

DURATHERM® HFO

Low GWP, Zero ODP, Spray Insulation & Stabilisation

PRODUCT DESCRIPTION

Duratherm® HFO is a low global warming potential two component, 1:1 ratio, rigid foam system comprising of the 4th generation hydrofluoroolefin (HFO) blowing agent. When processed through suitable spray machinery (Graco, Gusmer, Glas-Craft) the product will produce a rigid foam of approximate density 40kg/m³ with exceptionally good compressive strength. Service Temp range -15°C to 70°C. When tested to BS476 Part 7 the foam achieves a class 1 surface spread of flame.

USES

Duratherm® HFO is used for

- Retrofit insulation/stabilisation for pitched/flat roofs
- New build insulation
- Loft conversions
- Commercial buildings
- Ocean going yachts/canal barges

Duratherm HFO can be used to upgrade the thermal performance of roofs, floors or walls of any property to meet current building regulations. Standard Duratherm® HFO should not be used on substrates below 5°C.

EQUIPMENT

Duratherm® HFO can be processed through all standard foam machines. The machine should be capable of maintaining the mix ratio at ±2% accuracy and controlling component temperatures at 40-50°C (variable).

RECOMMENDED MACHINE SETTINGS

Block Temperature	Minimum operating	100-120°F/40-50°C
Hose Temperature Reading	Minimum operating	100°F/40-50°C
Chemical Pressures	Minimum operating	500 psi

Not greater than 200 psi difference iso/resin

SPRAY TECHNIQUES

The guidelines in Isothane Limited's standard specification should be followed but the general requirements are:

- The substrate should be clean, dry and free of dirt, grease, oil and loose particles.
- In certain cases primer may be necessary to maximize adhesion.
- Climatic conditions must be suitable for spraying with regard to humidity and wind velocities.
- The foam should be built up in passes of not less than 15mm and no more than 10 minutes should elapse between passes.
- The requirements of any relevant Agreement Certificates or British Standards should be followed.



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Reg No 29752728

PHYSICAL PROPERTIES

Duratherm® HFO is a two component, modified polyurethane rigid foam which sprayed through suitable foam machinery gives a product of nominal density 45kg/m³.

Laboratory cup test results (typical)

Cream Time	3-5 seconds
Tack free time	10-16 seconds
Rise time	20-30 seconds
Free rise density	26-35 kg/m ³

STORAGE, HANDLING AND PERSONAL PROTECTION

Shelf life 6 months. The recommendations in our Safety Data Sheet for this product must be followed at all times. More general information is included in our publication "A Guide to the Safe Handling of Polyurethane Chemicals" and in "Decontamination of Isocyanates using Isothane Decontaminant".

TYPICAL PROPERTIES OF DURATHERM® FOAM CORE

		VALUE	TEST METHOD
Core Density		34 - 42 kg/m ³	BS EN 1602:2013
Compressive strength	Parallel to rise	220 kpa	BS4370
Closed cell content		>90%	ISO 4590
Thermal Conductivity	Aged <80mm	0.027 W/mK	BS EN 12667
	Aged 80-120mm	0.026 W/mK	BS EN 12667
	Aged > 120mm	0.025 W/mK	BS EN 12667
Water Vapour Transmission	Rate (g)	415.1 mg/(m ² h)	BS EN 12086:2013
Water Vapour Diffusion Resistance	Factor (μ)	42	BS EN 12086:2013
Dimensional Stability	-20°C	-0.53% vol	BS EN 1604
	70/90	+0.75% vol	BS EN 1604
	Level DS(TH)	3	BS EN 14315-1:2013

Burning characteristics – These are laboratory scale tests and bear no relation to the performance of the material in a real fire situation. Care must be exercised in the end use to satisfy the demands of the Fire Authorities and moral obligations to the safety of persons and property.

Surface spread of flame	Class 1	BS476 pt. 7
Ozone Depletion Potential	Zero	
Global Warming Potential	Less than 5	



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FIRE SAFETY WHEN STORING, HANDLING AND INSTALLING POLYURETHANE OR POLYISOCYANATE FOAM

THIS INFORMATION MUST BE MADE AVAILABLE TO OTHER TRADES PRESENT WHOSE ACTIVITIES MAY GIVE RISE TO A FIRE RISK

At the present stage of development, all rigid polyurethane or polyisocyanurate foam should be considered combustible and handled accordingly. Experience demonstrates that certain precautions must be taken to minimize the risk of fire in handling, storage and use. Whilst the flammability of rigid polyurethane or polyisocyanurate foams and fabrications vary considerably, it is prudent to take precautions: -

During application, care must be taken to build up the thickness of foam gradually, to avoid excessive heat build-up, scorching and possible combustion.

Prohibit open flames, cutting and welding torches, high surface temperature electric heaters (oil filled radiators and similar appliances are acceptable), high intensity lamps and smoking materials from foam storage and installation areas. If HOT WORK must be done near the exposed polyurethane or polyisocyanurate foams, the foam must be cut back to a distance of TWO METRES and the exposed foam protected by heat resistant blankets. It is also desirable to have a fire watch.

DO NOT CUT OR WELD METAL THAT IS IN CONTACT WITH RIGID POLYURETHANE OR POLYISOCYANURATE FOAM.

Polyurethane or polyisocyanurate foam must not come into direct contact with flue pipes or chimneys.

Approved Document J 1/2/3 Heat producing appliances gives advice as to the required actions to be taken with regard to the separation of flue pipes or chimneys from combustible materials. Where the temperature of the flue gases, under the worst operating conditions, is unlikely to exceed 260°C, flue pipes to gas or oil burning appliances should be separated from the foam by a non-combustible sleeve enclosing an air space of at least 25 mm around the pipe. With all other flue pipes one of the following actions must be taken:

- an air space of at least three times the diameter of the pipe must be left between the pipe and the foam
- a minimum thickness of 200 mm of solid non-combustible material must separate the pipe from the foam
- the pipe must be lagged with a minimum thickness of 25 mm of non-combustible material extending 150 mm above and below the proposed foam thickness, and an air space of at least 1½ times the diameter of the pipe, or at least 115 mm thickness of solid non-combustible material, must separate the pipe from the foam, or an air space of at least 1½ times the diameter of the pipe must be left between the pipe and the foam, with a non-combustible shield placed 12.5 mm away from the foam.

Provide fire extinguishers both at storage and installation sites. Water in a fine spray is usually effective in extinguishing plastic foam fires. Dry powder or Chemical Foam type extinguishers can also be used.

Waste foam should be disposed of regularly in a designated location with due regard for its combustible characteristics. It is important that the accumulation of waste foam should be avoided and that disposal is in accordance with prevailing legislation.

IT IS RECOMMENDED THAT WARNING NOTICES BE POSTED AT STORAGE AND INSTALLATION SITES INDICATING THE NEED FOR FIRE PRECAUTIONS.

(See BS 5499: part 1:1990 Specification For Fire Safety Signs)

IT IS ALSO RECOMMENDED THAT DUE REGARD IS TAKEN OF OTHER TRADES AND MATERIALS WHICH MAY BE PRESENT AT STORAGE AND INSTALLATION SITES.



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