



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 1: Identification

Product Identifier

Trade Name: R-11-025
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name: NCFI Polyurethanes **Phone:** (800) 346-8229
Address: 1515 Carter St Mount Airy, NC 27030 **Fax:** (336) 789-9586
Website: www.NCFI.com **Emergency Phone:** CHEMTREC: 800-968-793 (Toll Free)

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	•

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
460-73-1	4%	1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)
406-58-6	16%	1,1,1,3,3-Pentafluorobutane (C ₄ H ₅ F ₅ or 365mfc)
431-89-0	1%	1,1,1,2,3,3,3-Heptafluoropropane (C ₃ HF ₇ or 227mfc)

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	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.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by C ₄ H ₅ F ₅ /C ₃ HF ₇ . C ₄ H ₅ F ₅ /C ₃ HF ₇ burn to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 95°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
1,1,1,3,3-Pentafluoropropane ¹ (CF ₃ CH ₂ CHF ₂ or HFC-245fa)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹	TWA	None established
Trans-1,2-Dichloroethylene ¹	TWA	200ppm
1,1,1,3,3-Pentafluorobutane (C ₄ H ₃ F ₅ or 365mfc)	TWA	1000ppm recommended
1,1,1,2,3,3,3-Heptafluoropropane (C ₃ HF ₇ or 227mfc)	TWA	1000ppm recommended

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure 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, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Brown	Upper/lower flammability or explosive limits:	N/A
Odor:	Faint ammonia odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.23g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Highly soluble in water
Boiling pt/boiling range:	86°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F
-------------------	-------------------	----------------------------	--------

Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	N/A
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
-----------------	---

Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

MSDS Preparation Date:	07/14/2014
Revision Date:	

IMPORTANT NOTICES

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

This information is furnished without warranty, expressed, or implied, except that it is accurate to the best knowledge of NCFI. The data on this sheet relates only to the specific material designated herein. NCFI assumes no legal responsibility for use or reliance upon these data.



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 1: Identification

Product Identifier

Trade Name: A-11-025
Chemical Name: Diphenylmethane Diisocyanate (MDI)
Recommended Use: Component for production of polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name: NCFI Polyurethanes
Address: 1515 Carter St Mount Airy, NC 27030
Website: www.NCFI.com
Phone: (800) 346-8229
Fax: (336) 789-9586
Emergency Phone: CHEMTREC: 800-968-793 (Toll Free)

Section 2: Hazard Identification

Classification of the substance or mixture

GHS Classification:	
• Skin irritation, Category 2	• Acute toxicity, Inhalative, Category 4
• Sensitization of respiratory airways, Category 1	• Eye irritation, Category 2
• Carcinogenicity, Category 2	• Sensitization of the skin, Category 1
• Specific target organ toxicity (repeated exposure), Category 2	• Specific target organ toxicity (single exposure), Category 3

GHS Labeling:



Danger

Hazard Statements:	
• May cause an allergic skin reaction	• Causes skin irritation
• Harmful if inhaled	• Causes serious eye irritation
• May cause respiratory irritation	• May cause allergy or asthma symptoms or breathing difficulties if inhaled
• May cause damage to organs through prolonged or repeated exposure	• Suspected of causing cancer

Precautionary Statements:	
• Do not breathe dust/fume/gas/mist/vapors/spray	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• Wear protective gloves/eye protection/face protection	• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards: Persons with respiratory conditions should avoid handling this product.



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 3: Composition

Hazardous Components

Type of product: substance

CAS#	Weight %	Name
101-68-8	38.0%	Diphenylmethane-4,4'-diisocyanate (MDI)
26447-40-5	< 10.0%	MDI Mixed Isomers
9016-87-9	< 55.0%	P-MDI

Section 4: First Aid Measures

General:	Remove contaminated clothing
Inhalation:	Remove affected individual to fresh air and keep person calm. Assist in breathing if necessary. Immediate medical attention required.
Skin Contact:	Wash affected areas with soap and water. Seek medical attention for irritation.
Eye Contact:	Rinse for at least 15 minutes with water. Immediate medical attention required.
Ingestion:	Rinse mouth and drink plenty of water. Do not induce vomiting. Immediate medical attention required.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Carbon dioxide, foam, dry powder, water spray
Unsuitable extinguishing media:	High volume water jet
Special hazards arising from the chemical:	Burning releases CO, CO ₂ , oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide.
Precautions for firefighters:	Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods/material for containment and cleanup:	Remove mechanically; cover remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO ₂ ?). Keep damp in a safe ventilated area for several days.

Spill area can be decontaminated with the following recommended decontamination solution:

Decontamination Solution #1: 8-10% sodium carbonate and 2% liquid soap in water

Decontamination Solution #2: Liquid/yellow soap (potassium soap with ~15% anionic dense): 20 ml; Water: 700 ml; Polyethylenglycol (PEG 400): 350 ml



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 7: Handling and Storage

Precautions for safe handling:	Provide sufficient air exchange and/or exhaust in work rooms. Occupational exposure limits should not be exceeded (refer to Section 8). Contact with skin and eyes and inhalation of vapors must be avoided. Keep away from foodstuffs, drinks, and tobacco. Wash hands before breaks and at end of work.
Conditions for safe storage, including any incompatibilities:	Keep container tightly closed and protect against moisture. Segregate from bases. Store from 32F – 110F.

Section 8: Exposure Controls and PPE

Exposure Limits

Component	Type	Value
P-MDI	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³
Diphenylmethane-4,4'-diisocyanate (MDI)	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³

Exposure Controls

Respiratory Protection:	Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.
Hand, eye, skin, body protection:	Chemical resistant protective gloves should be worn to prevent all skin contact. Wear eye/face protection. Wear suitable protective clothing

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	liquid	Flammability	not applicable
Color	dark amber	Upper/lower flammability or explosive limits	
Odor	earthy, musty	Vapor pressure	0.00016 mmHg
Odor threshold	not established	Vapor density	not established
pH	not established	Relative density	1.24
Melting pt/freezing pt	3° C	Solubility(ies)	Reacts with water
Boiling pt/boiling range	> 300° C	Partition coefficient (n-octanol/water)	not established
Flash point	> 250° C	Auto-ignition temperature	not applicable
Evaporation rate	not established	Decomposition temperature	not established

Section 10: Stability and Reactivity

Chemical stability:	Polymerises at about 200° C with evolution of CO ₂
Possibility of hazardous reactions:	Exothermic reaction with amines and alcohols; reacts with water forming CO ₂ ; in closed containers, risk of bursting owing to increase of pressure
Conditions to avoid:	Avoid moisture
Incompatible materials:	water, alcohols, strong bases



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Hazardous decomposition products: carbon monoxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapors

Section 11: Toxicological Information

Acute toxicity (inhalation):	LC50: 490mg/kg , vapor, 4hr rat
Chronic toxicity:	2 years, inhalation; NOAEL: 0.2mg/m ³ , (rat, Male/Female, 6hrs/day 5 days/week)
Likely routes of exposure:	Skin, inhalation
Symptoms related to physical, chemical and toxicological characteristics:	Minor skin irritation; asthma-like symptoms
Delayed and immediate effects and chronic effects from short and long-term exposure:	Possible sensitization
Numerical toxicity measures:	

Section 12: Ecological Information

Ecotoxicity:	LC0: >1,000mg/l (Zebra fish 96 hrs) LC0: >3,000mg.l (Killifish 96hrs)
Persistence and degradability:	0%
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	Incinerate or dispose of in a licensed facility. Do not discharge substance/product into sewer system. Do not burn empty drums or cut open with gas or an electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.
------------------------	---

Section 14: Transport

Land transport

USDOT	Not classified as dangerous good
China	Not classified as dangerous good

Sea transport

IMDG	Not classified as dangerous good
-------------	----------------------------------

Air transport

IATA/ICAO	Not classified as dangerous good
------------------	----------------------------------

Further information

DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Refer to Section 15 for the RQ of this product.



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 15: Regulatory

Relevant safety, health, and environmental regulations:	
Inventory Status:	TSCA listed
US Regulations:	Not regulated
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	Methylene Bis Phenylisocyanate 101-68-8 5000 lbs. See MSDS – A Component (Same as Diphenylmethane diisocyanate (MDI) Polymeric Diphenylmethane diisocyanate 9016-87-9 See MSDS – A Component

Section 16: Other

MSDS Preparation Date:	07/02/2014
Revision Date:	

IMPORTANT NOTICES

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

This information is furnished without warranty, expressed, or implied, except that it is accurate to the best knowledge of NCFI. The data on this sheet relates only to the specific material designated herein. NCFI assumes no legal responsibility for use or reliance upon these data.



SAFETY DATA SHEET According to GHS

PO Box 1528 • Mount Airy, NC 27030-1528
800.346.8229 • Fax 336.789.9586 • www.NCFI.com

Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

APPLICATOR BULLETIN

JOBSITE SAFETY & VENTILATION

1. ONLY TRAINED APPLICATOR PERSONNEL WEARING REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE) SHOULD BE ALLOWED WITHIN 50 FEET OF THE SPRAY ZONE AND FOR 24 HOURS AFTER COMPLETION OF SPRAYING.
2. MARK THE AREA WITH WARNING TAPE AND SIGNAGE TO PREVENT UNPROTECTED PERSONS FROM ENTERING THE WORK ZONE. THIS INCLUDES THE AREA AT THE EXHAUST FAN OUTLET.
3. CREATE A VENTILATION PLAN FOR THE WORK ZONE. HOMEOWNERS SHOULD BE COMPLETELY EVACUATED DURING AND FOR 24 HOURS AFTER COMPLETION OF SPRAYING. LARGER STRUCTURES OR THOSE WITH MULTIPLE FLOORS CAN BE PARTITIONED AND ISOLATED WITH PLASTIC FILM SO THAT OTHER TRADES ON THE JOBSITE NOT WEARING PPE CAN CONTINUE TO WORK SAFELY.
4. MAKE SURE THAT IGNITION SOURCES AND HVAC SYSTEMS INCLUDING INLET VENTS ARE SHUT DOWN AND MASKED OFF TO PREVENT ACCIDENTAL USE DURING APPLICATION.
5. ACTIVE VENTILATION SHOULD BE USED WITH FAN(S) POSITIONED TO MAINTAIN A MINIMUM OF 30 ACH (AIR CHANGES/HOUR) TO EXHAUST VAPORS AND ODORS WHILE THE FOAM IS SAFELY CURED. VENTILATION PLANS WILL VARY ACCORDING TO SIZE OF THE SPACE, LAYOUT AND SCHEDULING.
6. FILTERS SHOULD BE USED OVER THE EXHAUST FAN INLET DURING SPRAYING TO PREVENT BUILDUP OF RESIDUE ON FAN BLADES WHICH WILL DECREASE AIR MOVEMENT SUBSTANTIALLY.
7. OPTIONAL INLET FANS CAN BE USED TO INCREASE AIR MOVEMENT, TAKING CARE THAT THE EXHAUST FAN IS MOVING AIR AT A GREATER RATE TO MAINTAIN NEGATIVE PRESSURE WITHIN THE SPRAY ZONE.
8. REFER TO NCFI PRODUCT STEWARDSHIP MANUAL, SFC GUIDANCE ON BEST PRACTICES FOR APPLICATION OF POLYURETHANE FOAM, www.sprayfoam.org AND EPA VENTILATION GUIDANCE www.epa.gov/dfe OR CALL NCFI AT 800-346-8229 FOR RECOMMENDATIONS BEFORE COMMENCING WORK.

NCFI SPRAY FOAM SYSTEM 11-025

DESCRIPTION:

NCFI 11-025 is a two component, one-to-one by volume, self-adhering, seamless, high insulating efficiency spray applied rigid polyurethane foam system. This NCFI system has been formulated with HFC-365mfc as the principal blowing agent. NCFI 11-025 is suitable for use in the NCFI Agrithane® insulation system as well as other insulation applications. Complies with ASTM C1029.

DISTINGUISHING CHARACTERISTICS:

- High R-Value
- Zero ODP
- Class II Vapor Retarder - Semi-impermeable @2"
- High Yields
- High Closed Cell Content
- Air Barrier
- Good Dimensional Stability
- Meets ASTM E-84, FS ≤ 25 , SD ≤ 450 at 4 inch Thickness
- FEMA Class 5 Flood Resistance
- Water Resistive Barrier

For proper use of this NCFI insulating material refer to the NCFI Application Information and any of the following codes or guides:

- International Building Code, (IBC), Chapter 26
- International Residential Code (IRC) Section R314 and R806
- API Fire Safety Guidelines for Use of Rigid Polyurethane and Polyisocyanurate Foam Insulation in Building Construction (AX230)

Installation Limitations Limits based on NFPA 286

When covered with 1/2" gypsum board	Maximum Thickness in walls	Maximum Thickness in Ceilings
11-025	8"	12"

TYPICAL PHYSICAL PROPERTIES:

Core Density - ASTM 1622	2.0 pcf
Compressive Strength ASTM D 1621	33 psi
Moisture Vapor Transmission - ASTM E 96	1.3 perm-in
Closed Cell Content ASTM D6226	>90%
R value @ 1 inch ASTM C 518	6.6
Air Permeance - Infiltration ASTM E 283 Exfiltration	0.000 cfm/ft ² @ 1.57 psf 0.000 cfm/ft ² @ 1.57 psf
Bacterial & Fungal Growth ASTM G 21 & E 1428	Negligible
STC - ASTM E 90 OITC	31* 24*
Flammability ASTM E-84 @ 4 inches	Flame Spread ≤ 25 Smoke Dev ≤ 450
Max Service Temperature	180°F

Note: The above values are average values obtained from laboratory experiments and should serve only as guide lines. Free rise core density should not be confused with overall density. Overall densities are always higher than free rise core densities and take into account skin formation, thickness of application, environmental conditions, etc.

* As measured in 2" x 4" studwall assembly

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.

NCFI 11-025 APPLICATION INFORMATION

EQUIPMENT AND COMPONENT RATIOS:

It is preferred that this system be processed with Graco Polyurethane Spray Equipment. 11-025R is connected to the resin pumps with 11-025A being connected to the isocyanate pumps. The proportioning pump ratio is 1 to 1. Graco preheater and hose temperature should be set at 130°F to give a good pattern. For high-pressure equipment, temperature settings may be slightly higher.

STORAGE AND USE OF CHEMICALS:

Keep temperature of chemicals above 70°F for several days before use. Cold chemicals can cause poor mixing, pump cavitations or other process problems due to higher viscosity at lower temperatures. Storage temperature should not exceed 90°F. Do not store in direct sunlight. Keep drums tightly closed when not in use and under dry air or nitrogen pressure of 2-3 psi after they have been opened. The shelf life of NCFI 11-025 is six months.

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. **R component will froth at elevated temperatures.** 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.

APPLICATION GUIDELINES:

11-025 is suitable for application to most construction materials including wood, masonry, concrete, and metal. 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.

The maximum thickness of each layer or pass of foam should be 2" and allow 10 minutes between each pass for cooling. Multiple layers can be applied to reach the desired R value.

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 10°F and 120°F. In this range the warmer the surface the better the adhesion. NCFI has two grades of 11-025 foam for this application range, G-series for 50°F to 120°F and M-series for temperatures 20°F to 70°F. For best results, when surfaces to be sprayed are cooler than 50°F a flash coat should be applied with the second coat following as soon as the original coat is no longer tacky to the touch.

GL— Warm weather at low altitudes

ML— Cold weather at low altitudes

WEATHER PROTECTION OF FINISHED FOAM:

The finished surface of sprayed polyurethane foam should be protected from adverse effects of ultraviolet rays of direct sunlight, which can cause dusting and discoloration. Protective coatings designed for use with polyurethane foam are available.

VAPOR BARRIER PROTECTION ON COLD STORAGE APPLICATIONS:

When NCFI sprayed polyurethane foam insulates structures subject to continuous cold temperatures, such as coolers and freezers, a Class I moisture vapor retarder (0.1 perm or less) is normally required on the "warm" side of the foam insulation. Contact NCFI for specific recommendations.

CODE-COMPLIANT FIRE RESISTANCE:

Where foam is sprayed over large areas of building interiors, building codes require the installation of an approved thermal barrier between the foam plastic insulation and the occupied space. ½" gypsum board or other tested and approved material may be installed as a thermal barrier. Refer to specific building codes for details. Contact NCFI Polyurethanes for specific alternate approvals for 11-025.

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 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 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 of all liability with respect to the material or the use thereof.