eye	
Short Term	Irritation
Long Term	Irritation, eye damage
Ingestion	
Short Term	Nausea, vomiting, diarrhea, constipation, fever, stomach pain, difficulty breathing, dizziness, fainting, bluish skin color, lung congestion, changes in blood pressure, convulsions, coma
Long Term	Nausea, loss of appetite, headache, dizziness, sleep disturbances, blood disorders, kidney damage, liver damage, cancer
4 - First Aid Measures:	
First Aid – Eyes	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention
First Aid – Skin	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.
First Aid – Ingestion	If a large amount is swallowed, get medical attention.
First Aid – Inhalation	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.
5 - Fire Fighting Measures:	
Extinguishing Media	carbon dioxide, regular dry chemical, regular foam, water
Flammable Properties	Slight fire hazard
Fire Fighting Measures	Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas
Thermal Decomposition Products	Combustion: oxides of carbon
NFPA Ratings	
Health	2
Fire	1
Reactivity	0
6 - Accidental Release Measures:	

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Water Release	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.
Occupational spill/release	Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7 - Handling

Storage Procedures	Store and handle in accordance with all current regulations and standards. See original container for storage recommendations. Keep separated from incompatible substances
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8 - Exposure Controls / Personal Protection:

Exposure Guidelines	NIOSH recommends material should be used in encapsulated form to minimize worker exposure
Component Biological Limit Values	There are not biological limit values for any of this product's components
Ventilation	Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

PPE

Eyes / Face	Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area
Protective Clothing	Wear appropriate chemical resistant clothing
Glove Recommendations	Wear appropriate chemical resistant gloves.
Respiratory Protection	Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any air-purifying half-mask respirator equipped with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter.
	The following filters may also be used: N99, R99, P99, N100, R100 or P100. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister having an N100, R100, or P100 filter.
	Any powered, air-purifying respirator with a tight-fitting facepiece, organic vapor cartridge(s) and high-efficiency particulate filter(s). Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.
For Unknown Concentrations or Immediately Dangerous to Life or Health	Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

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Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Component Exposure Limits

CARBON BLACK (1333-86-4)

ACGIH:	3.5 mg/m ³ TWA
NIOSH:	3.5 mg/m ³ TWA; 0.1 mg/m ³ TWA (Carbon black in presence of Polycyclic aromatic hydrocarbons, as PAH)
OSHA:	3.5 mg/m ³ TWA
OSHA (Vacated):	3.5 mg/m ³ TWA
KAOLIN (1332-58-7) ACGIH:	2 mg/m ³ TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction)
NIOSH:	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable dust)
OSHA:	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
OSHA (Vacated):	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

ZINC OXIDE (1314-13-2)

ACGIH:	2 mg/m ³ TWA (respirable fraction)
	10 mg/m ³ STEL (respirable fraction)
NIOSH:	5 mg/m ³ TWA (dust and fume)
	10 mg/m ³ STEL (fume)
	15 mg/m ³ Ceiling (dust)
OSHA:	5 mg/m ³ TWA (fume); 15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
OSHA (Vacated):	10 mg/m ³ STEL (fume)
	5 mg/m ³ TWA (fume); 10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

ANTIMONY OXIDE (1309-64-4)

ACGIH:	0.5 mg/m ³ TWA (as Sb ⁺ related to Antimony compounds)
NIOSH:	0.5 mg/m ³ TWA (as Sb [[] related to Antimony compounds)
OSHA:	0.5 mg/m ³ TWA (as Sb ⁺ related to Antimony compounds)
OSHA (Vacated):	0.5 mg/m ³ TWA (as Sb ^L related to Antimony compounds)

MAGNESIUM OXIDE (1309-48-4)

ACGIH:	10 mg/m ³ TWA (inhalable fraction)
OSHA:	15 mg/m ³ TWA (fume, total particulate)
OSHA (Vacated):	10 mg/m ³ TWA (total particulate)

9 - Physical and Chemical Properties:

Physical State:	Solid Sponge
Physical Form:	Not available
Odor Threshold:	Not available
Melting/Freezing Point:	Not available

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Decomposition:	Not available
LEL:	Not available
Vapor Pressure:	Not available
Density:	Not available
Water Solubility:	Not available
Coeff. Water/Oil Dist:	Not available
Volatility:	Not available
Appearance:	Not available
Odor:	Not available
pH:	Not available
Boiling Point:	Not available
Evaporation Rate:	Not available
UEL:	Not available
Vapor Density (air = 1):	Not available
[^] Spec. Gravity (water = 1):	Not available
Log KOW:	Not available
Viscosity	Not available

10 - Stability and Reactivity:

Chemical Stability

Stable at normal temperatures and pressure

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Materials to Avoid

CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM):

OXIDIZERS (STRONG): Fire and explosion hazard.

ALUMINUM HYDROXIDE:

CHLORINATED RUBBER: Violent or explosive reaction on heating.

AZODICARBONAMIDE:

ACIDS (STRONG): Incompatible.

ALKALI METAL SALTS: Incompatible.

HEAVY METAL SALTS: Incompatible.

CARBON BLACK:

BROMATES: Incompatible.

CHLORATES: Incompatible.

NITRATES: Incompatible.

OXIDIZERS (STRONG): Fire and explosion hazard.

DINITROSPENTAMETHYLENETETRAMINE:

HYDROGEN CHLORIDE (DILUTE): Hydrolysis.

MINERAL ACIDS: Violent decomposition.

ZINC CHLORIDE: Violent decomposition.

KAOLIN (ALUMINUM SILICATE):

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NEOPRENE:

FLUORINE: Explodes and burns when dropped into liquid fluorine. Neoprene coated fiberglass exploded when dropped into liquid fluorine.

FLUORINE/OXYGEN MIXTURES: Reacts and burns.

OXIDIZERS (STRONG): Fire and explosion hazard.

ZINC OXIDE:

ACIDS (STRONG): Incompatible.

CHLORINATED RUBBER: Violent or explosive reaction when heated above 216 C.

LINSEED OIL: Exothermic reaction with possible ignition.

MAGNESIUM: Explosive reaction on heating.

OXIDIZERS (STRONG): Fire and explosion hazard.

RAPESEED OIL:

OXIDIZERS (STRONG): Fire and explosion hazard

Thermal Decomposition Products

Possibility of Hazardous Reactions

Possibility of Hazardous Reactions

11 - Toxicological Information:

Component Analysis LD50/LC60

The components of this material have been reviewed in various sources and the following selected endpoints are published:

CARBON BLACK (1333-86-4)

Oral LD50 Rat >15400 mg/kg

Dermal LD50 Rabbit >3 g/kg

AZODICARBONAMIDE (123-77-3)

Oral LD50 Rat >6400 mg/kg;

Dermal LD50 Rat >500 mg/kg

ZINC OXIDE (1314-13-2)

Oral LD50 Rat >5000 mg/kg

DINITROSPENTAMETHYLENETETRAMINE (101-25-7)

Oral LD50 Rat 940 mg/kg

ALUMINUM HYDROXIDE (21645-51-2)

Oral LD50 Rat >5000 mg/kg

ANTIMONY OXIDE (1309-64-4)

Oral LD50 Rat >34600 mg/kg

STEARIC ACID (57-11-4)

Dermal LD50 Rabbit >5 g/kg

SULFUR (7704-34-9)

Inhalation LC50 Rat >9.23 mg/L 4 h

Oral LD50 Rat >3000 mg/kg

Dermal LD50 Rabbit >2000 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

NEOPRENE (9010-98-4)

Oral: >40 gm/kg Oral Rat LD50

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CARBON BLACK (1333-86-4)

Oral: >15400 mg/kg
Oral Rat LD50,
Skin: >3 gm/kg
Skin Rabbit LD50

AZODICARBONAMIDE (123-77-3)

Oral: >6400 mg/kg
Oral Rat LD50

ZINC OXIDE (1314-13-2)

Inhalation: 2500 mg/m³
Inhalation Mouse LC50,
Oral: 7950 mg/kg
Oral Mouse LD50

DINITROSPENTAMETHYLENETETRAMINE (101-25-7)

Oral: 940 mg/kg
Oral Rat LD50

ANTIMONY OXIDE (1309-64-4)

Oral: >34600 mg/kg
Oral Rat LD50; >34 gm/kg
Oral Rat LD50

STEARIC ACID (57-11-4)

Oral: 4600 mg/kg
Oral Rat LD50,
Skin: >5 gm/kg
Skin Rabbit LD50

Acute Toxicity Level

NEOPRENE (9010-98-4)
Moderately Toxic: inhalation

AZODICARBONAMIDE (123-77-3)
Slightly Toxic: ingestion

ZINC OXIDE (1314-13-2)

Toxic: inhalation
Slightly Toxic: ingestion

DINITROSPENTAMETHYLENETETRAMINE (101-25-7)

Moderately Toxic: ingestion

SULFUR (7704-34-9)
Highly Toxic: inhalation

CONFIDENTIAL 1 (Not Available)
Moderately Toxic: ingestion

Component Carcinogenicity/

NEOPRENE (9010-98-4)
IARC: Supplement 7 [1987]; Monograph 19 [1979] (Group 3 (not classifiable))

CARBON BLACK (1333-86-4)
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 93 @J; Monograph 65 [1996] (Group 2B (possibly carcinogenic to humans))
OSHA: Present
NIOSH: potential occupational carcinogen

KAOLIN (1332-58-7)
ACGIH: A4 - Not Classifiable as a Human Carcinogen

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DINITROSPENTAMETHYLENETETRAMINE (101-25-7)

IARC: Supplement 7 [1987]; Monograph 11 [1976] (Group 3 (not classifiable))

ANTIMONY OXIDE (1309-64-4)

ACGIH: A2 - Suspected Human Carcinogen (production)

IARC: Monograph 47 [1989] (Group 2B (possibly carcinogenic to humans))

OSHA: Present

MAGNESIUM OXIDE (1309-48-4)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

ZINC OXIDE (1314-13-2)

500 mg/24 hour Eyes Rabbit mild; 500 mg/24 hour Skin Rabbit mild

ANTIMONY OXIDE (1309-64-4)

100 mg Eyes Rabbit mild

STEARIC ACID (57-11-4)

75 mg/3 day(s) intermittent Skin Human mild; 500 mg/24 hour Skin Rabbit moderate

SULFUR (7704-34-9)

8 ppm Eyes Human

Local Effects

ZINC OXIDE (1314-13-2)

Irritant: inhalation

ANTIMONY OXIDE (1309-64-4)

Irritant: inhalation, skin, eye

STEARIC ACID (57-11-4)

Irritant: skin

SULFUR (7704-34-9)

Irritant: inhalation, skin, eye

CONFIDENTIAL 1 (Not Available)

Irritant: inhalation, skin

Target Organs

AZODICARBONAMIDE (123-77-3)

immune system (sensitizer)

CONFIDENTIAL 1 (Not Available)

teratogen

Administration in the diet induced thyroid follicular cell carcinomas in rats of both sexes, and thyroid follicular cell neoplasms, hepatocellular neoplasms, and adenomas of the pars distalis of the pituitary gland in both male and female mice. Administration by gavage for three weeks, followed by dietary administration, induced hematomas in both male and female mice. Inhalation studies with male and female rats showed significant increases in the incidence of malignant and benign lung tumors in female rats. Increased incidences of lesions described as benign cystic keratinizing squamous-cell tumors or squamous-cell cysts were also observed. Intratracheal administration to female rats in three studies showed an increased incidence of malignant and benign lung tumors. Exposure to mineral oils that have been used in a variety of occupations, (i.e. mulespinning, metal machining, and jute processing) has been strongly and consistently associated with the occurrence of squamous cell cancers of the skin and of the scrotum. Dewaxed oils of naphthenic origin produced a significant skin tumor response in mice. Inhalation exposure in rats produced a significant increase in lung tumors.

Medical Conditions Aggravated by Exposure

Respiratory disorders, heart or cardiovascular disorders, liver and/or kidney disorders, skin disorders and allergies

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RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

CARBON BLACK (1333-86-4)

11600 ug/m3 Inhalation Rat TCLo (18 hour)

ANTIMONY OXIDE (1309-64-4)

4 mg/m3 Inhalation Rat TC (1 year(s)); 1600 ug/m3 Inhalation Rat TC (52 week); 50 mg/m3 Inhalation Rat TC (7 hour); 45 mg/m3 Inhalation Rat TCLo (52 week); 4200 ug/m3 Inhalation Rat TCLo (52 week)

STEARIC ACID (57-11-4)

400 mg/kg Implant Mouse TDLo

MAGNESIUM OXIDE (1309-48-4)

480 mg/kg Intratracheal Hamster TDLo (30 week)

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

CARBON BLACK (1333-86-4)

16 ug/L/48 hour human; 6200 ug/m3/16 hour- 12 week mouse; 50 gm/L/13 week rat; 50 ug/L/13 week intermittent rat; 1 mg/plate *Salmonella typhimurium* (+S9)

AZODICARBONAMIDE (123-77-3)

500 umol/L/1 hour cattle; 100 ug/plate *Salmonella typhimurium* (+S9)

ZINC OXIDE (1314-13-2)

3000 ppm *Escherichia coli*; 5300 ug/m3/3 hour- 6 day(s) guinea pig; 1 mg/L hamster; 300 ug/L hamster; 1 mg/L hamster; 100 umol/L/30 hour human; 100 ug/m3 rat

DINITROSPENTAMETHYLENETETRAMINE (101-25-7)

2 mg/disk *Bacillus subtilis*; 100 mg/L *Escherichia coli*; 80 mg/L hamster; 73500 ug/L hamster; 175 mg/L mouse; 5000 ppm/6 hour continuous other microorganisms (-S9); 1 mg/L rat; 100 mg/L *Saccharomyces cerevisiae*; 476 ppm *Saccharomyces cerevisiae*; 500 ug/plate *Salmonella typhimurium* (+S9)

ANTIMONY OXIDE (1309-64-4)

50 mmol/L *Bacillus subtilis*; 90 ug/L hamster; 0.12 ng/L/1 year(s) human; 50 mg/L human

STEARIC ACID (57-11-4)

10 mg/L/20 hour human

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

KAOLIN (1332-58-7)

590 gm/kg Oral Rat TDLo (prior to copulation 37 day(s), pregnant 1-22 day(s)); 370 gm/kg Oral Rat TDLo (prior to copulation 37 day(s), pregnant 1-22 day(s))

ZINC OXIDE (1314-13-2)

6846 mg/kg Oral Rat TDLo (pregnant 1-22 day(s))

ALUMINUM HYDROXIDE (21645-51-2)

84 gm/kg Oral Woman TDLo (pregnant 1-40 week)

ANTIMONY OXIDE (1309-64-4)

82 ug/m3 Inhalation Rat TCLo (pregnant 1-21 day(s)); 270 ug/m3 Inhalation Rat TCLo (pregnant 1-21 day(s)); 270 ug/m3 Inhalation Rat TCLo (24 hour, pregnant 1-21 day(s)); 23320 ug/kg Intratesticular Rat TDLo (male 1 day(s))

Additional Data

May cross the placenta. May be excreted in breast milk

Health Effects

Inhalation - Acute Exposure

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ALUMINUM HYDROXIDE: Dust may cause mucous membrane irritation. Inhalation of fine dusts including aluminum hydrate has been found to produce in human subjects decreased lung capacity and rapid shallow respiration which may continue for some time after being returned to normal air.

MINERAL OILS: Mists or sprays of insoluble oils are usually not harmful to the respiratory tract, although worker discomfort may occur at oil mist levels of 5 mg/m³.

METAL FUME FEVER: Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours.

RAPESEED OIL: No data available.

ZINC OXIDE: Fumes may cause irritation of the respiratory tract and mucous membranes and chemical pneumonitis with breathing difficulties. Inhalation of high levels of freshly formed zinc oxide fumes may cause zinc fume fever, an influenza-like illness, characterized by immediate dryness and irritation of the throat, metallic or sweet taste in the mouth, tightness in the chest, dyspnea, rales, and dry cough. Other symptoms, including fever, chills, lassitude, malaise, fatigue, headache, blurred vision, nausea, vomiting, muscle aches, and leukocytosis, may be delayed for 4-12 hours. The attack may last 6-24 hours. Tolerance to zinc fume fever may develop rapidly, but is lost quickly. Preliminary exposure to acetic acid vapors may increase susceptibility to zinc fume fever.

NEOPRENE: Vapors may be irritating to the upper respiratory tract.

KAOLIN (ALUMINUM SILICATE): Excessive concentrations of nuisance dusts in the workroom may cause unpleasant deposits in the nasal passages.

DINITROSPENTAMETHYLENETETRAMINE: Dust may be irritating. Fainting, dizziness, cyanosis, and convulsions have been reported by dinitrospentamethylenetetramine production workers.

AZODICARBONAMIDE: May cause pulmonary sensitization in previously exposed individuals. **CARBON BLACK:** Dusts may cause irritation of the nose and linings of the respiratory tract

Inhalation - Chronic Exposure

ALUMINUM HYDROXIDE: Prolonged inhalation of aluminum-containing dusts has produced non-nodular pulmonary fibrosis, emphysema, pneumothorax, and rarely, encephalopathy.

MINERAL OILS: Repeated or prolonged contact with oils may cause fibrotic nodules, lipid pneumonia, and lipid granuloma.

METAL FUME FEVER: There is no form of chronic metal fume fever, however, repeated bouts with symptoms as described above are quite common. Resistance to the condition develops after a few days of exposure, but is quickly lost in 1 or 2 days.

RAPESEED OIL: No data available.

ZINC OXIDE: Latent liver dysfunction and gastrointestinal disturbances with pressure in the stomach region, nausea, and weakness have been reported.

NEOPRENE: Occupational exposure to chloroprene during the polymerization process has been reported to be associated with a wide variety of organ and systemic toxicological effects.

KAOLIN (ALUMINUM SILICATE): Repeated exposure to high concentrations of dust may cause kaolinosis, a type of pneumoconiosis, which may be manifested by pain in the chest, cough, sputum production, wheezing, exertional dyspnea, and decreased vital capacity. Kaolinosis may progress to a disabling and possibly fatal pulmonary fibrosis.

DINITROSPENTAMETHYLENETETRAMINE: No data available.

AZODICARBONAMIDE: Repeated or prolonged inhalation of dust may cause pulmonary sensitization. Symptoms may be asthma-like and include airway hypersensitivity, rhinitis, coughing and shortness of breath. Mucous membrane irritation, wheezing and chest tightness have been reported in association with industrial use of azodicarbonamide. Kidney injury may possibly result following prolonged exposure.

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CARBON BLACK: Pretumorous oral mucosal lesions including keratosis, hyperkeratosis, and leukoplakia have been reported in workers in the carbon black industry. Carbon black may affect the pulmonary system with symptoms of coughing, difficulty breathing, and pain in the chest and near the heart. Headache, general weakness, malaise and decreased senses of smell and hearing have been reported. Reported lung diseases encountered by carbon black workers include pneumoconiosis, pneumosclerosis or pulmonary fibrosis, bronchitis, emphysema, and tuberculosis. Myocardial dystrophy and unspecified cardiovascular changes have been noted in a few workers. However, several epidemiologic studies have indicated no increased risk of cardiac or malignant diseases in workers engaged in carbon black production and handling. In a case-control study of carbon black workers who suffered from circulatory, malignant and respiratory diseases, a dose-response relationship could not be established. Animal studies indicate changes in the lungs and heart in addition to changes in the liver, kidney, and spleen. Varying degrees of skin atrophy or hyperplasia and/or fibrosis of the dermis resulted after exposure of mice to carbon black. In two studies, one with females only and one with male and female rats, significant increases in the incidence of malignant and benign lung tumors were observed in female rats. Increased incidences of lesions described as benign cystic keratinizing squamous cell tumors or squamous cysts were also observed.

Inhalation - Other Toxicity Information

CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM): See information on mineral oils.

ANTIMONY OXIDE: Effects from occupational exposure have included rhinitis with soreness or bleeding from the nose and septal perforations, secondary sinusitis, laryngitis with erosions or ulcerations of the vocal cords, tracheitis, pharyngitis, gastroenteritis, abdominal cramps, weight loss, pneumonitis, and metal fume fever. Cardiovascular effects of ECG changes, heart muscle changes and death due to heart disease have been reported. Pneumoconiosis including complications of chronic coughing, chronic bronchitis, emphysema, inactive tuberculosis, respiratory obstruction, and pleural adhesions have occurred. One study of exposed women reported an excess of premature births and spontaneous abortions and retarded growth of their children; another study noted reduced sexual potency among men workers. One epidemiological study has suggested a possible increased risk of lung cancer from antimony exposure. Chronic inhalation by animals produced extensive lung inflammation, altered blood counts, liver and splenic alterations, damage to heart muscle, and chronic epilepsy. Effects observed in a reproductive study of rats included reduced fertility and fetal growth retardation. A significant increase in the incidence of lung tumors was reported in rats. See information on metal fume fever.

Skin Contact - Acute Exposure

CARBON BLACK: May cause irritation.

MINERAL OILS: Usual cutaneous response to oil based materials is an oil folliculitis that arises as a result of chemical irritation and mechanical plugging of the hair follicles. Onset usually occurs soon after the first exposure and is marked by acute reactions starting on the dorsal surfaces of the hands and fingers, the extensor surfaces of the forearms and thighs, and the abdomen. Comedones, perifollicular papules and pustules (oil boils) may develop. Melanosis may appear later. Clinical manifestations clear rapidly with the termination of exposure and do not resolve if the exposure is continued. Some individuals may develop a skin sensitivity to petroleum products or to additives used in petroleum products.

ANTIMONY OXIDE: May cause irritation with redness and pain.

RAPESEED OIL: No data available.

ZINC OXIDE: Zinc oxide is a constituent of many topical dermatological preparations and has demonstrated a low potential for skin irritation, although it can alter skin pigmentation. Exposure to 500 mg/kg of zinc oxide produced mild irritation to rabbit skin after 24 hours. **NEOPRENE:** May be irritating.

DINITROSPENTAMETHYLENETETRAMINE: No data available.

AZODICARBONAMIDE: Overexposure may cause irritation. Rare sensitization has been reported. The reported LD50 in rats was >0.5 gm/kg. The symptoms were not reported.

ALUMINUM HYDROXIDE: Contact may cause irritation.

KAOLIN (ALUMINUM SILICATE): May cause irritation by abrasion.

Skin Contact - Chronic Exposure

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CARBON BLACK: Prolonged or repeated contact has resulted in acneiform and follicular coniosis, stigmata with hyperkeratosis of the palms and black linear tattooing of the hands and forearms in carbon black workers. Application of whole carbon black to the skin of mice did not produce carcinogenic tumors. However, application of benzene-extractable fractions of carbon black resulted in the production of benign and malignant skin tumors in mice.

MINERAL OILS: Repeated or prolonged contact may cause defatting of the skin which may result in dermatitis and effects as detailed in acute exposure.

ANTIMONY OXIDE: Prolonged or repeated contact may cause a dermatitis termed "antimony spots". Symptoms may include intense itching followed by skin eruptions which may be small erythematous papules or become enlarged and pustular and are most common in areas of friction and sweating.

RAPESEED OIL: No data available.

ZINC OXIDE: Repeated or prolonged exposure, coupled with poor personal hygiene, may result in "oxide pox" due to clogging of sebaceous glands. "Oxide pox", especially localized to moist areas, is characterized by small red, hard projecting papules with a central white plug, which develops into a pustule with intense itching. The lesions usually clear within 7-10 days.

NEOPRENE: Prolonged or repeated exposure may cause irritation and dermatitis.

DINITROOPENTAMETHYLENETETRAMINE: No data available.

AZODICARBONAMIDE: No data available.

ALUMINUM HYDROXIDE: No data available.

KAOLIN (ALUMINUM SILICATE): No data available.

Skin Contact - Other Toxicity Information

CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM): Exposure to mineral oils have been associated with the occurrence of squamous cell cancers of the skin and of the scrotum. Acid-treated oils of naphthenic origin produced a significant skin tumor response in mice. See information on mineral oils.

Eye Contact - Acute Exposure

NEOPRENE: May cause mechanical irritation.

ANTIMONY OXIDE: Direct contact may cause irritation with redness and pain.

MINERAL OILS: This substance, when tested, was found to be moderately irritating to rabbit eyes.

RAPESEED OIL: No data available.

ZINC OXIDE: Dusts or fumes may cause mechanical irritation, redness, and pain. Exposure to 500 mg/kg for 24 hours caused mild irritation to the eyes of rabbits.

KAOLIN (ALUMINUM SILICATE): May cause mild irritation. Excessive concentrations of nuisance dusts in the workroom air may seriously reduce visibility and may cause unpleasant deposits in the eyes.

DINITROOPENTAMETHYLENETETRAMINE: May cause irritation.

CARBON BLACK: May cause mechanical irritation and discoloration of the lids and conjunctiva.

ALUMINUM HYDROXIDE: Contact may cause irritation.

AZODICARBONAMIDE: May cause slight temporary reddening due to mechanical irritation.

Eye Contact - Chronic Exposure

NEOPRENE: No data available.

ANTIMONY OXIDE: Repeated or prolonged exposure may cause conjunctivitis. Cataracts and chromodacryorrhea were observed in rats exposed to airborne concentrations. However, due to the grooming and preening of the rats, ingestion may have been involved in the development of cataracts.

MINERAL OILS: Repeated or prolonged contact with irritants may cause conjunctivitis.

RAPESEED OIL: No data available.

ZINC OXIDE: No data available.

KAOLIN (ALUMINUM SILICATE): No data available.

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DINITROOPENTAMETHYLENETETRAMINE: No data available.

CARBON BLACK: Repeated or prolonged contact may cause conjunctivitis.

ALUMINUM HYDROXIDE: No data available.

AZODICARBONAMIDE: Repeated or prolonged exposure may cause conjunctivitis.

Eye - Other Toxicity Information

CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM): See information on mineral oils.

Ingestion - Acute Exposure

ALUMINUM HYDROXIDE: Ingestion may cause fever, and gastrointestinal effects including constipation and discolored feces.

MINERAL OILS: If the oil is of a sufficiently low viscosity, lung damage may occur if aspirated into the lungs and may be fatal. Symptoms may include coughing, difficulty breathing, cyanosis, and pulmonary edema. Mineral oils may cause gastrointestinal disturbances such as diarrhea.

ANTIMONY OXIDE: May cause irritation of the gastrointestinal tract, nausea, vomiting, abdominal pain, purging with bloody stools, slow pulse, low blood pressure, slow shallow breathing, pulmonary congestion, convulsions, and coma. Death may occur due to circulatory or respiratory failure.

RAPESEED OIL: No data available.

ZINC OXIDE: The greatest danger from ingestion may be intense gastroenteritis, with nausea, diarrhea, or constipation.

NEOPRENE: No data available.

KAOLIN (ALUMINUM SILICATE): Kaolin has been used therapeutically in persons as an absorbent for intestinal disorders. No adverse effects have been reported. However, ingestion of large doses may present the dangers of obstruction, perforation, and granuloma formation.

DINITROOPENTAMETHYLENETETRAMINE: May cause fainting, dizziness, cyanosis, and convulsions. 940 mg/kg was lethal to 50% of rats tested.

AZODICARBONAMIDE: The lethal dose reported in rats was 6400 mg/kg. The symptoms were not reported.

CARBON BLACK: No data available.

Ingestion - Chronic Exposure

ALUMINUM HYDROXIDE: Aluminum hydroxide may cause hypophosphatemia. Repeated ingestion of aluminum compounds may cause constipation.

MINERAL OILS: No data available.

ANTIMONY OXIDE: Repeated or prolonged ingestion of antimony or its compounds may cause dry throat, nausea, headache, sleeplessness, loss of appetite, and dizziness. Liver and kidney degenerative changes may occur.

RAPESEED OIL: No data available.

ZINC OXIDE: Repeated or prolonged administration of 0.5-34.4 mg of zinc oxide per day for periods of 1 month to 1 year resulted in no injuries in rats. Repeated or prolonged administration to pregnant rats has resulted in adverse effects on the newborn.

NEOPRENE: No data available. KAOLIN (ALUMINUM SILICATE): Female rats fed 20% kaolin in their diet for lengths of time ranging from a minimum of 37 days to a maximum of 117 days prior to fertilization and during gestation exhibited maternal anemia which was associated with a significant reduction in birth weight of the newborn.

DINITROOPENTAMETHYLENETETRAMINE: No data available.

AZODICARBONAMIDE: Kidney injury may possibly result following prolonged exposure.

CARBON BLACK: Oral administration of whole carbon black did not produce cancer in mice. However, administration of benzene-extractable fractions of carbon black resulted in the production of malignant tumors in mice.

Ingestion - Other Toxicity Information

CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM): See information on mineral oils.

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12 - Ecological Information:

Aquatic Toxicity

CARBON BLACK (1333-86-4)

Invertebrate: 24 Hr EC50 Daphnia magna: >5600 mg/L

AZODICARBONAMIDE (123-77-3)

Invertebrate: 48 Hr EC50 Daphnia magna: 11 mg/L

ANTIMONY OXIDE (1309-64-4)

Fish: 96 Hr LC50 Pimephales promelas: >80 mg/L [static]; 96 Hr LC50 Brachydanio rerio: >1000 mg/L [static]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 0.63 - 0.8 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.65 - 0.81 mg/L

Invertebrate: 48 Hr EC50 Daphnia magna: >1000 mg/L; 48 Hr EC50 Daphnia magna: 361.5 - 496.0 mg/L [Static]

SULFUR (7704-34-9)

Fish: 96 Hr LC50 Brachydanio rerio: 866 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: <14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >180 mg/L [static]

13 - Disposal Considerations:

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

14 - Transport Information:

RID Information - No Classification assigned.

IATA Information - No Classification assigned.

ICAO Information - No Classification assigned.

IMDG Information - No Classification assigned. US DOT Information - No Classification assigned.

TDG Information - No Classification assigned.

ADR Information - No Classification assigned.

ADR Tunnel Code Restrictions

This list contains tunnel restriction codes for those substances and/or chemically related entries which are found in chapter 3.2 of the ADR regulations.

AZODICARBONAMIDE (123-77-3)

D

SULFUR (7704-34-9)

E [UN1350.UN2448]

15 - Regulatory Information:

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

ZINC OXIDE (1314-13-2)

SARA 313: 1.0 % de minimis concentration (Chemical Category N982E related to Zinc compounds)

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ANTIMONY OXIDE (1309-64-4)

SARA 313: 1.0 % de minimis concentration (Chemical Category N01)

CERCLA: 1000 lb final RQ; 454 kg final RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: No

U.S. State Regulations

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

Component	CAS#	CA	MA	MN	NJ	PA
CARBON BLACK	1333-86-4	Yes	Yes	Yes	Yes	Yes
KAOLIN	1332-58-7	No	Yes	Yes	Yes	Yes
CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM)	64742-68-3	No	Yes	No	No	No
ZINC OXIDE	1314-13-2	Yes	Yes	Yes	Yes	Yes
ANTIMONY OXIDE	1309-64-4	Yes	Yes	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	Yes	No	Yes	Yes
MAGNESIUM OXIDE	1309-48-4	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component Analysis

CARBON BLACK (1333-86-4)

Care: carcinogen, initial date 2/21/03 (airborne, unbound particles of respirable size)

ANTIMONY OXIDE (1309-64-4)

Care: carcinogen, initial date 10/1/90

Component Analysis - Inventory

Component	CAS#	US	MITI	KOREA
NEOPRENE	9010-98-4	Yes	Yes	Yes
CARBON BLACK	1333-86-4	Yes	Yes	Yes
KAOLIN	1332-58-7	Yes	Yes	Yes
CATALYTIC DEWAXED HEAVY NAPHTHENIC OIL (PETROLEUM)	64742-68-3	Yes	No	Yes
AZODICARBONAMIDE	123-77-3	Yes	Yes	Yes
ZINC OXIDE	1314-13-2	Yes	Yes	Yes
RAPESEED OIL	8002-13-9	Yes	No	Yes
DINITROSPENTAMETHYLENETETRAMINE	101-25-7	Yes	Yes	Yes
ALUMINUM HYDROXIDE	21645-51-2	Yes	Yes	Yes

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ANTIMONY OXIDE	1309-64-4	Yes	Yes	Yes
STEARIC ACID	57-11-4	Yes	Yes	Yes
COURMARONE-INDENE RESINS	63393-89-5	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	No	Yes
MAGNESIUM OXIDE	1309-48-4	Yes	Yes	Yes

U.S. Inventory (TSCA)

All the components of this substance are listed on or are exempt from the inventory

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists

ADR - European Road Transport

AU - Australia

BOD - Biochemical Oxygen Demand

C - Celsius

CA - Canada

CAS - Chemical Abstracts Service

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CN - China

CPR - Controlled Products Regulations

DFG - Deutsche Forschungsgemeinschaft

DOT - Department of Transportation

DSL - Domestic Substances List

EEC - European Economic Community

EINECS - European Inventory of Existing Commercial Chemical Substances

EPA - Environmental Protection Agency

EU - European Union

F - Fahrenheit

IARC - International Agency for Research on Cancer

IATA - International Air Transport Association

ICAO - International Civil Aviation Organization

IDL - Ingredient Disclosure List

IDLH - Immediately Dangerous to Life and Health

IMDG - International Maritime Dangerous Goods

JP - Japan

Kow - Octanol/water partition coefficient

KR - Korea

LEL - Lower Explosive Limit

LOLI - List Of Lists™- ChemADVISOR's Regulatory Database

MAK - Maximum Concentration Value in the Workplace

MEL - Maximum Exposure Limits

NFPA - National Fire Protection Agency

NIOSH - National Institute for Occupational Safety and Health

NJTSR - New Jersey Trade Secret Registry

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NTP - National Toxicology Program
NZ - New Zealand
OSHA - Occupational Safety and Health Administration
PH - Philippines
RCRA - Resource Conservation and Recovery Act
RID - European Rail Transport
RTECS - Registry of Toxic Effects of Chemical Substances®
SARA - Superfund Amendments and Reauthorization Act
STEL - Short-term Exposure Limit
TDG - Transportation of Dangerous Goods
TSCA - Toxic Substances Control Act
TWA - Time Weighted Average
UEL - Upper Explosive Limit
US - United States
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