



# MATERIAL SAFETY DATA SHEET

## StrongBack<sup>®</sup> Tape

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### SECTION 1 – CHEMICAL PRODUCT & COMPANY IDENTIFICATION

**PRODUCT NAME** StrongBack Tape  
**PRODUCT USE/CLASS** AROMATIC ISOCYANATE

**NIXUS International Corporation** EMERGENCY TELEPHONE: 1-850-267-1237  
P.O. Box 613588  
Watersound, FL 32461  
U.S.A.

REVISION DATE: 8-17-2000 PREVIOUS MSDS REVISION DATE: 8-14-2000

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### SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Wt% <	Exposure Guidelines			OSHA			Units	Skin
			ACGIH TWS	STEL	TLV	TWA	CEIL	PEL		
Fiberglass	65997-17-3	65	None	None		None	None	15 mg/m <sup>3</sup>	None	None
Polyisocyanate (based on MDI)	Proprietary	27	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.		N.E.
diphenylmethane diisocyanate	26447-40-5	7.7	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.	PPM	
4,4' diphenylmethane diisocyanate	101-68-8	.5	0.005	N.E.	N.E.	N.E.	0.02		PPM	
OTHER INGREDIENTS	Proprietary	2								

N.E. – Not Established, S – Skin Designation, C – Ceiling

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### SECTION 3 – HAZARDS IDENTIFICATION

**\*\*\*EMERGENCY OVERVIEW\*\*\*:** Uncured composite resin system. Harmful if inhaled. May cause allergic skin reaction. May cause allergic respiratory reaction. Causes skin and eye irritation. Causes respiratory tract irritation.

**EFFECTS OF OVEREXPOSURE – EYE CONTACT:** Causes eye irritation, cured material is difficult to remove.

**EFFECTS OF OVEREXPOSURE – SKIN CONTACT:** May cause skin sensitization. May cause dermatitis. Causes skin irritation. Will react with skin.

**EFFECTS OF OVEREXPOSURE – INHALATION:** When working outside or without adequate ventilation, possible irritation of the respiratory system can occur causing a variety of symptoms; such as dryness of the throat, tightness of the chest, and shortness of breath. Allergic conditions can occur in certain individuals with high sensitivity to isocyanates; this may result in asthma-like symptoms. May cause respiratory sensitization. May cause lung damage.

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## SECTION 4 – HAZARDS IDENTIFICATION

**EFFECTS OF OVEREXPOSURE – INGESTION:** Harmful if swallowed. Ingestion is not an expected route of entry in industrial or commercial uses.

**EFFECTS OF OVEREXPOSURE – CHRONIC HAZARDS:** May cause long-term lung damage or chemical asthma. Chronic skin contact may cause dermatitis or react with the skin. Cured material is hard to remove from the skin.

**PRIMARY ROUTE(S) OF ENTRY:** INHALATION, SKIN CONTACT, INGESTION, EYE CONTACT.

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## SECTION 5 – FIRST AID MEASURES

**FIRST AID – EYE CONTACT:** Flush eyes immediately with large amount of water for at least 15 minutes holding eyelids open while flushing. Get prompt medical attention.

**FIRST AID – SKIN CONTACT:** Remove contaminated clothing. Flush contaminated skin thoroughly with large amounts of soap and water. For severe exposures or if irritation develops get medical attention.

**FIRST AID – INHALATION:** Move person to fresh air. Restore and support continued breathing. If breathing is difficult, give oxygen. Get immediate medical attention.

**FIRST AID – INGESTION:** If swallowed, do not induce vomiting. Give victim one or two glasses of water or milk. Call a physician or poison control center immediately for further instructions. Never give anything by mouth to an unconscious person.

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## SECTION 6 – FIRE FIGHTING MEASURES

FLASH POINT: >293o F, >145o C

(SETAFLASH CLOSED CUP)

AUTOIGNITION TEMPERATURE: N.D.

OSHA FLAMMABILITY CLASSIFICATION: COMBUSTIBLE LIQUID – CLASS IIIIB

EXTINGUISHING MEDIA: DRY CHEMICAL, WATER FOG, CO2, FOAM.

LOWER EXPLOSIVE LIMIT: N.A.

UPPER EXPLOSIVE LIMIT: N.A.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Keep containers tightly closed. Closed containers may rupture when exposed to extreme heat. Use water spray to keep fire-exposed containers cool.

**SPECIAL FIREFIGHTING PROCEDURES:** Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, highly toxic gasses may be generated by thermal decomposition (See Stability and Reactivity). At temperatures greater than 400o F (204o C), polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

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## SECTION 7 – ACCIDENTAL RELEASE MEASURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED:** Keep non-essential personnel a safe distance away from the area. Avoid breathing vapors. Notify appropriate authorities, if necessary. Avoid contact. Before attempting cleanup, refer to hazard caution information in other sections of this MSDS form. Clean up material with inert absorbent material and be sure to use protective clothing and gloves. Note that water or the ambient humidity will cause the material to cure.

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## SECTION 8 – HANDLING AND STORAGE

**SHIPPING CONTAINERS:** Due to its hygroscopic nature and the fact that the material cures by exposure to ambient humidity, individual lengths are shipped in sealed pouches. The pouches are then packaged in larger containers for transport.

**HANDLING:** Keep container tight and upright. Do not open individual pouches prematurely as the material will cure. Avoid skin and eye contact. Wash thoroughly after handling. Avoid breathing of vapor or spray mists. Do not handle until all safety precautions have been read and understood. Empty pouches should not be used. Use with adequate ventilation.

**STORAGE:** Store only in well-ventilated dry areas. Do not refrigerate.

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## SECTION 9 – EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Sufficient ventilation in pattern and volume should be provided in order to maintain air contaminant levels below recommended exposure limits.

**RESPIRATORY PROTECTION:** This product contains isocyanates, which have poor odor warning properties. If occupational exposure limits are exceeded, a NIOSH/MSHA approved supplied air respirator is required. Observe OSHA regulations (29CFR 1910.134) for respirator use.

**SKIN PROTECTION:** Use neoprene, nitrile, or rubber gloves to prevent skin contact.

**EYE PROTECTION:** Use safety eyewear including safety glasses with side shields and chemical goggles.

**OTHER PROTECTIVE EQUIPMENT:** Use disposable or impervious clothing if work clothing contamination is likely. Remove and wash contaminated clothing before reuse. Use long-sleeved shirt to minimize skin exposure.

**HYGIENIC PRACTICES:** Wash hands before eating, smoking, or using toilet facility. Food or beverages should not be consumed anywhere this product is handled or stored. Wash thoroughly after handling.

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## SECTION 10 – PHYSICAL AND CHEMICAL PROPERTIES

**BOILING RANGE:** 694 F

**APPEARANCE:** Buff white pre-impregnated glass cloth composite

**PHYSICAL STATE:** Semi solid

**ODOR:** Slight

**SOLUBILITY IN H<sub>2</sub>O:** Insoluble, resin cures with the addition of H<sub>2</sub>O

**VAPOR DENSITY:** Is heavier than air **ODOR THRESHOLD:** N.D.

**EVAPORATION RATE:** N.D.

**DENSITY, LB/GAL:** 1.1

**SPECIFIC GRAVITY:** .15

**pH:** N.A.

**VOLATILE BY VOL.:** 0.0 %

**FREEZE POINT:** N.D.

**VOLATILE BY WEIGHT:** 0.0 %

**VAPOR PRESSURE:** Less than 10 mmHg.

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** N.D.

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## SECTION 11 – STABILITY AND REACTIVITY

**CONDITIONS TO AVOID:** High temperatures.

**INCOMPATIBILITY:** Amines, acids, water, hydroxyl, or active hydrogen compounds. Note that the material will cure if exposed to water or ambient humidity.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Monomeric isocyanate, traces of hydrogen cyanide, nitrogen dioxide. Carbon monoxide, carbon dioxide.

**HAZARDOUS POLYMERIZATION:** Will not occur under normal conditions. Product will cure when exposed to water.

**STABILITY:** This product is stable under normal storage conditions.

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## SECTION 12 – TOXICOLOGICAL PROPERTIES

**TOXICITY DATA FOR:** Diphenylmethane Diisocyanate (Monomeric and Polymeric)

**ACUTE TOXICITY ORAL LD50:** Greater than 15,800 mg/kg (Rat) **DERMAL LD50:** Greater 5010 but less than 7,940 mg/kg (Rabbit)

**INHALATION LC50:** The 4-hour LC50 for polymeric MDI in rats ranges from 370 to 490 mg/m<sup>3</sup>. The LC50 for monomeric MDI was estimated to be between 172 and 187 mg/m<sup>3</sup>.

**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, and 6.0 mg/m<sup>3</sup>. 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/m<sup>3</sup>. The No Observable Effect Level (NOEL) was 0.2 mg/m<sup>3</sup>.

**CARCINOGENICITY:** In the study described above (See 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/m<sup>3</sup>.

**MUTAGENICITY:** MDI has been reported by NIOSH to be mutagenic to salmonella typhimurium bacteria in the presence of a mammalian activating system. Recent work done by M. Anderson, at the Danish School of Pharmacy in Denmark and published in the Scandinavian Journal of Work and Environmental Health, also shows a positive. There is not full agreement in the scientific community on the significance of these Ames test results and their relationship to human safety in the risk of cancer in man.

**DEVELOPMENTAL TOXICITY.:** Rats were exposed to polymeric MDI at air concentrations of 0, 1, 4 and 12 mg/m<sup>3</sup> during days 6 – 15 of gestation. Maternal Toxicity (including mortality) was observed at the highest concentration of 12 mg/m<sup>3</sup> accompanied by embryo and fetal toxicity. However, no teratogenic effects were observed even at this lethal concentration.

**OTHER TOXICITY DATA:** No conclusive evidence has been developed to indicate that the MDI is carcinogenic, teratogenic or that it causes reproductive effects in animals or in humans.

**TOXICITY DATA FOR MUTAGENICITY:** MDI has been reported by NIOSH to be mutagenic to salmonella typhimurium bacteria in the presence of a mammalian activating system. Recent work done by M. Anderson, at the Danish School of Pharmacy in Denmark and published in the Scandinavian Journal of Work and Environmental Health, also shows a positive result for the MDI. There is not full agreement in the scientific community on the significance of these Ames test results and their relationship to human safety in the risk of cancer in man.

**OTHER TOXICITY DATA:** No conclusive evidence has been developed to indicate that the MDI is carcinogenic, teratogenic or that it causes reproductive effects in animals or in humans.

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## SECTION 13 – ECOLOGICAL INFORMATION

**Aquatic Toxicity:** LC50 – 24 hours (static): Greater than 500 mg/liter for Daphnia magna, Limnaea stagnalis, and Zebra fish (Brachydanio rerio) for both polymeric and monomeric MDI.

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## SECTION 14 – DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Disposal should be done in accordance with Federal (40CFR Part 261), state and local environmental control regulations. If waste is determined to be hazardous, use licensed hazardous waste transporter and disposal facility.

**EMPTY BAG PRECAUTIONS:** After opening a small amount of residual resin material is present on the inside of the sealed pouches. This material will cure in an hour or so from the ambient humidity. Once the material has cured it poses no known hazard.

**UNUSED MATERIAL:** Unused material should be allowed to cure in the ambient humidity. This takes an hour or so. Once the material is cured it can be handled and poses no known hazard.

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## SECTION 15 – TRANSPORTATION INFORMATION

**DOT PROPER SHIPPING NAME:** DIPHENYLMETHANE-4,4' DIISOCYANATE SOLUTION

**DOT HAZARD CLASS:** NOT REGULATED FOR SHIPMENTS OF LESS THAN 74,540 POUNDS PER CONTAINER. EMERGENCY RESPONSE GUIDE NUMBER: 55

**DOT UN/NA NUMBER:** NOT APPLICABLE

**PACKING GROUP:** III

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## SECTION 16 – REGULATORY INFORMATION

### U.S. FEDERAL REGULATIONS AS FOLLOWS:

**OSHA:** Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

**OSHA SECTION 313:** This product contains the following substances subject to the reporting requirement of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER:	WT % IS LESS THAN
4,4'-Diphenylmethane diisocyanate	101-68-8	.5%

### TOXIC SUBSTANCES CONTROL ACT: INVENTORY STATUS

The chemical substances in this product are on the TSCA Section 8.

**EXPORT NOTIFICATION:** This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

CHEMICAL NAME	CAS NUMBER
Diisodecyl phthalate – DIDP	68515-49-1
Monochlorobenzene	108-90-7

**OSHA STATUS:** This product is a hazardous under the criteria of the Federal OSHA Hazard Commission Standard 29 CFR 1910.1200.

**TSCA STATUS:** On TSCA Inventory.

**CERCLA REPORTABLE QUANTITY:** 500 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 313–4,4' Diphenylmethane diisocyanate (CAS# 101-68-8) Approximately 0.5%.

**RCRA STATUS:** This product is not listed as a hazardous waste. To the best of our knowledge, this product does not meet the criteria of a hazardous waste when it is discarded in its purchased form. However under RERA, it is the responsibility of the user of this product to determine, at the time of disposal, whether a product meets any of the criteria for a hazardous waste. This is because the product transforms during use.

The following chemicals are specifically listed by individual states; other product specific health and safety 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 %	StateCode
4,4'diphenylmethane diisocyanate (MDI) 101-68-8	0.5	PA1, FL, IL, RI, NJ1, NJ4, CN2
Diphenylmethane diisocyanate 26447-40-5	7.7	NJ4
Polyisocyanate, based on MDI NJTSRN (31765300002)	27	PA3, NJ4 5317P

FL – Florida substance act

IL – Illinois toxic substance list

MA – Massachusetts hazardous substance list

NJ1 – New Jersey hazardous substance list

NJ2 – New Jersey other - other in 5 predominant ingredients > 1%

NJTSRN – New Jersey trade secret registry number

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 .1%

PENNSYLVANIA RIGHT-TO-KNOW: The following non-hazardous ingredients are present in the product at greater than 3%:  
-----CHEMICAL NAME----- CAS NUMBER Titanium dioxide 53320-86-8

**CALIFORNIA PROPOSITION 65:** This product does not contain any chemicals regulated under California Proposition 65.  
INTERNATIONAL REGULATIONS AS FOLLOWS:

**CANADIAN WHMIS:** This MSDS has been prepared in compliance with Controlled Product Regulations except for use of the 16 headings.

**CANADA WHMIS CLASS:** No information available.

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## SECTION 17 – OTHER INFORMATION

**NEPA 704M RATINGS: Health 3    FLAMMABILITY: 1    REACTIVITY: 1**

**WHMIS RATINGS – HEALTH: 2\*    FLAMMABILITY: 1    REACTIVITY: 1**

\* - Indicates a chronic hazard: see Section 3

**REASON FOR REVISION:** Reformatting.

**VOLATILE ORGANIC COMPOUNDS (VOCS):** 0.0 lbs./gal.    0 grams/lt.

**LEGEND:** N.A. – Not Applicable, N.E. – Not Established, N.D. – Not Determined

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**Notice:** The information contained herein is provided in good faith and to the best of our knowledge and belief, accurate. However StrongBack Corporation makes no representation as to its completeness and accuracy. Customers are encouraged to make their own determination as to the suitability of this product for their purpose prior to use. Also, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.



NIXUS International Corporation  
P.O. Box 613588  
WaterSound, FL 32461

Tel: 850.267.1237 // Fax: 850.267.1604  
e-mail: [info@NIXUSstrongback.com](mailto:info@NIXUSstrongback.com)  
[www.NIXUSstrongback.com](http://www.NIXUSstrongback.com)