

## SPRAY FOAM SYSTEM 11-035

### DESCRIPTION:

NCFI 11-035 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 highly insulating HFO-1233zd as the principal blowing agent. NCFI 11-035 is suitable for use on tanks and temperature-controlled structures, and for air sealing structures as part of the NCFI Agrithane® insulation system.

### DISTINGUISHING CHARACTERISTICS:

- High R-Value
- Zero ODP
- Low GWP
- High Yields
- High Closed Cell Content
- Good Dimensional Stability
- Meets ASTM E-84, FS  $\leq 25$ , SD  $\leq 450$  at 4 inch Thickness
- FEMA Class 5 Flood Resistance

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

#### **APPLICATION AROUND PLASTIC PIPES:**

Based on a series of extensive studies, the 11-035 system can be applied in contact with PVC, CPVC, ABS, PP-R and PEX plastic pipes. The pipes must not be pressurized during the foam application. Each foam pass shall not exceed 2" thick, and a 10 minute cooling/curing time must be allowed between each subsequent pass. The total foam thickness is limited to that thickness permitted in that area of the building assembly.

#### **APPLICATION AROUND ELECTRICAL WIRES:**

Based on NCFI testing, the 11-035 system can be applied in contact with electrical wires. Spray foam applicators must spray the foam in such a manner that the expanding foam does not stretch and distort the wires. Light gauge wires which will be encapsulated in the foam layer should have the foam installed behind the wires and allowed to cool prior to applying a top layer to cover the wire. Use of a shallow lift of 3/4" of foam to cover the wire. Wait the required 10 minutes between passes when adding more foam thickness to achieve the desired R-value.

### TYPICAL PHYSICAL PROPERTIES:

Core Density - ASTM 1622	2.0 pcf
Compressive Strength ASTM D 1621	27 psi
Closed Cell Content ASTM D6226	>90%
R value @ 1 inch ASTM C 518	6.6
Bacterial & Fungal Growth ASTM G 21 & E 1428	Negligible
Flammability ASTM E-84 @ 4 inches	Flame Spread $\leq 25$ Smoke Dev $\leq 450$
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.

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 11-035 APPLICATION INFORMATION

## STORAGE AND USE OF CHEMICALS:

The 11-035 chemicals should be between 65°F and 80°F for proper processing through the spray equipment. Chemicals shipped during winter or summer months may need extra time in moderate temperature storage to stabilize back in the proper application range. Cold chemicals can cause poor mixing, pump cavitations or other process problems due to higher viscosity at lower temperatures. Storing chemicals above 90°F should be avoided as much as possible. 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 11-035 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 [www.spraypolyurethane.org](http://www.spraypolyurethane.org), Resources box, "Health and Safety Product Stewardship Workbook for High-Pressure Application of SPF".

## APPLICATION & SAFETY CONSIDERATIONS:

All spray foam applicators must evaluate the job prior to beginning the spray foam application. It is impossible to anticipate every issue and provide explicit guidance in this product data sheet. If there is a question regarding some aspects of the planned application, consult with NCFI for more guidance. The NCFI Product Stewardship Manual contains additional information and should be reviewed often enough by all foam applicators to remain familiar with the contents. The American Chemistry Council (ACC), the Center for the Polyurethane Industry (CPI) and the Spray Polyurethane Foam Alliance (SPFA) also publish information regarding the safe handling and application of spray foam chemicals.

## VENTILATION OF SPRAY AREA:

Spraying foam will generate mist and fumes with a distinct odor. For interior applications the building area must be vented with fresh air to dissipate the odor. The amount of air flow and time for venting will vary based on each situation. A closed area may require fans to force air into and out of the space. An open structure that does have the doors and windows installed may have sufficient air flow to vent the odor fairly quickly. Reentry time for closed-in areas being vented with fans is typically about 24 hours. Other workers should remain out of the immediate area during venting time period.

## APPLICATION GUIDELINES:

11-035 is suitable for application to most construction materials including wood, masonry, concrete, and metal. Application can be to the exterior or interior side of wall surfaces. 11-035 can be applied to surfaces that will be in contact with soil and intermittent contact with water, such as below grade exterior foundation and basement walls or under concrete slab floors. 11-035 may be applied to tanks or structures to provide air sealing. To ensure proper adhesion, all substrate surfaces should be dry, clean of dust or flaking surface rust, ice or frost.

All metal surfaces must be free of oil, grease, etc. Uncoated metals may require a primer coat. No flammable chemicals, such as wasp or hornet sprays, should be sprayed in the area of foam application 24 hours before the application. No such chemical can be sprayed after foam application until the foam has cooled to room temperature.

Spraying foam will generate heat. Foam which is applied too thick in single passes can build temperatures which will degrade cell structure and not produce foam with optimum properties. In the most extreme case, 11-035 could reach dangerously high temperatures inside the finished foam which could lead to splitting, charring, or even spontaneous combustion. The maximum pass thickness for 11-035 is 4 inches, and a 2 minute cooling time is required before adding additional foam passes. Multiple layers can be applied to reach the desired R-value.

## EQUIPMENT AND COMPONENT RATIOS:

This product is formulated to be sprayed with plural component pumping equipment specifically designed to spray polyurethane foam systems. R-11-035 is connected to the resin pumps with A-11-035 being connected to the isocyanate pumps. The proportioning pump ratio is 1 to 1. Preheater and hose temperatures should be set at 130°F to give a good pattern. Due to equipment variations, the application temperature settings may be adjusted to achieve a good spray pattern. For high-pressure settings above 1000 psi, temperature settings can be slightly lower.

## OPTIMUM ADHESION TEMPERATURE OF SURFACE TO BE SPRAYED:

The surface should be between 20°F and 120°F. In this range the warmer the surface the better the adhesion. For best results, when surfaces to be sprayed are cooler than 60°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.

## VAPOR BARRIER PROTECTION ON COLD STORAGE APPLICATIONS:

When NCFI sprayed polyurethane foam insulates structures 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.

## 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. On exterior applications where a masonry veneer or mechanically attached covering is to be installed, the 11-035 foam surface may be exposed to UV light up to 6 months.

If there are any questions regarding the application of the 11-035 system, contact a NCFI representative.

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.