

Nilflam®

CFC-FREE RIGID POLYISOCYANURATE INSULATION

DESCRIPTION

Nilflam® is a CFC-free rigid polyisocyanurate insulation which is manufactured as a continuous process. The closed cell composition gives the product excellent thermal properties. It is amongst the most thermally efficient insulation materials commonly available. Having a >90% closed cell structure it is highly resistant to moisture penetration and wicking. Nilflam® is lightweight, easily fabricated on site and is available in blocks up to 4 feet wide and 12 feet in length.

APPLICATION

Nilflam® is recommended for the thermal insulation of pipes, tanks and vessels etc with operating temperatures within the range of -290°F to +300°F (-180°C to +150°C). It will provide excellent performance with regard to insulation efficiency, moisture resistance, fire performance, environmental health, safety and cost under the most severe operating conditions. Although primarily designed for use as industrial thermal insulation material Nilflam's unique properties have lead to many areas of application including: oil refinery, chemical, liquid gas and cryogenic process plant; refrigeration pipework, equipment and transport; food processing and brewery industries; temperature controlled/cold store building panels; architectural construction panels and glass reinforced plastics.

AVAILABILITY

Nilflam® is available in the following form as standard:

Buns/block stock, preformed pipe insulation, curved segments, preformed elbows and fitting covers;

Standard density is 2.2 lb/ft³ [35 kg/m³] and is also available at densities 2.5 lb/ft³ [40 kg/m³], 2.8 lb/ft³ [45 kg/m³], 3 lb/ft³ [50 kg/m³], 3.75 lb/ft³ [60 kg/m³], 5 lb/ft³ [80 kg/m³], 6 lb/ft³ [100 kg/m³], 7.5 lb/ft³ [120 kg/m³] and 10 lb/ft³ [160 kg/m³].

ADVANTAGES

Nilflam® polyisocyanurate insulation exhibits one of the lowest K-values of any commonly available insulation material, thereby providing excellent thermal efficiency in addition to a thinner product. A thinner product often results in less surface area to jacket and/or coat and therefore greater material savings. Since the K-value remains virtually unchanged as Nilflam® ages, the thermal efficiency remains constant (unlike some other insulation materials). The closed cell structure prevents 'wicking', which preserves the integrity of the insulation system over long periods of time. This property is particularly valuable in humid conditions where moisture build-up can compromise the performance of lesser insulation materials. Nilflam® is CFC-free.

In a fire situation, Nilflam® does not melt or produce flaming droplets. When subjected to fire, its outer surface forms a strong carbonaceous layer that retards further flame spread and penetration. When tested to ASTM E 84 it achieves a flame spread of less than 25.

TECHNICAL DATA (TYPICAL VALUES)

Color
Pink

Thermal Conductivity (ASTM C 177)
(180 day aged)

Units: Btu in/hr ft ² °F		Units: W/mK	
-269°F	0.08	-176°C	0.012
-149°F	0.13	-101°C	0.019
-63°F	0.14	-53°C	0.020
-16°F	0.14	-27°C	0.020
+30°F	0.14	-1°C	0.021
+75°F	0.16	+24°C	0.023
+147°F	0.19	+64°C	0.028

Nominal Density (ASTM D 1622)
2.2 lb/ft³ (35 kg/m³)

Temperature Limits
-290°F to +300°F (-180°C to +150°C)

Compressive Strength (ASTM D 1621)

At ambient

Parallel to rise 29.0 lb/in² (200 kPa)
Perpendicular to rise (length) 23.0 lb/in² (160 kPa)
Perpendicular to rise (width) 22.0 lb/in² (150 kPa)

At -265°F (-165°C)

Parallel to rise 29.7 lb/in² (205 kPa)
Perpendicular to rise (length) 25.0 lb/in² (173 kPa)
Perpendicular to rise (width) 26.0 lb/in² (180 kPa)

Tensile Strength (ASTM D 1623)

At ambient

Parallel to rise 45.0 lb/in² (315 kPa)
Perpendicular to rise (length) 40.0 lb/in² (276 kPa)
Perpendicular to rise (width) 31.0 lb/in² (213 kPa)

At -265°F (-165°C)

Parallel to rise 39.0 lb/in² (269 kPa)
Perpendicular to rise (length) 32.7 lb/in² (225 kPa)
Perpendicular to rise (width) 27.0 lb/in² (186 kPa)

Coefficient of Linear Thermal Expansion (ASTM E 228)

75°F/-265°F : (23°C/-165°C)

Parallel to rise 18.7 x 10⁻⁶/°F (33.7 x 10⁻⁶/°C)
Perpendicular to rise (length) 30.8 x 10⁻⁶/°F (55.5 x 10⁻⁶/°C)
Perpendicular to rise (width) 37.0 x 10⁻⁶/°F (66.7 x 10⁻⁶/°C)

Cryogenic Thermal Stress Resistance Safety Factor

(330°F temperature differential)

Parallel to rise >1.5

Perpendicular to rise (length) >1.5

Perpendicular to rise (width) >1.5

Closed Cell Content (ASTM D 2856)

90% minimum.

Water Vapor Permeability (ASTM E 96)

4 perm inch (6.25 ng/Pa.s.m)

Chloride Content (ASTM C 871)

41 ppm.

Surface Burning Characteristics – Flame Spread Index (ASTM E 84)

25.

Niiflam® polyisocyanurate insulation is sold for commercial and/or industrial use only. Its use should be based on the design of the complete insulation system specified by professional engineers and consultants. All insulation should be applied in accordance with the National Commercial and Industrial Insulation Standards (1999 Fifth Edition), as published by MICA and endorsed by NIA.

Before applying any type of insulation, all equipment and piping surfaces must be dry, free of dirt, dust, grease, frost, moisture and any other imperfections. ASJ jacketed pipe sections must be applied with the circumferential joints sealed with ASJ tape or butt straps (included with ASJ jacketing material) and longitudinal laps sealed using self seal laps (SSL) or a pressure sensitive lap adhesive, in accordance with manufacturers recommendations. Corrosion of any metal under thermal insulation can occur for a variety of reasons. The use of corrosion inhibiting primers and vapor retarder coatings and/or facings will minimize corrosion potential. The potential user must perform all pertinent tests in order to determine

the suitability of Niiflam® polyisocyanurate insulation for the specific intended application. Final determination of product fitness for any and all potential and particular uses is the responsibility of the buyer. All orders are accepted subject to and sales made in accordance with the terms and conditions in the sellers invoice. Recommendations made by this company and its representatives are based upon test data, experiments and experience believed to be reliable. No guarantee of accuracy is made, however surface burning characteristics derived from ASTM E 84 are not intended to reflect hazards presented by this product under actual fire conditions. It is a condition of sale that the manufacturer in no event assumes liability beyond the purchase price of the products involved, but the manufacturer will refund the purchase price or replace materials found to be defective provided that the defects are reported in a timely fashion and in any event no later than six (6) months after shipment. No representative of the manufacturer and/or the seller has authority to alter or extend these conditions.

FOR FURTHER INFORMATION ON THE

NILFLAM® RANGE OF PRODUCTS

OR DETAILS ON YOUR LOCAL FABRICATOR PLEASE CONTACT

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