

# Material Safety Data Sheet



P. O. Box 1528 • MOUNT AIRY, NC 27030-1528  
336-789-9161 • FAX 336-789-9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

## PRODUCT IDENTIFICATION

**Trade Name:** NCFI 14-007 R  
**Chemical Name:** Mixture  
**Synonyms:** Polyurethane Resin  
**Chemical Family:** Polyol Resin System  
**Formula:** N/A  
**Date Prepared:** 10/08/14

## INGREDIENTS-HAZARD CLASSIFICATION

Name:	CAS NO.	%	PEL
1,1,1,3,3-pentafluoropropane (CF <sub>3</sub> CH <sub>2</sub> CHF <sub>2</sub> or HFC-245fa)	460-73-1	9	None Established 300 ppm TWA recommended
Trans-1,2-dichloroethylene <sup>1</sup>	156-60-5	2	200 ppm TWA

<sup>1</sup> Not listed as a carcinogen (NTA, IARC, OSHA)

## SHIPPING INFORMATION

Not regulated when shipped by land, water or air.

## PHYSICAL DATA

**Boiling Point (°F):** CF<sub>3</sub>CH<sub>2</sub>CHF<sub>2</sub>, 60°F  
**Solubility in Water:** Slight  
**Appearance and Odor:** Amber liquid, ethereal odor  
**Specific Gravity:** 1.19  
**% Volatile by Volume:** 11

## FIRE AND EXPLOSION HAZARD DATA

**Flash Point (test method):** After CF<sub>3</sub>CH<sub>2</sub>CHF<sub>2</sub> evaporation, >200°F (P-M)  
**Extinguishing Media:** Water, dry chemicals, CO<sub>2</sub>  
**Special Fire Fighting Procedures:** A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.  
**Unusual Fire and Explosion Hazards:** Overheated containers may rupture due to pressure produced by CF<sub>3</sub>CH<sub>2</sub>CHF<sub>2</sub>. CF<sub>3</sub>CH<sub>2</sub>CHF<sub>2</sub> burns to form acids and noxious gases.  
**Flammable Limits (vapor):** Lower: None; Upper: None

## REACTIVITY DATA

**Stability:** Stable  
**Polymerization:** Will not occur  
**Incompatibility:** Isocyanates and other chemicals that react with hydroxyl groups.  
**Hazardous Decomposition Products:** When burned; CO, CO<sub>2</sub>, NO<sub>x</sub>, aliphatic fragments, halogens, halogen acids and possibly carbonyl halides.  
**Conditions to Avoid:** Temperatures over 85°F  
**Conditions to Avoid:** N/A

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## HEALTH HAZARD DATA

**Permissible Exposure Limit:** None established.

**Effects of Overexposure:** May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.

### First Aid Procedures

**Eyes:** Flush with water for at least 15 minutes. See a physician if irritation develops.

**Skin:** Wash with soap and water at first opportunity.

**Inhalation:** Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.

**Ingestion:** Do not induce vomiting unless instructed to do so by a medical professional.

## SPECIAL PROTECTION INFORMATION

**Ventilation:** Local exhaust ventilation is recommended when working with this product. Uses requiring heating and/or spraying may require more ventilation or personal protective equipment.

**Respiratory Protection:** The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, *see OSHA standard 29CFR 1910.134*. All equipment must be NIOSH approved and maintained.

**Eye Protection:** Goggles or chemical safety glasses.

**Gloves:** Chemically resistant rubber or plastic.

**Other:** Avoid eye and skin contact. Eye wash system and showers should be available.

## SPILL OR LEAK PROCEDURES

Remove or extinguish ignition or combustion sources.

Contain spill. Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.

Wash area with detergent and water.

## SPECIAL PRECAUTIONS

Store between 65°F and 85°F out of sunlight. Keep tightly sealed. Relieve pressure slowly when opening container. R Component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations.

**CAUTION:** Under no circumstances should empty drums be burned or cut open with an electric or gas torch.

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## PRODUCT IDENTIFICATION

**Trade Name:** NCFI 14-007 A

**Chemical Family:** Aromatic Isocyanate

**Chemical Name:** Polymethylene polyphenylisocyanate

**Formula:** N/A

**Synonyms:** Polymeric MDI

**Date Prepared:** 10/08/14

## INGREDIENTS-HAZARD CLASSIFICATION

Name:	CAS NO.	%	PEL
Diphenylmethane diisocyanate (MDI) <sup>1</sup>	101-68-8	50	0.02 ppm ceiling
Higher polymers of similar structure	9016-87-9	50	None Established.

<sup>1</sup> Not listed as a carcinogen (NTA, IARC, OSHA)

## SHIPPING INFORMATION

Not regulated when shipped by land, water or air when packaged in single containers of 5000 pounds or less.

## PHYSICAL DATA

**Boiling Point (°F):** 625°F

**Specific Gravity:** 1.24

**Solubility in Water:** Insoluble, reacts

**% Volatile by Volume:** None

**Appearance and Odor:** Brown liquid, slight aromatic odor

## FIRE AND EXPLOSION HAZARD DATA

**Flash Point (test method):** 390°F (P-M)

**Extinguishing Media:** Water, dry chemicals, CO<sub>2</sub>

**Special Fire Fighting Procedures:** A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

**Unusual Fire and Explosion Hazards:** At temperatures above 400°F, MDI can polymerize/decompose causing pressure build-up in closed containers and possibly rupture. Avoid water contamination in closed containers which may cause rupture (CO<sub>2</sub> is evolved).

## REACTIVITY DATA

**Stability:** Stable

**Conditions to Avoid:** Contamination with water

**Polymerization:** May occur from contact with water, alcohols, glycols or other materials containing active hydrogens.

**Incompatibility:** Water, alcohols, amines, strong bases.

**Hazardous Decomposition Products:** By high heat or fire; CO, CO<sub>2</sub>, NO<sub>x</sub>, benzene, toluene, aliphatic fragments, traces of HCN

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## HEALTH HAZARD DATA

**Permissible Exposure Limit:** 0.02 ppm ceiling for MDI.

**Effects of Overexposure:** May cause skin or eye irritation upon contact. Inhalation of MDI vapors may cause breathlessness, chest discomfort, coughing and reduced pulmonary functions. Exposure may produce asthma-like symptoms, also may lead to allergic sensitivity.

### First Aid Procedures

**Eyes:** Flush with flowing water for at least 15 minutes, then obtain medical attention.

**Skin:** Remove contaminated clothing and wash off with soap & water.

**Inhalation:** Remove to fresh air, administer oxygen if necessary.

**Ingestion:** Drink large amounts of water. See a physician.

## SPECIAL PROTECTION INFORMATION

**Ventilation:** MDI has a very low vapor pressure at room temperature. General/local ventilation typically control exposure levels very adequately. Uses requiring heating and/or spraying may require more aggressive engineering controls or personal protective equipment. Monitoring is required to determine engineering controls.

**Respiratory Protection:** The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, *see OSHA standard 29CFR 1910.134*. All equipment must be NIOSH approved and maintained.

**Eye Protection:** Wear goggles or chemical safety glasses.

**Gloves:** Chemically resistant rubber or plastic.

**Other:** Avoid eye and skin contact. Eye wash system and safety showers should be available.

## SPILL OR LEAK PROCEDURES

Contain spill. Absorb with sawdust, etc., and shovel into open top drum. Decontaminate absorbent and spill area with 2% detergent/water solution. Let waste stand for 1 to 2 days, then dispose of waste in a licensed facility. Respiratory protection/ventilation is recommended during clean-up.

## SPECIAL PRECAUTIONS

Store between 65°F and 85°F out of sunlight. Keep tightly sealed to prevent moisture contamination. Relieve pressure slowly when opening container. Once opened, protect contents from water with dry atmosphere (-40°F dew point). If isocyanate becomes contaminated, do not reseal. Empty isocyanate drums or other container should be decontaminated by filling with water or decontamination solution, preferably outdoors. Allow to stand for 24-48 hours, open to the atmosphere. DO NOT SEAL DRUMS OR CONTAINERS. Drain the drums and puncture to prevent reuse. Dispose of as ordinary industrial waste.

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Date Prepared: 7/20/04

## SARA 313 INFORMATION

The isocyanate (A) component product of this NCFI system contains the following chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, EPCRA Section 313 (40 CFR 372) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CERCLA RQ</u>	<u>CONCENTRATION</u>
Methylene Bis Phenylisocyanate (Same as Diphenylmethane diisocyanate (MDI))	101-68-8	5000 lbs.	See MSDS – A Component
Polymeric Diphenylmethane diisocyanate	9016-87-9		See MSDS – A Component

The resin (R) component product of this NCFI system contains the following chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, EPCRA Section 313 (40 CFR 372) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CERCLA RQ</u>	<u>CONCENTRATION</u>
Trans-1,2-dichloroethylene	156-60-5	1000 lbs.	See MSDS – R Component

## IMPORTANT NOTICE

This notification is a part of the Material Safety Data Sheet document and must not be detached. Any copying and redistribution of the Material Safety Data Sheet shall include copying of this notice and attaching the copy to the redistributed Material Safety Data Sheet copies.

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**NCFI SPRAY SYSTEM 14-007**

**DESCRIPTION:**

NCFI 14-007 is a two-component, HFC-245fa blown, all PMDI based spray polyurethane foam system designed for use as an insulation material. NCFI 14-007 has been formulated to spray at 2.3–2.7 pcf depending on typical lift thicknesses of 0.75 to 3 inches and it is available in seasonal speeds.

**DISTINGUISHING CHARACTERISTICS:**

- Excellent Physical Strength Properties
- Excellent Insulation Properties
- Good Interlayer Adhesion
- Low Moisture Vapor Transmission

**TYPICAL RESIN PROPERTIES:**

	<u>14-007 R</u>	<u>14-007 A</u>
Viscosity	600 cps	200 cps
Lbs./Gallon	9.9 lbs.	10.2 lbs.
Appearance	transparent, dark liquid	transparent, brown liquid
Shelf Life	6 months	6 months

**MIX RATIO:**

	<u>14-007 R</u>	<u>14-007 A</u>
By Volume	100 parts	100 parts

**TYPICAL REACTION PROPERTIES:**

Hand Mix @ 50°F

	<u>Summer</u>	<u>Spring/Fall</u>
Cream Time	7 seconds	6 seconds
Tack Free Time	16 seconds	12 seconds
Rise Time	28 seconds	22 seconds

Machine Spray @ 130°F

Tack Free Time	8 seconds	5 seconds
Firm Time	180 seconds	130 seconds

**TYPICAL PHYSICAL PROPERTIES:**

Core Density	2.5 pcf
ASTM D 1622	
Compressive Strength	
@ Yield	35 psi
ASTM D 1621	
Closed Cell Content	>95%
NCFITM-300	
Water Absorption,	0.026 lbs/ft <sup>2</sup>
ASTM D 2842	
Dimensional Stability, 28 day, ASTM D 2126	
200°F dry heat	3.5% vol change
-20°F cold	0.3% vol change
158°F/100% RH	4.0% vol change
k-factor, initial	0.160 BTU-in./hr.sq.ft.°F
ASTM C 518	
Resistance to Solvents	Excellent
Maximum Service Temp	180°F

\*The above values are average values obtained from laboratory experiments and should serve only as guide lines.



## NCFI 14-007 APPLICATION INFORMATION

### EQUIPMENT AND COMPONENT RATIOS:

NCFI 14-007 should be sprayed using standard spray equipment with 1/1 by volume proportioning pumps capable of maintaining 800-1200 psi dynamic pressure. The Graco Reactor E-30 with a Fusion gun is preferred. Preheater temperatures should be set at a minimum of 115 - 130°F. 130°F is the optimum process temperature. NCFI 14-007 R is connected to the **resin/polyol** pumps with NCFI 14-007 A being connected to the **isocyanate** pumps.

### STORAGE AND USE OF CHEMICALS:

Keep temperature of chemicals at 70°F for several days before use. Cold chemicals can cause poor mixing, pump cavitation or other process problems due to higher viscosity at lower temperatures. Storage temperature should not exceed 80°F. Prolonged exposure to temperatures below 60°F can cause the 'A' component to freeze. Do not store in direct sunlight. Keep drums tightly closed when not in use and under nitrogen pressure of 2 - 3 psi after they have been opened.

### PREPARATION OF SURFACE TO BE SPRAYED:

All surfaces to be sprayed should be clean, dry, and free of dew or frost. All metal to which foam is to be applied must be free of oil, grease, etc.

### OPTIMUM ADHESION TEMPERATURE OF SURFACE TO BE SPRAYED:

On general work where the surface to be sprayed will remain at ambient temperature or cooler, the surface should be between 70°F and 120°F. In this range the warmer the surface the better the adhesion.

### SAFE HANDLING OF LIQUID COMPONENTS:

Use caution in removing bungs from the container. Loosen the small bung first and let any built up gas escape before completely removing. Avoid prolonged breathing of vapors. In case of chemical contact with eyes, flush with water for at least 15 minutes and get medical attention. For further information refer to "MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal" publication AX-119 published by the Center For The Polyurethanes Industry 1300 Wilson Blvd, Suite 800, Arlington, VA 22209.

### Caution:

Polyurethane products manufactured or produced from this liquid system may present a serious fire hazard if improperly used or allowed to remain exposed or unprotected. The character and magnitude of any such hazard will depend on a broad range of factors which are controlled and influenced by the manufacturing and production process, by the mode of application or installation and by the function and usage of the particular product. *Any flammability rating contained in this literature is not intended to reflect hazards presented by this or any other material under actual fire conditions. These ratings are used solely to measure and describe the product's response to heat and flame under controlled laboratory conditions.* Each person, firm or corporation engaged in the manufacture, production, application, installation or use of any polyurethane product should carefully determine whether there is a potential fire hazard associated with such product in a specific usage, and utilize all appropriate precautionary and safety measures.

The information on our data sheets is to assist customers in determining whether our products are suitable for their applications. The customers must satisfy themselves as to the suitability for specific cases. NCFI Polyurethanes warrants only that the material shall meet its specifications; this warranty is in lieu of all other written or unwritten, expressed or implied warranties and NCFI Polyurethanes expressly disclaims any warranty of merchantability, fitness for a particular purpose, or freedom from patent infringement. Accordingly, buyer assumes all risks whatsoever as to the use of the material. Buyer's exclusive remedy as to any breach of warranty, negligence or other claim shall be limited to the purchase price of the material. Failure to adhere strictly to any recommended procedures shall relieve NCFI Polyurethanes of all liability with respect to the material or the use thereof.

Origination date: 100814