

ICYNENE® / 200 HFO

ICYNENE® HFO 200 is a two component, closed cell, spray applied, rigid polyurethane foam system. This product uses recycled plastic materials, rapidly renewable soy oils, and the blowing agent has zero ozone depleting potential. Icynene HFO 200 complies with the intent of the International Code Council's residential and commercial building codes and is commonly used as a thermal insulation, air barrier, vapor retarder and water resistive barrier in above grade, below grade, interior and exterior applications.

PHYSICAL PROPERTIES

ASTM D 1622	Core Density	2.0 – 2.4 lb/ft ³
ASTM C 518	Aged Thermal Resistance	R-7.4 @ 1" R-23 @ 3.5"
ASTM E 283	Air Leakage @ 75 Pa @ 1"	< 0.02 L/sm ²
ASTM E 2178	Air Permeance @ 75 Pa @ 1"	< 0.02 L/sm ²
ASTM E 96	Water Vapor Permeance Class II vapor retarder per IBC Section 202 @ 1"	0.91 perms
	Class II vapor retarder @ ≤ 1 perm	1"
ASTM D 2842	Water Absorption (volume)	0.3%
ASTM D 1621	Compressive Strength	31 psi
ASTM D 1623	Tensile Strength	44 psi
ASTM D 2126	Dimensional Stability @ 158°F (70°C) 97% R.H. (168 hours)	-3.7 (% volume change)
VOC Emissions	UL Environment (Greenguard Gold)	Meets Criteria
ASTM C 1338	Fungi Resistance	No fungal growth
ASTM D 2856	Closed Cell Content	98%
ASTM C 1029	Standard specification for spray applied rigid cellular polyurethane thermal insulation	Type II Compliant
ASTM D 6226	Open Cell Content	9.95%

FIRE TEST RESULTS

ASTM E 84	Surface Burning Characteristics, 4" thick Flame Spread Index Smoke Developed	Class I 12 350 –400
AC 377 Appendix X	Ignition Barrier – Compliant with 2012, 2015, 2018 & 2021 IBC and IRC, and ICC-ES AC-377 Appendix X, for use in attics and crawl spaces without a prescriptive ignition barrier or intumescent coating.	Pass
NFPA 285	Compliant with 2012, 2015, 2018 & 2021 IBC with brick, metal or aluminum cladding for exterior walls of Type I, II, III and IV buildings of any height. See UES 565 Tables for specific assembly requirements. Contact the Huntsman Building Solutions Engineering Department for assistance with alternate assemblies.	Pass
NFPA 286	Thermal Barrier - Compliant with the IBC and IRC, as an interior finish with an intumescent coating thickness found at the corresponding table.	Pass

THERMAL BARRIER THICKNESS REQUIREMENTS

Coating	Mils wet film thickness	Mils dry film thickness
DC 315	18	12
No Burn Plus ThB	18	12

RECOMMENDED PROCESSING PARAMETERS*

Initial Primary Heater A-Side (ISO) Setpoint**	92 - 106°F
Initial Hose Heat Setpoint**	102 - 115°F
Initial Primary Heater B-Side (Resin) Setpoint**	98 - 115°F
Initial Processing Setpoint Pressure	1200 - 1400 psi

RECOMMENDED PROCESSING PARAMETERS* (CONTINUED)

Drum Temperature During Storage	50 - 77°F
Drum Temperature During Processing	65 - 77°F
Substrate & Ambient Temperature	Summer ≥ 50°F Winter ≥ 15°F
Moisture Content of Substrate	≤19%
Moisture Content of Concrete	Concrete must be cured, dry and free of dust and form release agents.

*Foam application temperatures and pressures can vary widely depending on temperature, humidity, elevation, substrate, equipment and other factors. While processing, the applicator must continuously observe the characteristics of the sprayed foam and adjust processing temperatures and pressures to maintain proper cell structure, adhesion, cohesion and general foam quality. It is the sole responsibility of the applicator to process and apply Icynene HFO 200 within specification.

**It may be necessary to go outside of the recommended processing parameters or split temps due to ambient temps and material viscosity.

REACTIVITY PROFILE

Cream Time 0 – 1 seconds	Gel Time 2 seconds	Tack Free Time 3 – 4 seconds	End of Rise 3 – 4 seconds
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RECOMMENDED MAXIMUM PASS THICKNESSES

Maximum Pass	3"
Dual Pass (x" + x")	2" + 2"

Applicators should limit the application of this product to no more than a thickness of 2" per pass (after expansion) to avoid fire hazards (including spontaneous combustion) resulting from excessive heat generation. A second 2" layer may be applied immediately after the first one has fully risen. Alternatively, a single pass of up to 3" may be applied.

In either case, if subsequent passes are needed, applicators should wait until the core temperature of the foam has dropped below 100°F to allow any reaction heat to dissipate from the prior applications before attempting to reapply the product.

LIQUID COMPONENT PROPERTIES

PROPERTY	A-PMDI ISOCYANATE	ICYNENE HFO 200 RESIN
Color	Brown	Blue
Viscosity @ 77°F	180 - 220 cps	500 - 800 cps
Specific Gravity	1.24	1.17 - 1.21
Shelf Life of unopened drum properly stored	12 months	6 months
Storage Temperature	50 - 100°F	50 - 77°F
Mixing Ratio (volume)	1:1	1:1

*See SDS for more information.

RECYCLED & RENEWABLE CONTENT

Recyclable Content	19%
Renewable Content	6%

LIMITATIONS OF USE: Icynene HFO 200 is a combustible material with a maximum continuous service temperature of 180°F (82°C). Icynene HFO 200 should not be used in direct contact with chimneys, flues, steam pipes, recessed lighting or heat emitting devices. Consult the listing or label of such materials for clearance to combustibles. A minimum clearance of 3" should be maintained when applying around recessed lighting, and it's important to avoid spraying inside electric outlets or junction boxes. Properly prep and secure any material or surface that should not get insulated. If in doubt about the substrate temperature or surface conditions, a trial application should be conducted to check foam quality and spray performance. Water on the surface from rain, fog, condensation, etc. will react chemically with the isocyanate, adversely affecting the foam and physical properties, particularly adhesion. For further product and application knowledge reference this product's application guide and consult with a member of the Huntsman Building Solutions team.

GENERAL REQUIREMENTS: Equipment must be capable of delivering the proper ratio (1:1 by volume) of polymeric isocyanate (PMDI) and polyol blend at adequate temperatures and spray pressures. Substrate must be at least 5 degrees above dew point, with best processing results when ambient humidity is below 80%. Substrate must also be free of moisture (dew or frost), grease, oil, solvents and other materials that would adversely affect adhesion of the polyurethane foam. Icynene HFO 200 must be separated from the interior of the building by an approved thermal barrier or an approved finish material equivalent to a thermal barrier in accordance with applicable codes. Icynene HFO 200 must be sprayed at a minimum thickness of 1" per pass. This product must not be used when the continuous service temperature of the substrate or foam is below -60°F (-51°C) or above 180°F (82°C). Icynene HFO 200 should not be used to cover flexible ductwork.

DISCLAIMER: The information herein is to assist customers in determining whether our products are suitable for their applications. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute a warranty, expressed or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent inferred. All patent rights are reserved. The foam product is combustible and must be protected in accordance with applicable codes. Protect from direct flame and spark contact, around hot work for example. The exclusive remedy for all proven claims is replacement of our materials.

