

## 12-008 SPRAY FOAM SYSTEM TECHNICAL DATA

### DESCRIPTION:

InsulStar®Light 12-008 is a two component, one-to-one by volume, no-mix, self-adhering, seamless spray applied open-cell polyurethane insulation system. InsulStar®Light has been formulated with water as the blowing agent and does not contain CFC, HCFC, HFC or formaldehyde. InsulStar®Light is suitable for use in Type I, II, III, IV & V construction.

### DISTINGUISHING CHARACTERISTICS:

- Eliminates Convective Air Movement in Building Assemblies
- Good Sound Barrier
- High Yields
- Good Dimensional Stability
- Meets ASTM E84 Class A
- Air Impermeable Insulation
- Low VOC per CDPH Standard version 1.2 2017
- Fungal Resistant—ASTM C1338

R-Value* Chart ASTM C518	
Foam Thickness	R-value (°F·hr·ft <sup>2</sup> / Btu)
1.0"	3.7
3.5"	13
5.5"	21
8"	31
10"	38
11"	42
14"	54
16"	61

Note: As with all insulating materials, the R-value will vary with age and use conditions.

\*Based on 90 day aged testing of R-values at 1" and 3.5"

### TYPICAL PHYSICAL PROPERTIES:

Core Density ASTM C1622	0.4 - 0.5 pcf
Moisture Vapor Perm ASTM E96 Desiccant Method	28 @ 1"
Air Permeance @ 75Pa ASTM E2178	<0.02 L/s·m <sup>2</sup> @ 4"
Flammability - ASTM E84	@ 4 inches Flame Spread ≤ 25 Smoke Dev ≤ 450
Potential Heat—NFPA 259	506 Btu/ft <sup>2</sup> @ 1"
UL 94	HF-1
Sound Transmission - ASTM E90	STC - 41*
Noise Reduction - ASTM C423	NRC - 0.75
Sound Absorption - ASTM C423	SAA - 0.71
Max Service Temperature	180°F

Note: The above values are average values obtained from laboratory experiments and should serve only as guidelines. 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.

\*In a 2"x 6" wall assembly

For proper use of this NCFI insulating material refer to the NCFI Product Stewardship Manual and the following codes or guides:

- CCRR-0323 Code Compliance Research Report
- 2018 or 2021 International Building Code Chapter 26 or Residential Code Section R316 & R806
- Products, Resources, and Documents Library at [polyurethane.americanchemistry.com](http://polyurethane.americanchemistry.com)

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.

## 12-008 Application Information

### PREPARATION OF SURFACE TO BE SPRAYED:

To ensure proper adhesion, all substrate surfaces should be dry, clean of dust or flaking surface, loose scale, ice or frost. All metal surfaces must be free of oil, grease, etc. Uncoated metals may require a primer coat.

### STORAGE AND USE OF CHEMICALS:

The 12-008 system consists of the A2-000 component and the 12-008 B component. NCFI recommends the chemicals not be allowed to freeze. If suspected, refer to **NCFI SPF Chemical Temperature Controls & Storage Technical Bulletin**. For proper processing through the spray foam proportioning pumps, the chemicals should be between 60°F and 85°F. Chemicals shipped during winter or summer months may need extra time to reach the proper processing temperature range. Cold chemicals can cause poor mixing, pump cavitation or other processing problems. Keep drums tightly closed when not in use and under dry air or nitrogen pressure of 2-3 psi after they have been opened. When stored between 40°F and 90°F, the shelf life of unopened A2-000 is 24 months and 12-008 B component is 6 months.

### SAFE HANDLING OF LIQUID COMPONENTS:

Use caution in removing bungs from the container. Partially loosen the small bung first allowing any built up gas pressure to escape before completely removing it. 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 go to [www.spraypolyurethane.org](http://www.spraypolyurethane.org) and click on the Resources tab in the Professional Contractors section.

### EQUIPMENT AND COMPONENT RATIOS:

The 12-008 system, consisting of the 12-008 B Side drum and the A2-000 A Side drum, is formulated for spraying with a two component pump specifically designed for spray foam systems. The B component is connected to the resin pump and the A drum is connected to the isocyanate pump. The proportioning pump ratio is 1:1. DO NOT mix the B-side chemical while spraying. If the drum has been sitting for a number of weeks, the chemicals may be stirred with a drum mixer up to 10 minutes prior to spraying.

Recommended proportioner settings are:

Pre-heater Temperatures	130-140°F
Hose Temperature	130-140°F
Pressure Static	1200 psi
Pressure Dynamic	1000 psi

Note: These are only recommended starting points, and may need to be adjusted according to the specific mixing chamber, proportioner, hose lengths, ambient and substrate temperatures, and conditions. Adjust the settings to achieve a good spray pattern. For additional assistance contact NCFI Polyurethanes.

### CHANGING OVER FROM DIFFERENT SYSTEMS:

Closed cell and other foams are incompatible with the B side of 12-008. Therefore care should be taken to avoid the introduction of any other chemical system into the B side drum of 12-008. It is recommended to dedicate a stainless steel transfer pump to the B side of 12-008 to avoid the possibility of cross contamination. Before applying the 12-008 in a building assembly, spray out all of the changeover material, under pressure, onto cardboard or plastic film to flush out the hoses and pump. Under no circumstances should the user bleed out the spray lines containing incompatible foam back into the B-side 12-008 drum.

### OPTIMUM SUBSTRATE TEMPERATURE:

For general work, the surface to be sprayed should be between 50°F and 120°F. Within this range, the warmer the surface, the better the adhesion. For surfaces below 50°F, the spray applicator should spray a test area approximately 25 square feet and check for proper adhesion and cell structure. If both are satisfactory, then the spray application may continue.

### APPLICATION PASS THICKNESS:

Spraying foam will generate heat. The thicker the pass, the more heat will be generated. Heat will build up if the user does not wait for the foam to cool after each pass. Too much heat will degrade the foam's cell structure and the foam won't have optimum properties. The minimum pass thickness for proper chemical reaction is 3 inches. The maximum pass thickness is 10 inches. When spraying more than 6 inches in a single pass, the applicator must closely monitor the foam's adhesion and cell structure. Then wait 10 minutes or until the foam surface has cooled to ambient temperature before spraying on top of it. The number of passes to achieve the total insulation value is not limited.

### ATTIC AND CRAWLSPACE APPLICATION:

Building codes require an ignition barrier material over foam plastic insulations installed in attics and crawlspaces. The 12-008 system is approved for use with DC315 intumescent coating in lieu of the code-prescribed ignition barrier in attics and crawlspaces. The foam can be installed up to 8 inches thick on vertical surfaces and up to 14 inches thick on horizontal and overhead surfaces when covered with 7 wet mils of DC315.

### UNVENTED ATTIC APPLICATION:

The 12-008 system was tested per IBC Section 2603.9 and IRC Section R316.6 to qualify for application in an unvented attic with no ignition barrier covering. The attic space must be constructed in a specific manner with the attic access designed and installed in the attic floor. The 12-008 must be applied within the limitations of the approval. Refer to Intertek CCRR - 0323 or contact NCFI for specific details of the construction requirements.



## 12-008 Application Information

### APPLICATION AND SAFETY CONSIDERATIONS:

Before 12-008 is to be applied, there are many safety and application situations to consider. 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 application guideline. If there is a question regarding an aspect of the planned application, contact NCFI for more guidance. The NCFI Product Stewardship Manual contains additional information and should be reviewed often enough by all spray foam applicators to remain familiar with the contents. The American Chemistry Council (ACC), the Center for Polyurethanes Industry (CPI) and the Spray Polyurethane Foam Alliance (SPFA) also publish information regarding the safe handling and application of spray foam chemicals. If there are any questions regarding the application of the 12-008 system, contact NCFI.

### APPLICATION GUIDELINES:

12-008 is suitable for application to most construction materials including wood, masonry, concrete, and metal. 12-008 should not be applied to surfaces that will be in contact with soil or intermittent contact with water. To ensure proper adhesion, all substrate surfaces should be dry, clean of dust or flaking surface rust, ice or frost, oil, grease, etc. Uncoated metals may require a primer coat. 24 hours before spraying the foam, no flammable chemicals, such as wasp and hornet sprays, should be sprayed in the area where the foam will be applied. After the foam has been applied, no flammable chemical can be sprayed until the foam has cooled to ambient temperature.

### CODE-COMPLIANT FIRE RESISTANCE:

Building codes require the spray foam to be separated from the interior of buildings with an approved thermal barrier. Minimum ½ inch gypsum board or other approved thermal barrier, or DC315 may be installed in lieu of the thermal barrier. **There is no total thickness limitation when the foam is covered with a thermal barrier. The foam can be installed up to 8 inches in walls and 14 inches in ceilings when coated with 14 wet mils of DC315. Contact NCFI for additional information.**

### APPLICATION IN TYPE I, II, III, IV CONSTRUCTION:

InsulStar® Light 12-008 is approved for use in all types of construction. Specific requirements for applications in Type I, II, III, and IV construction are provided in Intertek CCRR-0323. Contact NCFI for additional details.

### VENTILATION OF SPRAY AREA:

Spraying foam will generate a 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 needed for venting will vary based on each situation. A closed attic area may require fans to force air into and out of the space. An open building that does not have the doors and windows installed may have sufficient air flow to vent the odor fairly quickly. Re-entry time for closed-in areas being vented with fans is about 24 hours. Other workers should remain out of the immediate area during this venting time period.

### APPLICATION AROUND PLASTIC PIPES:

Based on a series of extensive studies, the 12-008 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. Where the pipe is offset from a base wall, spray just enough foam to fill the space between the wall and pipe. Avoid spraying foam where it will expand and bow or stress the pipe. Wait at least 2 minutes for cooling purposes before spraying a top layer to cover the pipe. The foam layer covering the pipe should not exceed 6 inches in thickness to avoid excessive heat at the pipe-to-foam interface. After the pipe covering layer has cooled at least 2 minutes, additional foam passes can be applied.

### APPLICATION AROUND ELECTRICAL WIRES:

Based on NCFI testing, the 12-008 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 or distort the wires. When encapsulating light gauge wires in the foam, a foam layer should be installed behind the wires. Wait at least 2 minutes for cooling before applying the covering pass of foam.

### MOISTURE VAPOR RETARDER USE:

For applications in colder climates, building codes may require a vapor retarder on the warm side of the open cell foam. Consult the local building codes for information or contact NCFI Polyurethanes for further guidance.

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.