

# DEFEND ALU/V DEFEND ALU POLYESTER DEFEND/V

SPECIAL ELASTOPLASTOMERIC DISTILLED POLYMER-BITUMEN  
WATERPROOFING MEMBRANES TO FORM A VAPOUR BARRIER

GRANTS *LEED* CREDITS

CATEGORY	CHARACTERISTICS			ENVIRONMENTAL						METHOD OF USE				
SPECIAL ELASTOPLASTOMERIC FOR SPECIFIC USES	WATERPROOF	VAPOUR BARRIER	REACTION TO FIRE	ECO GREEN	ASBESTOS FREE	TAR FREE	CHLORINE FREE	RECYCLABLE	NON DANGEROUS WASTE	EXHAUSTED OIL FREE	TORCH APPLICATION	HOT AIR APPLICATION	NAILING	APPLICATION WITH MOLTEN BLOWN BITUMEN

\* For waterproofing membranes with TEXFLAMINA underface finish only

## 1 PROBLEM

**ROOF**  Flat  Sloped

**SUBSTRATE**  Concrete  Wood  Previous membrane  Metal deck

## HOW TO KEEP THE THERMAL INSULATION OF A ROOF DRY

The increasingly common use of thermal insulation, the improved draught proofing of window and door frames and the use of double-glazing, etc. are all factors which tend to make condensation worse in buildings situated in cold climates where central heating is used for long periods during the winter months.

In winter, the partial pressure of the water vapour inside heated environments is higher than that outside, with the result that the vapour inside tends to move outside in order to compensate this difference in pressure.

In this movement the vapour permeates the walls and ceilings. In general, construction materials and almost all thermal insulation products are easily permeated by vapour.

In correct thermohygrometric conditions where the build-up of roofing insulation consists of layers with a decreasing resistance to vapour diffusion from the inside towards the outside, vapour can migrate easily without causing condensation.

In hot roof coverings however, the waterproofing layer has to be applied on top of the thermal insulation as a protection against rainwater but its high resistance to the passage of vapour prevents diffusion to the atmosphere. Vapour accumulates in the coldest area of the roofing and condenses inside the insulation which, when damp, loses its insulating properties. To counteract this problem in the build-up of roofing insulation, an extra layer which is resistant to vapour diffusion must be installed below the thermal insulation. This layer is called the "vapour barrier".

## 2 SOLUTION

**DEFEND**

The **DEFEND** Series membranes are used as a vapour barrier layer of thermal insulation materials in construction covers. These membranes consist of non-porous, elastoplastomeric polymer-bitumen which, in itself, is an excellent barrier against vapour migration.

There are three types of membranes:

**DEFEND/V** for the vapour barrier on roofings of rooms with low and medium humidity (RH at 20°C ≤ 80%). It is protected with a rot-proof reinforced fibreglass mat. It is also used as a sub-layer for double-layer waterproofing coats, to give dimensional stability to the top layer reinforced with polyester.

**DEFEND ALU/V** for the vapour barrier on roofings of insufficiently ventilated rooms with high humidity (RH at 20°C ≥ 80%). It is reinforced with a 60 micron aluminium foil, which is insuperable by vapour migration. The foil is associated with a fibreglass mat which increases its stability and mechanical resistance.

**DEFEND ALU POLYESTER** for the vapour barrier of movement susceptible floors, which cover insufficiently ventilated rooms with high humidity (RH at 20°C ≥ 80%). It is reinforced with a 12 micron aluminium foil coupled to a non-woven fabric in composite elastic polyester, stabilised with fibreglass. The upper face of the membrane is lined with fine silk screen printed talcum, whereas the lower face is lined with Flamina flame-melt embossed film. The adhesion of the membranes on the laying surface and sealing of the overlaps is carried out by flame, heating the lower face with a propane gas torch, until Flamina thermo-retracts, thus activating the adhesiveness of the compound.

## APPLICATION FIELDS

Membranes **DEFEND ALU/V** and **DEFEND ALU POLYESTER** are exclusively used as a vapour barrier, whereas **DEFEND/V** can also be used as an additional layer in the composition of waterproofing coats.

INDEX also produces special multi-purpose vapour barriers with the upper face embossed (bubble effect): **PROMINENT/V**, **PROMINENT**

**CE** INTENDED USE OF "CE" MARKING SPECIFIED ACCORDING TO THE AISPEC-MBP GUIDELINES

**EN 13707 - REINFORCED BITUMEN SHEETS FOR ROOF WATERPROOFING**

- Sub-layer or intermediate layer in multi-layer systems without permanent heavy upper protection (visible)
- DEFEND/V

**EN 13970 - BITUMEN WATER VAPOUR CONTROL LAYERS**

- DEFEND ALU/V
- DEFEND ALU POLYESTER
- DEFEND/V

**POLYESTER** and **PROMINENT ALU POLYESTER**. Flame applied insulating panels can be bonded on these barriers, without using melted bitumen. It also produces **DIFFUSER ALU/V**, with bitumen bubbles on the underside for draining vapour condensed upstream of the vapour barrier.

## ADVANTAGES

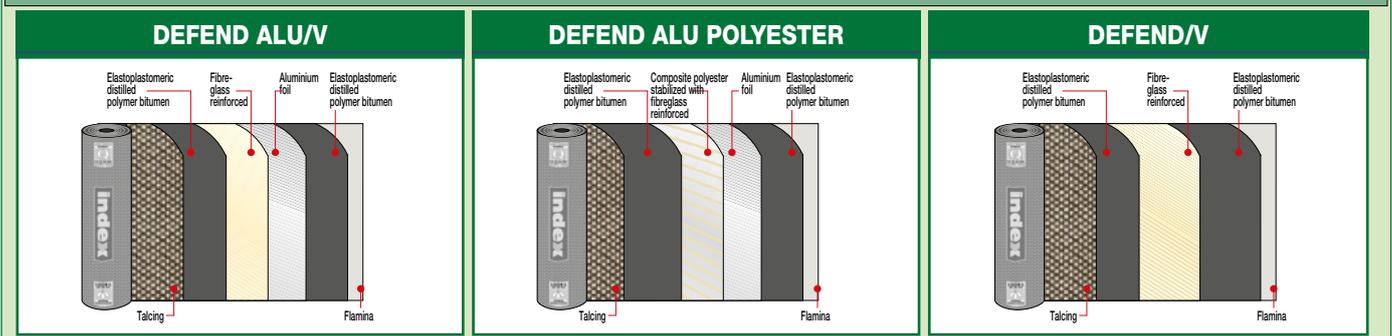
- Also the overlaps are impermeable to water vapour

# TECHNICAL CHARACTERISTICS

	Standard	T	DEFEND ALU/V			DEFEND ALU POLYESTER			DEFEND/V		
			Aluminium foil and fibreglass			Aluminium foil and non-woven composite polyester stabilized with fibreglass			Fibreglass		
Reinforcement			Aluminium foil and fibreglass			Aluminium foil and non-woven composite polyester stabilized with fibreglass			Fibreglass		
Thickness	EN 1849-1	±0,2	-	3 mm	4 mm	-	3 mm	4 mm	2 mm	3 mm	4 mm
Mass per unit area	EN 1849-1	±10%	2.0 kg/m <sup>2</sup>	-	-	2.0 kg/m <sup>2</sup>	-	-	-	-	-
Roll size	EN 1848-1	-1%	1x20 m	1x10 m	1x10 m	1x20 m	1x10 m	1x10 m	1x20 m	1x10 m	1x10 m
Watertightness	EN 1928 - B	≥	60 kPa	60 kPa		60 kPa			60 kPa		
Shear resistance L/T	EN 12317-1	-20%	450/350	450/350 N/50 mm		250/120 N/50 mm			300/200 N/50 mm		
Maximum tensile force L/T	EN 12311-1	-20%	450/350	450/350 N/50 mm		250/120 N/50 mm			300/200 N/50 mm		
Elongation L/T	EN 12311-1	-15% V.A.	3/3%	3/3%		15/20%			2/2%		
Resistance to impact	EN 12691 - A		NPD	700 mm		NPD			NPD		
Resistance to tearing (nail shank) L/T	EN 12310-1	-30%	NPD	70/70 N		100/100 N			70/70 N		
Flexibility to low temperature	EN 1109	≤	-10°C	-10°C		-10°C			-10°C		
Flow resistance at high temperature	EN 1110	≥	-	120°C		120°C			120°C		
Water vapour transmission • after ageing	EN 1931 EN 1296-1931	-20% -20%	μ = 1 500 000 NPD	μ = 1 500 000 NPD		μ = 1 500 000 NPD			μ = 100 000 NPD		
Reaction to fire Euroclass	EN 13501-1		E	E		E			E		
External fire performance	EN 13501-5		F roof	F roof		F roof			F roof		
Thermal specifications											
Thermal conductivity			0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK
Heat capacity			2.60 KJ/K	3.90 KJ/K	5.20 KJ/K	2.60 KJ/K	3.90 KJ/K	5.20 KJ/K	2.60 KJ/K	3.90 KJ/K	5.20 KJ/K

the numerous possible uses and the possible interference of conditions or elements beyond our control, we assume no responsibility regarding the results which are obtained. The purchasers, of their own accord and under their own responsibility, must establish the suitability of the product for the envisaged use.

## COMPOSITION OF THE MEMBRANE



## PRODUCT FINISHING



**EMBOSSING FLAMINA.** The embossing on the lower surfaces of the membranes finished with Flamina film makes it possible to lay the product precisely and quickly, forming a smooth surface when melted with the torch. It indicates the correct melting temperature and lets the film retract faster. The embossing also enables optimal vapour diffusion; in spot bonded and loose laid installation, in the points where it remains intact, preventing blisters and swelling.



**TALC SURFACING.** The talcing of the top face is carried out with a technique which evenly spreads the very thin talc over the top surface with a special pattern, preventing accumulation or zones without talc. This new system allow a quick unroll and gives the surface a pleasant aspect, which enable to torch it faster if compared to the other coarser mineral finishes.

The figures shown are average indicative figures relevant to current production and may be changed or updated by INDEX at any time without previous warning. The advice and technical information provided, is what results from our best knowledge regarding the properties and the use of the product. Considering

• FOR ANY FURTHER INFORMATION OR ADVICE ON PARTICULAR APPLICATIONS, CONTACT OUR TECHNICAL OFFICE • IN ORDER TO CORRECTLY USE OUR PRODUCTS, REFER TO INDEX TECHNICAL SPECIFICATIONS •

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