

Material Safety Data Sheet

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Product Identification

Product Name: AV-290 FAST-SET

Composition/Ingredient Information

Ingredient Name / CAS Number	Exposure Limits	Concentration
4,4' - Diphenylmethane Diisocyanate (MDI) CAS #101-68-8	OSHA: .02 ppm - .20 mg/m ³ ceiling ACGIH: .005 ppm - .951 mg/m ³ TWA	Trade Secret
Dibutyl Maleate CAS #105-76-0	OSHA PEL: Not established ACGIH TLV: Not established	Trade Secret
Polyoxyalkylene Polyol CAS #9082-00-2	OSHA PEL: Not established ACGIH TLV: Not established	Trade Secret

Hazards Information

Primary route(s) of entry: Skin absorption and inhalation.

Health Hazards: Persons with known with respiratory or allergy problems must not be exposed to this product. May cause headaches, nausea, coughing, shortness of breath, chest pains.

Eye Contact: As a liquid exposure may cause irritation or inflammation.

Skin Contact: Prolonged or repeated exposure can cause upper respiratory tract irritation. Severe overexposure may lead to pulmonary edema.

Ingestion: Can result in irritation and corrosive action in the mouth, stomach tissue, and digestive tract.

First Aid Measures

Eyes: Flush with plenty of water for at least 15 minutes. Get medical attention.

Skin: Wash thoroughly with soap and water. If irritation develops, consult a physician.

Inhalation: remove to fresh air. If breathing is difficult, administer oxygen and get medical attention.

Ingestion: Drink 1 or 2 glasses of milk or water. If gastrointestinal symptoms develop, get medical attention. (Never give anything by mouth to an unconscious or convulsing person.)

Note to Physician: Treat symptomatically; no specific antidote is available.

Fire and Explosion Hazards

Flash Point: 270 COC

Flammable Limits: N/D

Extinguishing Media: Dry chemical, foam or water spray.

Special Fire Fighting Procedures: Wear self-contaminated breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards: Toxic fumes (isocyanate vapor or mist, carbon dioxide, carbon monoxide, nitrogen oxides, traces of hydrogen cyanide) are released in fire situations. At temperature greater than 400°F (204°C), Polymeric MDI can polymerize and decompose which will cause pressure to build-up in closed containers. Explosive rupture is possible. Water contamination will produce carbon dioxide. Downwind personnel must be evacuated.

Accidental Release Measures

Spill or leak procedures: Evacuate spill area. With adequate ventilation, cover with an inert absorbent material such as clay or vermiculite, transfer to a proper waste container. Larger quantities of liquid may be transferred directly to drums for disposal. Wash the area with water containing 5% ammonia and detergent. Wear respirator and other protective equipment for protection of eyes and skin during cleanup.

Storage and Handling

Storage and Handling: Store in a dry area between 60°F and 100°F (16°-30°C). Opened containers must be handled properly to prevent moisture contamination.

Exposure Controls and Personal Protection

Respiratory Protection: Wear NIOSH/MSHA approved supplied air respirator or self-contained breathing apparatus when airborne concentrations are unknown or exceed permissible limits. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

Ventilation: Mechanical general/local exhaust to control vapor or mist below maximum exposure limits.

Protective Clothing: Long-sleeve shirt and trousers.

Eye Protection: Use safety goggles and face shield to avoid splashing on face.

Other Protective Equipment: Impervious rubber gloves and boots.

Work/Hygienic Practices: Wash with soap and water after handling. Remove contaminated clothing and wash before next use.

Physical and Chemical Properties

Appearance and Odor: Clear Yellow to Opaque Liquid

Boiling Point: 500 F

Vapor pressure (mm Hg): Not established

Vapor density: N/L

Specific Gravity (water=1): 1.04 @ 77°F (25°C)

Melting Point: N/D

Evaporation Rate (butyl acetate): N/A

Solubility in Water: Reacts

Stability and Reactivity

Stability: This is a stable material in sealed containers.

Incompatibility (materials to avoid): Water (moisture), metal compounds, acids, bases, and surface-active materials

Decomposition: Toxic fumes are released in fire situations, including isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides, and traces of hydrogen cyanide.

Polymerization: May occur.

Toxicological Information

Toxicity Data For: Diphenylmethane Diisocyanate (Monomeric and Polymeric)

Acute Toxicity:

Oral LD₅₀: Greater than 15,800 mg/kg (rat)

Dermal LD₅₀: Greater than 5,010 but less than 7,940 mg/kg (rabbit)

Inhalation LD₅₀: The 4-hour LD₅₀ for polymeric MDI in rats ranges from 370 to 490 mg/m³. The LD₅₀ for monomeric MDI was estimated to be between 172 and 187 mg/m³.

Eye Effects: Slight to moderate irritation.

Skin Effects: Slight to moderate irritation.

Sensitization: MDI has been shown to produce dermal sensitization in laboratory animals. Evidence of respiratory sensitization has also been observed in guinea pigs. In addition, there is some evidence suggestive of cross-sensitization between different types of diisocyanates.

Chronic Toxicity: In a combined chronic inhalation toxicity/oncogenicity study, rats were exposed to an aerosol of polymeric MDI for 6 hours per day, 5 days per week for one or two years. The exposure concentrations were 0, 0.2, 1.0 and 6.0 mg/m³. Microscopic examination of tissues revealed the effects of irritation to the nasal cavity and lungs in animals exposed to 1.0 and 6.0 mg/m³. The No Observable Effect Level (NOEL) was 0.2 mg/m³.

Carcinogenicity: In the study described above (CHRONIC TOXICITY), the occurrence of pulmonary adenomas and a single pulmonary adenocarcinoma was considered to be related to MDI. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m³.

Mutagenicity: Positive (Salmonella microsome test with metabolic activation; cell transformation assay) as well as negative (mouse lymphoma specific locus mutation test with or without metabolic activation) results have been observed "in vitro". However, MDI was negative in an "in vivo" (mouse micronucleus) assay.

Developmental Toxicity: Rats were exposed to polymeric MDI at air concentrations of 0, 1, 4 and 12 mg/m³ during days 6-15 of gestation. Maternal Toxicity (including mortality) was observed at the highest concentration of 12 mg/m³ accompanied by embryo and fetal toxicity. However, no errogenic effects were observed even at this lethal concentration.

Ecological Information

Ecological Data For: Diphenylmethane Diisocyanate (Monomeric and Polymeric)

Aquatic Toxicity: LD₅₀ – 24 hours (static): Greater than 500 mg/liter for Daphnia magna, Limnea Stagnalis, and Zebra fish (Brachydanio rerio) for both polymeric and monomeric MDI.

Disposal Considerations

Waste disposal method: waste may be incinerated at proper facilities or disposed of in accordance with local, state, and federal regulations.

Transport Information

Proper shipping name: Liquid resin non-regulated

DOT hazard classification: None

UN/NA number: None

Packaging group: None

Freight class: 65

DOT labels required: None

DOT placards required: None

Regulatory Information

OSHA Status: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: On TSCA Inventory

CERCLA Reportable Quantity: 5000 lbs. for 4,4'-Diphenylmethane Diisocyanate, CAS # 101-68-8.

SARA Title III:

Section 302 Extremely Hazardous Substances: None

Section 311/312 Hazard Categories: Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard

Section 313 Toxic Chemicals: Polymeric Diphenylmethane Diisocyanate, CAS #9016-87-9, 100%; Contained in this polymeric MDI product is 4,4'-Diphenylmethane Diisocyanate, CAS #101-68-8, RCRA STATUS: MDI is not listed as a hazardous waste. To the best of our knowledge, MDI does not meet the criteria of a hazardous waste if discarded in its purchased form. However, under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether a product meets any of the criteria for a hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting material hazardous, under the criteria of ignitability, corrosivity, reactivity and toxicity characteristics under the new Toxicity Characteristics Leaching Procedure (TCLP) 40 Code of Federal Regulations 261.20-24.

The following chemicals are 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.

Component Name / CAS Number	Concentration	State Code
4,4' – Diphenylmethane Diisocyanate (MDI) CAS #101-68-8	Upper Bound 15%	PA1,FL, IL, MA, NJ1, NJ4, CN2
Higher Oligomers of MDI CAS #9016-87-9	45-55%	PA3, NJ4
Diphenylmethane Diisocyanate (MDI) CAS #26447-40-5	1-10%	PA3, NJ4
Phenyl isocyanate CAS #103-71-9	Trace – ppm	MA

FL*	Florida Substance List
IL	Illinois Toxic Substance List
MA	Massachusetts Hazardous Substance List
NJ1	New Jersey Hazardous Substance List
NJ4	New Jersey Other – included in 5 predominant ingredients > 1%
PA1	Pennsylvania Hazardous Substance List
PA3	Pennsylvania Non-hazardous present at 3% or greater
RI	Rhode Island List of Designated Substances
CN2	Canada WHMIS Ingredient Disclosure List over 0.1%

Other Information

The information on this MSDS is accurate to the best of Avanti International's knowledge. Avanti International makes no expressed or implied warranty, and in no case shall be liable for consequential, special, or indirect damages resulting from the use or handling of this product.