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FLEX ISO-IV HIGH PERFORMANCE ROOF INSULATION HIGH WIND RATINGS…WITHOUT COVERBOARDS TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

FLEX ISO-IV is a closed-cell, polyiso foam core integrally laminated to heavy, durable and dimensionally stable coated-glass facers. FLEX ISO-IV is offered in a variety of thicknesses, providing long-term thermal resistance (LTTR) values from 6.0 to 25.0. It provides high wind uplift ratings ranging from FM 1-90 to FM 1-345.

FLEX ISO-IV is typically specified for BUR, modified bitumen, and single-ply membrane systems.

FLEX ISO-IV is CFC- and HCFC-free with zero ozone depletion potential (ODP) and zero (negligible) global warming potential (GWP).

TECHNICAL DATA

THICKNESS		LTTR VALUE	RSI	PCS/PKG	METAL DECK FLUTE SPANABILITY	
in	mm				in	mm
2.0	50.80	12.1	2.13	24	4.375	111.13
2.5	63.50	15.3	2.69	19	4.375	111.13
2.8	71.12	17.2	3.03	17	4.375	111.13
3.0	76.20	18.5	3.26	16	4.375	111.13
3.1	78.74	19.1	3.36	15	4.375	111.13
3.3	83.82	20.4	3.59	14	4.375	111.13

*LTTR (long-term thermal resistance) values were determined in accordance with CAN/ULC-S770 and ASTM C 1289, Annex A1. All test samples were third-party selected and tested by an accredited material testing laboratory.

Flex recommends multi-layering when desired insulation thicknesses are greater than 2.7 in.

** RSI is the metric expression of R-value (m^2 x K/W). To calculate the RSI, multiply the LTTR-value by .176.

FLEX ISO-IV FM APPROVALS TESTED RATINGS

FM RATING*	# OF FASTENERS OF 4' x 8' BOARD	# OF FASTENERS OF 4' x 8' BOARD	# OF FASTENERS OF 4' x 8' BOARD
	Field	Perimeter	Corner
1-90	6	16	24
1-105	12	24	32
1-120	12	24	32
1-135	16	24	32
1-150	16	TBD	TBD
1-240	24	TBD	TBD
1-345	32	TBD	TBD

*** Min. 2.0 in. thickness of ISO-IV required.**

INSTALLATION

Before installation begins, the roof deck should be firm, well attached, even, clean and dry. Proper attachment of the insulation is necessary to prevent roof failures. Flex is not responsible for any damage caused by improper attachment. Flex ISO products can be attached to decks that are approved by FM Approvals and local codes. Flex is not responsible for determining the suitability of the deck. Flex ISO products shall be kept dry before, during and after installation. Install only as much Flex roof insulation as can be covered the same day with completed roofing. Although Flex ISO has been designed to withstand normal foot traffic, protection from damage by construction traffic and/or abuse is extremely important. Roof surface protection such as plywood shall be used in areas where storage and staging are planned and heavy or repeated traffic is anticipated during or after installation. For further recommendations regarding attachment please contact Flex Technical Services.

MULTI-LAYER INSTALLATION

A two-layer application of ISO is strongly recommended. The joints in each layer should be offset in order to avoid a vertically continuous joint through the total insulation thickness. Two layers (or more) with joints staggered can provide improved insulation performance by eliminating thermal bridges. This method also reduces condensation potential and thermal stress on the roof membrane and limits air movement through the roof systems. For further recommendations regarding attachment please contact Flex Technical Services.

MECHANICAL ATTACHMENT

Mechanical fastening is the recommended method of attachment over nailable decks. Fastener frequency and spacing for steel, wood, cast-in-place structural concrete and poured gypsum decks are covered in the current Flex catalog according to the membrane system.

For further recommendations regarding attachment of insulation to lightweight insulating concrete decks or poured gypsum concrete decks, follow the instructions outlined in the NRCA Roofing and Waterproofing Manual. Flex ISO products shall not be adhered directly to these decks by any bitumen or adhesive attachment method.

ADHESIVE ATTACHMENT

For installing Flex ISO to a structural concrete deck, adhesive/bitumen attachment is the recommended method. When using hot bitumen on the concrete decks, priming is necessary. Precautions must be taken

to prevent bitumen drippage. When using hot-applied bitumen for insulation attachment, the temperature of the bitumen should be approximately 50°F below the interplay hand mopping EVT. The deck must be dry and care must be taken to apply the bitumen in sufficient quantity to totally cover the available deck surface. Use 18 to 30 pounds of bitumen per square to ensure proper attachment. To ensure embedment, the board must also be "stepped in" at several points while the bitumen is still hot enough to allow positive attachment. The recommended Flex ISO insulation size for hot bitumen attachment is 4' X 4'.

When using polyurethane adhesives or cold applied asphalt adhesive follow the adhesive manufacturer's installation recommendation.

VAPOR/AIR RETARDERS

Moisture vapor tends to migrate from warmer to cooler areas. In building construction, vapor/air retarders are used to inhibit or block the passage of warm, moisture-laden air into walls or roofing assemblies. To determine whether a vapor/air retarder is necessary, calculations based on interior relative humidity, interior temperature, and the outside design temperature must be performed. Consult the NRCA Roofing Manual for more information regarding vapor/air retarders and dew point calculations.

Special consideration should be given to construction-generated moisture as well. For example, construction-generated moisture will be released when concrete floor slabs are placed after the roof has been installed, which can drive large quantities of moisture into the roof system. Therefore, Flex is not responsible for damage to the insulation when exposed to construction generated moisture. Refer to the NRCA Roofing Manual for recommendations for the use of vapor retarder when construction generated moisture is present. Consult vapor/air retarder manufacturer for recommended applications and details.

STORAGE

Factory applied packaging is intended only for protection during transit. When stored outdoors or on the job site, the insulation should be stacked on pallets at least three inches above ground level and be completely covered with a weatherproof covering such as a tarpaulin. The temporary factory applied packaging should be slit or removed to prevent accumulation of condensation. Roof insulation that has become wet or damaged should be removed and replaced with new insulation of the same type.

PHYSICAL PROPERTIES

Property	Test Method	Typical Results
Dimensional Stability (Length and Width)	ASTM D 2126	<2%
Compressive Strength (10% Deformation)	ASTM D 1621	20 psi (138 kPa) 25 psi (172 kPa)
Water Absorption	ASTM C 209 ASTM D 2842	<1% <3.5%
Moisture Vapor Transmission	ASTM E 96	< 1.0 perm (85.0ng/(Pa●s●m²)
Product Density	ASTM D 1622	Nominal 2.0 pcf (32.04 kg/m³)
Flame Spread	ASTM E 84 (Full 10 min. test)	40-60*
Smoke Developed	ASTM E 84 (Full 10 min. test	50-170**
Tensile Strength	ASTM D 1623	>730 psf (35 KPa)
Service Temperature	-	-40 to 200 F**

* The numerical ratings as determined by ASTM Test Method E 84 are not intended to reflect hazards presented by this or any other material under actual fire conditions. A flame spread index of 75 or less and smoke development of 450 or less meet code requirements regarding flame spread and smoke development for foam plastic roof insulation. However, the codes exempt foam plastic insulation when used in roof deck constructions that comply as an assembly with FM 4450 or UL 1256 (see IBC, NBC, UBC, and SBS Sections on Foam Plastic Insulation (Chapter 26). Smoke development does not apply to roofing.

** ASTM C 1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

The physical properties listed above are presented as typical average values as determined by accepted ASTM test methods and are subject to normal manufacturing variation. Standard, Grade 2,20 psi. Non-standard, Grade3, 25 psi.

TECHNICAL ASSURANCE

Flex provides a full-service Technical Department with a LEED Accredited Professional (AP), Registered Roof Consultant (RRC), Construction Documents Technologists (CDT) and Certified Construction Product Representatives (CCPR) on staff.

WARNING – DO NOT LEAVE EXPOSED

This product is a polyiso organic plastic foam and will burn if exposed to an ignition source of sufficient heat and intensity, or open flame, such as a welder's torch. Like other organic materials this product will release smoke if ignited. Do not apply flame directly to Flex Roof Insulations. This product should be used only in strict accordance with Flex's recommended uses and application instructions.

LIMITATION OF LIABILITY

Other than the aforementioned representations and descriptions, Flex Membrane International, Inc. (hereafter, "Seller") makes no other representations or warranties as to the insulation sold herein. The Seller disclaims all other warranties, express or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose. Seller, does, however have a limited warranty as to the LTTR-value of the insulation, the terms of which are available upon request from the Seller.

The Seller shall not be liable for any incidental or consequential damages including the cost of installation, removal, repair, or replacement of this product. The Buyer's remedies shall be limited exclusively to, at Seller's option, the repayment of the purchase price or resupply of product manufactured by Flex in a quantity equal to that of the nonconforming product. Flex distributors, agents, salespersons or other independent representatives have no authority to waive or alter the above limitation of liability and remedies.

CODES AND COMPLIANCES

ASTM C 1289, Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi)
California State Insulation Quality Standards and Title 25 Foam Flammability Criteria (License #TC 1231)
CAN/CGSB-51.26-M86
CAN/ULC-S704
Federal Specification HH-I-1972/GEN and HH-I-1972/2, Class 1 has been canceled.
IBC, NBC, UBC, and SBC Sections on Foam Insulation (Chapter 26)

FM Standard 4450/4470 Approval
Flex ISO IV is approved for Class 1 insulated steel, wood, concrete and gypsum roof deck construction for 1-60 and 1-90.
Flex ISO IV (**min. 2.0 in. thickness**) is also approved for Class 1 steel roof deck construction for 1-90, 1-120, 1-150, 1-240, and 1-345 Windstorm Classifications. Refer to FM Approvals RoofNav for details on specific systems.

UL Standard 1256 Classification
Insulated metal deck construction assemblies – Construction No. 120, No. 123 and No. 292.

UL Standard 790 (ASTM E 108) Classification
Class A with most roof membrane systems. See UL Roofing Materials & Systems Directory.

UL Standard 263 Fire Resistance Classification (ASTM E 119)
Some classifications for fire resistance are P225, P230, P259, P508, P510, P514, P519*, P701, P710, P713, P717, P718, P719, P720, P722, P723, P724, P725, P727, P728, P729, P730, P732, P801, P814, P815, P818, P819, and P828. See UL Fire Resistance Directory for updated listings.

UL Certified for Canada

UL of Canada
Insulated Roof Deck Assemblies – Construction No.C34, Meets CAN/ULC-S126-M86, CAN/ULC-S101-M89, CAN/ULC-S-107-M87