



Elastomeric Chains and Ligatures

1 – IDENTIFICATION

PRODUCT NAME: Elastomeric Chains and Ligatures

CHEMICAL FAMILY: Thermoplastic Polyurethane

CHEMICAL NAME: Polyurethane Polyester Elastomer

FORMULA: not applicable – polymeric material

COMPANY NAME:

Orthodontic Design and Production

1370 Decision Street, Suite D

Vista, CA 92081 (760) 734-3995

2 – HAZARDOUS INGREDIENTS

This product contains no hazardous ingredient as defined under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

3 – HEALTH HAZARD DATA

ROUTE (S) OF ENTRY: Inhalation; Eye Contact; Skin Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE: Material is non-reactive solid pellet. Mechanical irritation (i.e. abrasion) to the eyes may occur due to exposure to fines. Eyes may become red and scratchy and may tear. At recommended processing temperatures, carbon dioxide (CO₂), carbon monoxide (CO), tetrahydrofuran and cyclopentanone vapors may be among the fume constituents evolved. These gases and fumes as well as decomposition products may irritate the eyes, skin, or respiratory tract. Increasing the processing temperature may cause cleavage of the polymer matrix and release diphenylmethane diisocyanate (MDI) vapors. The quantity and rate of MDI generation is dependent on variables such as temperature, processing method and the chemical composition of the resin. The following additional effects of overexposure reflect the potential health hazards associated with MDI.

ACUTE INHALATION: MDI vapors at concentration above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing hyper reactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g. fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure.

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CHRONIC INHALATION: As a result of previous repeated overexposures or a single large dose, certain individuals develop isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). 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. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) that may be permanent. Sensitization can either be temporary or permanent.

ACUTE EYE CONTACT: Vapors or MDI are irritating and can cause tearing, reddening, and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. See section 5 for First Aid Measures..

CHRONIC EYE CONTACT: None found.

CARCINOGENICITY: The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Exposure to MDI can affect asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyper reactivity), skin allergies, and eczema.

EXPOSURE LIMITS: For product fines the OSHA-PEL for nuisance dust of 15mg/m³ total dust, 5-mg/m³ respirable dusts are recommended. In addition, the ACGIH-TLV for nuisance dust of 10 mg/m³ is recommended. The OSHA-PEL for MDI is 0.2 mg/m³ (0.02 ppm), which is a ceiling value not to be exceeded. ACGIH TLV for MDI is 0.051 mg/m³ (0.005 ppm TWA).

4 – PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Natural

FORM: Pellets

ODOR: odorless/slight

pH: not established

BOILING POINT: not applicable

MELTING/FREEZING POINT: 390-440 Fahrenheit

SOLUBILITY IN WATER: insoluble

SPECIFIC GRAVITY: Approximately 1.2

BULK DENSITY: Approximately 10.01 lbs/gal

% VOLATILE BY VOLUME: negligible

VAPOR PRESSURE: negligible

Note: This MSDS was prepared in accordance with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and is to be used only for this product. The information contained in this MSDS is, to the best of our knowledge, believed to be accurate.
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5 – FIRE AND EXPLOSION HAZARD

FLASH POINT: not applicable

FLAMMABLE LIMITS: UEL and LEL both not established

EXTINGUISHING MEDIA: Water; dry chemical; carbon dioxide; foam.

SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus should be worn by firefighters. During a fire, MDI vapors and other highly irritating and toxic gases may be generated by thermal decomposition and combustion.

6 – REACTIVITY DATA

STABILITY: This product is stable under normal ambient conditions of temperature and pressure

INCOMPATIBILITY: none known

HAZARDOUS DECOMPOSITION PRODUCTS: Phosphine, oxides of phosphorus

HAZARDOUS POLYMERIZATION: No

INCOMPATIBILITIES: none known

DECOMPOSITION PRODUCTS: By fire or thermal decomposition: Carbon monoxide (CO), carbon dioxide (CO₂), oxides of nitrogen (NO_x), traces of hydrogen cyanide (HCN), amines, nitriles, tetrahydrofuran, and cyclopentanone. Traces of MDI, aliphatic and aromatic hydrocarbons, aldehydes and acids may also be formed.

7 – EMERGENCY/FIRST AID MEASURES

FIRST AID FOR EYES: Flush eyes with plenty of lukewarm water. See a physician or ophthalmologist for immediate follow-up if irritation is present and persists.

FIRST AID FOR SKIN: Wash affected area with soap and water. See physician if thermal burn occurs.

FIRST AID FOR INHALATION: Move to an area free from risk of further exposure. Give oxygen or artificial respiration as needed (to be administered by authorized medical personnel only). Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.

FIRST AID FOR INGESTION: If material is ingested, do not induce vomiting and contact a physician.

NOTE TO PHYSICIAN: The following courses of action are suggested if overexposure to MDI is suspected. Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. If burned, treat as thermal burn. Respiratory: MDI is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization reaction to this material should be removed from exposure to any isocyanate

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8 – HANDLING AND STORAGE

STORAGE TEMPERATURE (MIN/MAX): Ambient

SHELF LIFE: n/a

SPECIAL SENSITIVITY: Moisture

HANDLING/STORAGE PRECAUTIONS: When handling flaked material or during secondary operations, vent storage bins, conveyors, dust collectors, etc. Ground handling equipment. Keep open flames, sparks and heat away from dusty areas. Maintain highest standards or housekeeping to prevent accumulation of dust.

OTHER NOTES: Material should be stored in a clean, dry environment in sealed containers. Materials must be dried before processing.

SHIPPING INFORMATION:

D.O.T. SHIPPING NAME: none

TECHNICAL SHIPPING NAME: Polyurethane Polyester Elastomer

D.O.T. HAZARD CLASS: Non-regulated

U.N./N.A. NUMBER: none

PRODUCT RQ (LBS): none

D.O.T. LABEL: none

D.O.T. PLACARD: none

FREIGHT CLASS PACKATE: Plastic Materials. O/T Exp., Pellet

PRODUCT LABEL: 480 A Natural (Pellets)

9 – SPECIAL PROTECTION

EYE PROTECTION REQUIREMENTS: Safety glasses are recommended as a good industrial hygiene and safety practice.

SKIN PROTECTION REQUIREMENTS: Fabric gloves are recommended when handling molten material.

VENTILATION REQUIREMENTS: Provide natural or mechanical exhaust ventilation to control gases and fumes given off during hot melt processing, cutting, regrinding, heat-welding, soldering, purging, or any other operation involving heat sufficient to result in fumes, vapors, or product breakdown. Diphenylmethane diisocyanate (MDI) could be liberated in small amounts. OSHA PEL for MDI is .02 mg/m³ (0.02 ppm), which is a ceiling value not to be exceeded. ACGIH TLV for MDI is 0.051 mg/m³ (0.005 ppm) TWA. Standard references regarding industrial ventilation (ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

RESPIRATOR REQUIREMENTS: NIOSH/MSHA-approved dust respirator recommended if the airborne dust concentration is near or exceeds the nuisance dust exposure limits. During die-cleaning operations, high-temperature processing and/or circumstances where decomposition is suspected, a NIOSH-approved supplied air respirator is recommended to protect against Diphenylmethane Diisocyanate (MDI).



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ADDITIONAL PROTECTIVE MEASURES: The greatest potential for injury occurs when working with molten polymeric resins, such as during a purge or a molding machine, extruder and the like. During this type of operation it is essential that all workers in the immediate area wear eye protection and skin protection (sleeves, gloves, etc.) as protection from thermal burns. Purgings should be collected as small flat thin shapes or thin strands to allow for rapid cooling. Precautions should be taken against auto-ignition of hot, thick masses of the plastic. Quench with water, Grinder dust is an exposure hazard.

10 – SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If molten material is spilled, allow it to solidify. For both solidified material and pellets, remove mechanically by a method, which minimizes the generation of dust.

11 – DISPOSAL INFORMATION

WASTE DISPOSAL METHOD: This disposal method is recommendation only. Be sure to dispose of materials in full accordance with all local, state, and federal regulations.

12 – REGULATORY INFORMATION

OSHA STATUS: This product is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR decomposition fumes from this product may be hazardous as noted.

TSCA STATUS: On TSCA Inventory.

CERCLA REPORTABLE QUANTITY: None

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: None

SECTION 311/312 HAZARD CATEGORIES: None hazardous under Section 311-312

SECTION 313 TOXIC CHEMICALS: None

SCRA STATUS: If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

OTHER REGULATORY INFORMATION: The following chemical is specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

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COMPONENT NAME/

CAS NUMBER:	CONCENTRATION	STATE CODE
Polyurethane Polyester		
Elastomer		
CAS # (26375-23-5)	>99%	PA3, NJ4

NJ4 – New Jersey Other – included in 5 predominant ingredients >1%

PA3 – Pennsylvania Non-hazardous present at 3% or greater.

California Proposition 65

To the best of our knowledge, this product contains no levels of listed substances, which the state of California has found to cause cancer, birth defects, or other reproductive effects.

Massachusetts Substance List (MSL)

Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. To the best of our knowledge, this product contains no substances at a level, which could require reporting under the statute.

13 – DISCLAIMER OF WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy of completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for his or her particular purpose(s).

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