

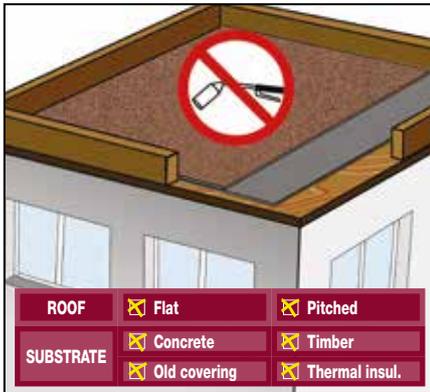
FLEXTER BIARMATO TEX POLYESTER MINERAL FLEXTER TEX POLYESTER FLEXTER 25/5 TEX POLYESTER FLEXTER BIARMATO FR TEX POLYESTER MINERAL FLEXTER FR TRIATEX POLYESTER

ELASTOPLASTOMERIC POLYMER-BITUMEN WATERPROOFING MEMBRANES WITH THEIR LOWER FACE COVERED IN TEXFLAMINA FINISH FOR LAYING WITH COLD ADHESIVES

GRANTS **LEED** CREDITS

CATEGORY	CHARACTERISTICS			ENVIRONMENTAL						METHOD OF USE	
EP	WATERPROOF	Reazione al fuoco	ECO GREEN	ASBESTOS FREE	TAR FREE	CHLORINE FREE	RECYCLABLE	NON DANGEROUS WASTE	EXHAUSTED OIL FREE	COLD ADHESIVE BONDING	APPLICATION WITH MOLTEN BLOWN BITUMEN
ELASTOPLASTOMERIC		REACTION TO FIRE									

1 PROBLEM



HOW TO BOND POLYMER-BITUMEN MEMBRANES WITH COLD ADHESIVE WITHOUT USING A TORCH

Polymer-bitumen waterproofing membranes for the building trade are traditionally bonded to the laying surface by heating the hot melt film that covers the lower face of the membrane with a propane gas torch. The film melts and shrinks, the bituminous mix softens and bonds to the laying surface as a hot adhesive (hot melt).

On cement surfaces (performed by trained professionals) the torch laying system does not imply any particular risks of injury or fire, or such risks are certainly lower compared to the old hot bitumen laying system; however, more precautions must be taken when laying on thermal insulation panels and on combustible surfaces such as wood boards, especially when these are laid over a ventilated air space.

Cold bonding with the specific bitumen adhesive MASTIPOL prevents the problems indicated above but the adhesion of membranes with their lower face covered in a hot melt film may deteriorate over time and, to guarantee optimal and durable adhesion, the surface of the membrane must be appropriately prepared.

2 SOLUTION

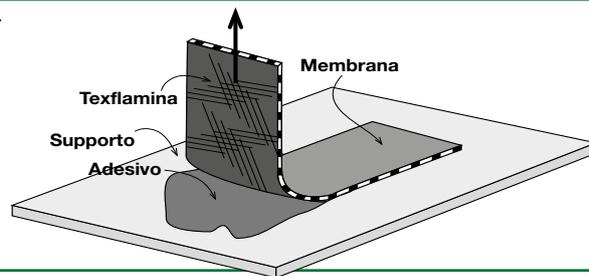
The **FLEXTER TEX** membranes suitable for cold application with adhesive have their lower face coated with a textile polypropylene finish, with a high specific surface area that guarantees a durable bond to the MASTIPOL bitumen adhesive appropriately designed for the purpose.

Even if only the overlaps are torch sealed and the vertical parts bonded with the same method, the risk of fire and explosion is reduced considerably, due both to the circumscribed use of the naked flame and to the considerable reduction in the number of propane gas cylinders used on site.

Furthermore, by bonding in total adherence

Surface finish of membrane	PEEL TEST (adhesion strength N/50 mm)			
	Bonding to concrete with melted oxidised bitumen		Bonding to concrete with MASTIPOL	
	New	After ageing (*)	New	After ageing (*)
Sand/talc	33	24	38	30
Texflamina	40	85	45	76

(*) Ageing: 25 d at 70°C.



CERTIFICATIONS



The FR versions pass the fire resistance test according to EN 1187/1 and are classified as compliant with EN13501-5: B_{roof}(t1).



The wind resistance of FLEXTER BIARMATO glued with MASTIPOL adhesive has also been certified.



For the FLEXTER BIARMATO FR (*) and MINERAL FLEXTER FR(*) membranes, the Dutch Research Institute BDA, after assessing work carried out over the years, has certified their durability as at least 30 years.



FLEXTER BIARMATO TEX and FLEXTER 25/5 TEX mixed with Preventol B2 additive are certified by the German Institute FORSCHUNGSANSTALT GEISENHEIM with the FLL method, compliant with standard EN-13948.

(*) distributed in Holland under the name of WEDEFLEX CRT, MINERAL WEDEFLEX CRT and WEDEFLEX D4, respectively.

with adhesive spread right over the whole surface, if the waterproof covering is accidentally ripped, only a minimum amount of water leaks around the damaged area. Therefore, the leak is much easier to find compared to a covering laid without adhesive or only glued partially. Bonding in total adherence also considerably reduces tension caused by thermal changes on exposed waterproof coverings, hence preventing the formation of folds. The further advantages offered by the cold laying system with the adhesive MASTIPOL are clear to see.

changes on exposed waterproof coverings, hence preventing the formation of folds. The further advantages offered by the cold laying system with the adhesive MASTIPOL are clear to see.

The membranes of the **FLEXTER TEX** series consist of an elastoplastic phase inversion mix with a base of selected distilled bitumen, polyolefin elastomers and plastomers from Catalloy polymerization processes and polymerised with metallocene catalysts, in which the continuous phase is the polymer component. Therefore, the polymer-bitumen mix is resistant at high and low temperatures and these properties remain constant over time. The membranes of the **FLEXTER TEX** series feature a textile finish of the lower face consisting of non-woven polypropylene fibre fabric TEXFLAMINA coupled at high temperature to the polymer-bitumen membrane.

This ensures strong adhesion of the fabric to the membrane in view of its fibrous nature, considerably increases the specific gripping surface to the adhesives and represents a very efficient adhesion intermediary, thus incrementing the glued membrane's resistance to peeling.

The TEXFLAMINA finish is designed for gluing with cold MASTIPOL adhesive but is also effective when bonding with molten oxidized bitumen laid hot. The TEXFLAMINA finish ensures durable and more effective bonding than that obtained on the surface of talcum-

treated or sand-treated membranes and unlike these, as can be seen from the table above, the adhesion force increases over time. When TEXFLAMINA is not glued in place, it acts as a sliding layer with low friction coefficient, better than the talcum and sand finish and even the plastic films normally coupled with the lower face of bitumen membranes. The TEXFLAMINA finish can also be melted with a torch or hot air and allows strong adhesion of the overlaps of the membrane.

Among the membranes of the **FLEXTER TEX** series of particular interest is **FLEXTER BIARMATO TEX**, which has double reinforcement with non-woven polyester fabric coupled with fibreglass mat positioned in the top part of the body of the membrane but still covered with a fine film of polymer bitumen that enables the easy and durable sealing of the overlaps. Double reinforcement is the oldest system used but still the most effective to guarantee the best dimensional resistance to heat of the membrane, especially in the initial drying phase of the adhesive when it is glued exposed on a strong thermal insulation product. Stabilisation with fibreglass mat also positively affects the thermal-mechanical reaction of the membrane at low temperatures; by reducing its thermal contraction towards the geometric centre of the roofing, in combination with gluing in total adherence, the formation of tension and perimeter folds of the waterproof covering by the corners and ends of the roof reliefs is reduced.

A dimensional stability similar to double reinforcement is offered by the triple reinforcement of the **MINERAL FLEXTER FR TRIATEX** membrane made up of fibreglass mat applied between the two layers of non-woven polyester fabric. This contributes to the membrane's fire resistance, such as in the case of the **FR** (Fire Resistance) version of **BIARMATO**, in combined action with the special additive added to the polymer-bitumen mix of these versions.

The flame retardant additive in the **FR** version is harmless, of mineral nature, does not contain chlorine and does not release toxic gases during combustion.

The **MINERAL FLEXTER TEX** and **FLEXTER 25/5 TEX** membranes have a composite reinforcement in non-woven polyester fabric stabilised with fibreglass in the longitudinal direction, which is the one most subject to the problem of hot shrinkage of membranes when exposed to the sun, in order to avoid the problem of the end joints slipping. Type **25/5** is stronger and thicker so that it can also be used on roofs subject to foot-traffic and in more demanding projects.

Finally, a specific anti-root additive can be

	INTENDED USE OF "CE" MARKING SPECIFIED ACCORDING TO THE AISPEC-MBP GUIDELINES
	<p>EN 13707 - REINFORCED BITUMEN SHEETS FOR ROOF WATERPROOFING</p> <ul style="list-style-type: none"> • Under layer or intermediate layer in multi-layer systems without permanent heavy surface protection <ul style="list-style-type: none"> - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX • Upper layer in multi-layer systems without permanent heavy surface protection <ul style="list-style-type: none"> - MINERAL FLEXTER FR TRIATEX - MINERAL FLEXTER TEX - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX • Exposed single-layer <ul style="list-style-type: none"> - MINERAL FLEXTER FR TRIATEX - MINERAL FLEXTER TEX - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX • Single-layer under heavy protection <ul style="list-style-type: none"> - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX • Under heavy protection in multi-layer systems <ul style="list-style-type: none"> - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX
<p>EN 13969 - BITUMEN DAMP PROOF SHEET INCLUDING BITUMEN BASEMENT TANKING SHEETS</p> <ul style="list-style-type: none"> • Membranes for foundations <ul style="list-style-type: none"> - FLEXTER 25/5 TEX - FLEXTER BIARMATO FR TEX - FLEXTER BIARMATO TEX 	

added to the versions **FLEXTER BIARMATO TEX** and **FLEXTER 25/5 TEX** used as waterproof coverings of "green" roofs.

APPLICATION FIELDS

FLEXTER TEX membranes bonded with MASTIPOL are used for waterproofing flat concrete roofs, both walkable, drivable and non-walkable, insulated and non-insulated, for waterproofing flat roofs in wood and in corrugated sheet with and without thermal insulation, for waterproofing intensive and extensive green roofs and for renovating old bituminous coverings. Further information on

ADVANTAGES

- **Eliminates/reduces the risk of fire and explosion.**
- **Adhesive coating considerably reduces water leakage if the covering is ripped and makes it easier to find the leak.**
- **Bonding in total adherence considerably reduces tension caused by thermal changes on exposed waterproof coverings, which prevents the formation of folds.**

LAYING MASTIPOL ADHESIVE



LAYING FLEXTER TEX MEMBRANES

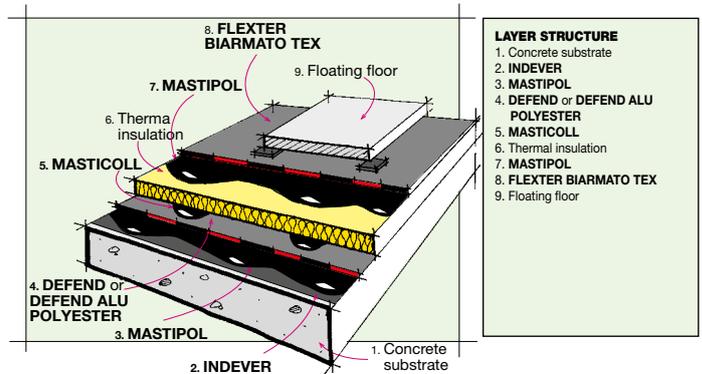
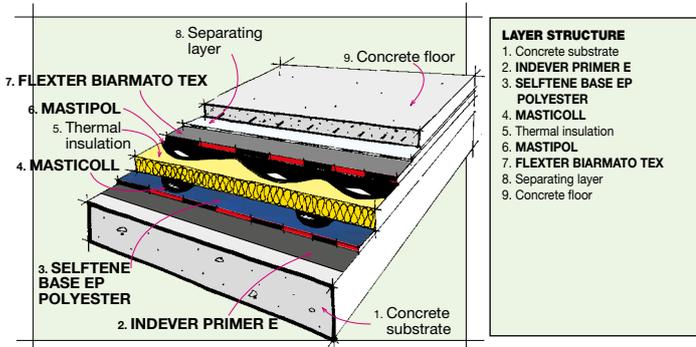


APPLICATIONS

Below are some examples of layer structures;
other solutions can be looked up in the specific "Guide to cold laying".



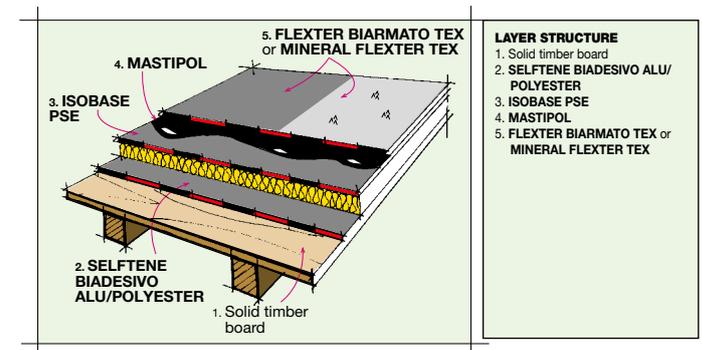
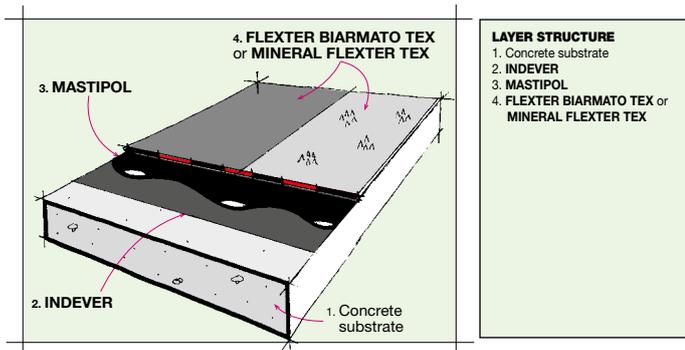
Flat roof walkable



Flat and sloping roof with facing coat

on concrete without thermal insulation

on timber with thermal insulation



layer structures that can be created can be found in the specific technical publication "Guide to laying **FLEXTER TEX** membranes with MASTIPOL cold adhesive", where there is also an explanation of laying thermal insulation with MASTIPOL cold adhesive, which completes the technique of laying waterproofing and thermal insulation while avoiding both the use of melted bitumen and the use of a flame.

uses the cold adhesive MASTIPOL while the overlaps are sealed and the vertical parts are bonded using a torch. In any case, with the available adhesives, in sites where there are special safety measures, as well as bonding the membranes with MASTIPOL on parts along the roof, it is possible to cold bond on the vertical parts and overlaps with HEAD-COLL bitumen adhesive, remembering that the seal of the joints is not as strong as that obtained by torch sealing or hot air sealing.

The maximum slope of the roof for laying with MASTIPOL must be less than 5% and the materials compatible with the adhesive are concrete, wood, metals, old bitumen coverings, polyurethane foam, rock wool and insulation made of perlite foam and cellulose fibres. For more information, consult the specific technical publication "Guide to laying with cold adhesives" and the technical data sheet of the adhesive MASTIPOL.

METHOD OF USE

In most cases where there are no particular restrictions, the bonding to the laying surface

Hot air sealing of overlaps and bonding onto small projecting parts, when allowed, eliminates the risk of fire and explosion connected with naked flames and propane gas cylinders.



TECHNICAL CHARACTERISTICS

	Standard	T	FLEXTER BIARMATO TEX POL.	MINERAL FLEXTER TEX POLYESTER	FLEXTER 25/5 TEX POLYESTER	FLEXTER BIARMATO FR TEX POL.	MINERAL FLEXTER FR TRIATEX POL.
Reinforcement			Feltro di vetro accoppiato a TNT di pol. da filo continuo Spunbond	Tessuto non tessuto di POLYESTER composito stabiliz. con fibra di vetro	Tessuto non tessuto di POLYESTER composito stabiliz. con fibra di vetro	Feltro di vetro accoppiato a TNT di pol. da filo continuo Spunbond	TNT di pol da filo continuo Spunbond triarmato e fibra di vetro
Thickness	EN 1849-1	±0,2	4 mm	4 mm	5 mm	4 mm	4 mm
Roll size	EN 1848-1	-1%	1x10 m	1x10 m	1x10 m	1x10 m	1x10 m
Watertightness • after ageing	EN 1928 - B	≥	60 kPa	60 kPa	60 kPa	60 kPa	60 kPa
Peel resistance L/T	EN 12316-1	-20 N	40 N/50 mm	40 N/50 mm	-	40 N/50 mm	-
Shear resistance L/T	EN 12317-1	-20%	500/500 N/50 mm	750/600 N/50 mm	900/800 N/50 mm	500/500 N/50 mm	650/550 N/50 mm
Maximum tensile force L/T	EN 12311-1	-20%	650/550 N/50 mm	850/700 N/50 mm	1100/900 N/50 mm	650/550 N/50 mm	750/600 N/50 mm
Elongation L/T	EN 12311-1	-15% V.A.	40/40%	50/50%	50/50%	40/40%	35/35%
Resistance to impact	EN 12691 - A		1 000 mm	1 250 mm	1 500 mm	1 000 mm	1 000 mm
Resistance to static loading	EN 12730 - A		15 kg	15 kg	20 kg	15 kg	15 kg
Resistance to tearing (nail shank) L/T	EN 12310-1	-30%	150/150 N	150/150 N	200/200 N	150/150 N	200/200 N
Dimensional stability L/T	EN 1107-1	≤	-0.20/+0.20%	-0.30/+0.30%	-0.30/+0.30%	-0.20/+0.20%	-0.25/+0.10%
Flexibility to low temp. • after ageing	EN 1109 EN 1296-1109	≤ +15°C	-20°C -15°C	-20°C -15°C	-20°C -15°C	-20°C -15°C	-20°C -10°C
Flow resist. at high temp. • after ageing	EN 1110 EN 1296-1110	≥ -10°C	140°C 140°C	140°C 140°C	140°C 140°C	140°C 140°C	140°C 140°C
UV ageing	EN 1297		Test passed	Test passed	Test passed	Test passed	Test passed
Reaction to fire Euroclass	EN 13501-1		E	E	E	E	E
External fire performance	EN 13501-5		F roof	F roof	F roof	B _{roof} (t1)	B _{roof} (t1) / B _{roof} (t3) / B _{roof} (t4)
Thermal specifications							
Thermal conductivity			0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK	0.2 W/mK
Heat capacity			5.20 KJ/K	6.00 KJ/K	6.50 KJ/K	5.20 KJ/K	5.20 KJ/K

Compliant with EN 13707 in terms of the resistance factor to steam penetration for reinforced polymer-bitumen membranes, the value of $\mu = 20\,000$ may be considered, unless declared otherwise.

The colour of the membranes may vary according to the storage time. The problem is resolved within 2-3 months of installation of the sheets. The colour of the membranes may vary according to the storage time. This is a normal phenomenon for this type of membranes and cannot be a reason for complaints. The same is valid for the maintenance of colour and the different shades that can be found on areas of the roof that are more or less exposed to artificially coloured membranes.

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

FLEXTER BIARMATO TEX POL. and BIARMATO FR	MINERAL FLEXTER TEX POLYESTER	FLEXTER 25/5 TEX POLYESTER	MINERAL FLEXTER FR TRIATEX POL.

PRODUCT FINISHING

<p>"TEXTILAMINA" PP NON-WOVEN. Multifunction, protection finishing material made up of a non-woven flame-melting synthetic-fibre fabric, coupled to the upper face of the membrane. It prevents coils from sticking to the roll, improves foot traffic resistance during installation, enhances the adhesion of paints, glues and extends their life.</p>	<p>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.</p>	<p>SELF-PROTECTION WITH SLATE GRANULES. On the visible face of the membrane, a protective coating made up of slate granules of various colours is hot bonded. This mineral shield protects the membrane from ageing caused by UV rays.</p>
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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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