



NEOPRENE SYNTHETIC RUBBER ALL IN SYNONYM LIST NEO009
NEO009 Revised 30-JUN-2007

Substance ID : DPESISGRP251

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

"NEOPRENE" AD, AD5, AD10, AD20, AD30, AD40, #
"NEOPRENE" ADG, ADQ15, ADQ55, AG, SND35, SND90, TRT,
"NEOPRENE" NPG-6856, NPG-9100, NPG-9101, NPG-9102,
"NEOPRENE" NPG-9103,
"NEOPRENE" TRT2, TW, TW-100, W, WB, WD, WHV, WHVA120,
"NEOPRENE" WHV-100, WHV-A, WK, WM-1, WM 1SP, WM-12,
"NEOPRENE" WRT, WRT M1, WRT M2, WX, WX-J,

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont Performance Elastomers L.L.C.
Bellevue Park Corporate Center
300 Bellevue Parkway
Wilmington, Delaware 19809

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.
302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300 (outside U.S.
703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S.
302-774-1139)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
TALC, CONTAINING NO ASBESTOS FIBERS	14807-96-6	<1
2-CHLORO-1,3-BUTADIENE POLYMERS & COPOLYMERS		>98
WATER	7732-18-5	<1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

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L.L.C.
Material Safety Data Sheet**

HAZARDS IDENTIFICATION

Potential Health Effects

Before using Neoprene Synthetic Rubbers, read Bulletin "Guide for Safety in Handling and FDA Status of Neoprene Solid Polymers".

ADDITIONAL HEALTH EFFECTS

POLYCHLOROPRENE

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION One type of Neoprene was tested for oral toxicity in rats. The LD-50 is in excess of 20,000 milligrams per kilogram body weight which is low toxicity. Other types of Neoprene are predicted to have the same low toxicity. Ingestion is not a probable route of exposure.

SKIN Patch tests were run with four types of Neoprene on human volunteers. No skin reactions were shown. Results are predicted to be similar for the types of Neoprene in this MSDS.

EYE Mechanical irritation only.

INHALATION At processing temperatures above 200 C (392 F), fumes irritating to the eyes, nose, and throat may be produced. This exposure may result in reddening, tearing, and itching of the eyes and soreness in the nose and throat together with coughing.

CHRONIC EFFECT None are known.

TALC

Short-term over-exposure by inhalation to Talc may cause irritation of the nose, throat and lungs with cough, difficulty breathing or shortness of breath. Long-term over-exposure may lead to chronic lung disease with impaired lung function and abnormal chest x-rays.

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

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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

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.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact but cleansing the skin after use is advisable. If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.

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

Flash Point : >260 C (>500 F)
Method : Open cup

Fire and Explosion Hazards:

HAZARDOUS COMBUSTION PRODUCTS: Complete combustion gives hydrogen chloride, carbon dioxide, sulfur dioxide and water. Incomplete combustion gives in addition carbon monoxide, organic acids, aldehydes, and alcohols.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment.

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

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

Recover undamaged and minimally contaminated material for reuse and reclamation.

Scrape up spilled polymer. Contaminated surfaces can be cleaned with a solvent.

HANDLING AND STORAGE

Storage

Store in a cool place. Keep container tightly closed.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use local ventilation to control fumes from hot processing.

Conveying or handling may cause static ignition hazard. Static charges can cause explosions in solvent and dust laden atmospheres. Refer to National Fire Protection Association (NFPA) RP77 "Recommended Practice on Static Electricity" for guidance in reducing fire hazards associated with static electricity.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when 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.

RESPIRATORS

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L.L.C.
Material Safety Data Sheet**

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

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

Exposure Guidelines

Applicable Exposure Limits

TALC, CONTAINING NO ASBESTOS FIBERS

PEL (OSHA)	: 20 mppcf (~3.3 mg/m ³), respirable as 8 Hr TWA
TLV (ACGIH)	: 2 mg/m ³ , respirable dust, 8 Hr. TWA, A4 Notice of Intended Changes (2007) 1 mg/m ³ , 8 Hr. TWA, Respirable, A4
AEL * (DuPont)	: 0.5 mg/m ³ , 8 & 12 Hr. TWA respirable dust

* 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

Melting Point	: NA
% Volatiles	: NA
Solubility in Water	: Negligible
Odor	: Mild characteristic
Form	: chips
Color	: Off white to tan
Specific Gravity	: NA

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 200 C (392 F) .

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

Incompatibility with Other Materials

None reasonably foreseeable.

Decomposition

Hazardous gases or vapors can be released, including carbon monoxide, hydrogen chloride (HCl), organic acids, aldehydes, alcohols.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data**TALC****Talc**

Oral LD50: > 5000 mg/kg in rats
Inhalation 5 hour ALC: > 22 mg/L in rats

Long-term exposure by ingestion to Talc caused no significant decrease in life span.

A single exposure by inhalation to high doses of Talc caused irregular respiration and lacrimation but no evidence of an inflammatory reaction. Repeated exposure caused no adverse effects on survival or histological changes. Long-term exposure in rats caused chronic inflammation, impaired pulmonary function and histopathological changes of the lungs.

One lifetime inhalation study reports an increased incidence of lung and adrenal tumors in rats exposed to Talc. The lung tumors and chronic inflammation occurred at dust levels which overwhelmed the animals lung clearance mechanism and, therefore, are of questionable biological relevance for man. The adrenal tumors are unlikely to be a direct effect of Talc exposure and are of questionable relevance. No increases in tumors were observed in mice. Talc has not caused developmental toxicity in animals. No animal data are available to define the reproductive toxicity of Talc. Tests have shown that Talc does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. Animal data indicate that Talc does not cause permanent genetic damage in reproductive cells of mammals (does not cause heritable genetic damage).

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

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

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT

Proper Shipping Name : Not regulated.

Shipping Information -- Canada

This material is 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)- Talc.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

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

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)- Talc.

Canadian Regulations

This is not a WHMIS Controlled Product.

CEPA Status: DSL: REPORTED/INCLUDED

OTHER INFORMATION

Additional Information

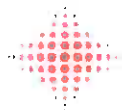
MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont Performance Elastomers Medical
Application Policy (H-69237).

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.

End of MSDS



Neoprene[®] polychloroprene

From DuPont Performance Elastomers

Guide for Safety in Handling and FDA Status of Neoprene Solid Polymers

Beyond the hazards typically encountered in processing any polymer (e.g., static, dust generation, thermal control, etc), DuPont Performance Elastomers is not aware of specific health hazards associated with exposure to uncompounded Neoprene polychloroprene solid polymers. However, for all Neoprene solid polymers, routine industrial hygiene practices are recommended to avoid conditions such as excessive processing temperatures, dust formation, dust buildup and static charges. This technical bulletin includes available hazard data and handling guidance for Neoprene solid polymers. The bulletin also provides the status of DuPont Performance Elastomers Neoprene solid polymers with respect to applicable U.S. Food and Drug Administration regulations (*Table 1*). A brief description of FDA regulations pertinent to Neoprene polymers is also given.

Safety in Handling

Raw Polymer Handling

Solid Neoprene polychloroprene polymers are supplied as chips. These materials can potentially accumulate a static charge during shipping, unloading, conveying, or pouring from the bag. Refer to the National Fire Protection Association (NFPA) RP77 "Recommended Practice on Static Electricity" for guidance in reducing the fire hazards associated with static electricity.

Warehouse storage areas used for Neoprene should display appropriate warnings. In case of fire, substantial quantities of hydrogen chloride (the US Occupational Safety, and Health Administration Permissible Exposure Limit [OSHA PEL] for HCl is 5 ppm, Ceiling) can be evolved. Appropriate eye, respiratory and skin protection from smoke and corrosive hydrogen chloride gas should be used. Decomposition product residues in water may be acidic and appropriate skin protection should be considered in fire-wastes.

Dust Inhalation Precautions

Only non-asbestiform talc (CAS No. 14807-96-6) is used as a partitioning agent on Neoprene chips to reduce massing and improve flow. Talc used for Neoprene solid polymers may have low levels of crystalline silica, typically, <1%. Free talc may become airborne during transfer or handling of the Neoprene chips. Short-term overexposure by inhalation of talc may cause irritation of the respiratory tract. Long-term overexposure may lead to chronic lung disease.

Lifetime inhalation studies with talc caused an increased incidence of lung inflammation, lung tumors and adrenal tumors in rats; no tumors were produced in mice. These effects occurred at such high dust levels that the animal's lung clearance mechanism for inhaled dusts was overwhelmed, producing chronic lung inflammation. Lung tumors from inhalation of insoluble, low-reactivity (so called "nuisance") particles such as talc are thought to be a rodent-specific response and, therefore, are of questionable biological relevance for man. Available epidemiology studies do not suggest a causal relationship of inhaled, non-asbestiform talc exposure with lung tumors in humans. In view of the animal studies, DuPont Performance Elastomers treats non-asbestiform talc as a possible human carcinogen. The International Agency for Research on Cancer (IARC) considers non-asbestiform talc

to be unclassifiable for possible carcinogenicity in humans; further details are found in the IARC documentation (Vol. 93, 2006).

DuPont Performance Elastomers has adopted a workplace Acceptable Exposure Limit (AEL) for respirable dust from non-asbestiform talc of 0.5 mg/m³ for an 8 and 12 hr Time Weighted Average (TWA). The OSHA PEL for non-asbestiform talc is 20 million particles per cubic foot (equivalent to approximately 3 mg/m³).

Acute Oral Toxicity

One Neoprene solid polymer, Neoprene TW, has been tested and shown to have a very low order of acute oral toxicity. The median acutely dose in rats (LD₅₀) is in excess of 20,000 mg/kg. Other solid Neoprenes are essentially insoluble, high molecular weight polymers and as such are expected to have similarly low oral toxicity.

Skin Tests

No skin reactions were observed in human patch tests conducted with three Neoprene solid polymers (W, WRT, and WHV) by Holland and Parsons¹.

Chloroprene Monomer

Residual chloroprene monomer in DuPont Performance Elastomers Neoprene solid polymers is not detectable in the solid polymer at levels above 0.5 ppm, the analytical detection limit for this monomer².

Waste Disposal

Neoprene solid polymers may be disposed of by incineration or burial, using a method that is in compliance with federal, state, and local regulations. If incineration is employed, an excess of oxygen should be provided to assure complete combustion. Also, an absorber to remove corrosive hydrogen chloride gas from effluent gases is necessary.

Compounded Neoprene

Handling Precautions During Processing

During the processing (mixing, curing, demolding, etc.) of compounded Neoprene, some gaseous by-products or dusts will be released into the air in the immediate work area. Breathing these gases and dusts should be avoided, and adequate local and general room ventilation should be utilized to remove these substances from the work area. More information on ventilation can be found in the DuPont technical Bulletin "Proper Use of Local Exhaust Ventilation During Processing of Plastics" (http://www2.dupont.com/Plastics/en_US/assets/downloads/processing/L10953.pdf). The composition and concentration of these off-gases and dusts will depend on operating conditions and the specific compounding ingredients added to the Neoprene. Since it is virtually impossible to anticipate the multitude of compounding ingredients and breakdown products from a compound of Neoprene, only generalized cautionary advice can be given. Importantly, Neoprene products or compounds should not be heated above 200°C since harmful substances may be produced that contaminate workplace air^{3,4,5}. Careful control of processing temperatures and local/room ventilation appropriate for the process must be maintained.

Label directions and handling precautions from suppliers of all ingredients should be consulted and followed. Even when it is known that there is no danger from individual compounding ingredients, there is no assurance that a combination of these ingredients will be equally nonhazardous. Thus, it is necessary for users to consider and address possible product hazards under expected conditions of use.

FDA Status of Neoprene

Table 1
Compliance of Neoprene Solid Polymers with FDA Regulations

		Complies With FDA Regulations		
		175.105 Adhesives	175.300 Coatings	177.2600 Rubber Articles
Adhesive Grades				
Neoprene	AD	Yes	No	No
G Family				
Neoprene	GNA*	Yes	Yes	Yes
	GRT	Yes	No	Yes
	GW	Yes	Yes	Yes
T Family				
Neoprene	TW	Yes	No	Yes, but not fatty foods
	TW 100	Yes	No	Yes, but not fatty foods
W Family				
Neoprene	W	Yes	Yes	Yes
	WB	Yes	No	Yes, but not fatty foods
	WD	Yes	No	Yes
	WHV	Yes	Yes	Yes
	WHV 100	Yes	Yes	Yes
	WRT	Yes	No	Yes

*DuPont Performance Elastomers recognizes that Neoprene GNA complies with FDA regulations but does not recommend its use if other types of Neoprene will work as well.

Applicable FDA Regulations

Reference: 21 CFR 175.105—Adhesives

Materials are listed that may be used as components of adhesives for packaging, transporting, or holding food where the adhesive is either separated from the food by a functional barrier; or in the case of aqueous and fatty foods, where the quantity of adhesive that contacts the food is limited to a minimal amount.

Reference: 21 CFR 175.300 — Resinous and Polymeric Coatings

Resinous and polymeric coatings may be safely used as the food-contact surface of articles intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting or holding food. The coating is applied as a continuous film or enamel over a substrate so that the coating serves as a functional barrier between the food and the substrate.

Reference: 21 CFR 177.2600 — Rubber Articles Intended for Repeated Use

This regulation defines the polymers and compounding ingredients that can be used in rubber articles intended for repeated use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food. There are limitations on the amount of certain compounding ingredients:

- Accelerators, total not to exceed 1.5% by weight of rubber product;
- Retarders, total not to exceed 10% by weight of rubber product;
- Activators, total not to exceed 5% by weight of rubber product, except magnesium oxide may be used at higher levels;
- Antioxidants and Antiozonants, total not to exceed 5% by weight of rubber product;
- Plasticizers, total not to exceed 30% by weight of rubber product;
- Fillers, no maximum given except for carbon black; channel process or furnace combustion process, total not to exceed 50% by weight of rubber product; furnace combustion black content

not to exceed 10% by weight of rubber products intended for use in contact with milk or edible oils;

- Colorants used in accordance with 21 CFR 178.3297.
- Lubricants, total not to exceed 2% by weight of rubber product;
- Emulsifiers, no maximum given.
- Sulfur, no maximum given.

Substances Generally Recognized as Safe

Part 182 lists substances which are "generally recognized as safe" for food contact use. Some of these substances, listed below, are used as compounding ingredients for Neoprene:

Section 182.5191	Calcium Carbonate
Section 182.5210	Calcium Oxide
Section 182.5431	Magnesium Oxide
Section 182.5991	Zinc Oxide

Ingredients Restricted by FDA

Part 189 lists substances which, if used in contact with food, cause the food to be deemed adulterated. Although Neoprene solid polymers manufactured by DuPont Performance Elastomers do not contain ethylene thiourea (ETU), a commonly used accelerator for Neoprene, ETU is listed in 21 CFR 189.250. Neoprene polymers cured with ETU should not be used in contact with food.

Information on European Union Dangerous Preparations Directive 1999/45/EC related to Colophony Skin Sensitization

Colophony is classified as a skin contact sensitizer under European Union Dangerous Preparations Directive 1999/45/EC effective July 30, 2002. This Directive requires labeling of products that contain colophony at levels equal to or greater than 0.1% (refer to the Directives for specific details). Solid (dry type) Neoprene adhesive grade products manufactured by DuPont Performance Elastomers L.L.C. contain about 4% colophony (CAS No. 8050-09-7). Toxicological tests in animals with comparable products show that dry Neoprene is not a skin sensitizer. Because of this testing, dry Neoprene polymer is not subject to mandatory labeling under the above Directive despite the presence of colophony. However, when these Neoprene adhesive grade products are dissolved in organic solvents, the colophony may still be present at concentrations up to 0.8% depending on the solids content of the solutions. In the absence of data showing the adhesive is not a skin sensitizer, the adhesive could be subject to the above EU regulation.

It is recommended that manufacturers and marketers of adhesive solutions containing DuPont Performance Elastomers' Neoprene (dry type) adhesive grade products determine whether the colophony level is above 0.1%. If the manufactured preparation has a colophony content of less than 0.1% it will not be subject to mandatory labeling (provided no other constituents necessitate mandatory labeling). Manufactured preparations that contain higher colophony contents will require the labeling and/or container notices described in the Directive.

References

1. P. Holland and C. W. Parsons, "Elastomers and Compounding Ingredients for Respirator Rubber Compositions in Relation to their Effect on the Skin," October 1969, Chemical Defense Establishment, Salisbury, Wilts., England
2. DuPont Performance Elastomers Analytical Method N GC 1200
3. G. S. Skinner and J. H. McNeal, "Decomposition of Elastomers at High Temperatures," Industrial and Engineering Chemistry, Vol. 40, p. 2303, December 1948.
4. K. L. Paciorek, et. al., "Thermal Oxidative Decomposition Studies of Neoprene Compositions," American Industrial Hygiene Association Journal, January 1975, pp. 10-16.
5. I. Aracil, et. al., "TG-MS Analysis of the Thermo-Oxidative Decomposition of Polychloroprene," Journal of Analytical Applied Pyrolysis, Vol. 79, 2007, pp. 327-336.

For further information please contact one of the addresses below, or visit us at our website at www.dupontelastomers.com/neoprene

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont Performance Elastomers customer service representative and read Medical Caution Statement H-69237.

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