DIVISIONE RUBBERFUSE
IMPER ITALIA S.P.A.
sistemi impermeabilizzanti sintetici
N°10 - June 2002

rubberfuse news

Editorial

When launching the Rubberfuse line over 7 years ago, we were confident to have a product designed to meet the requirements of the synthetic waterproofing market. But we also knew that introducing a new generation of synthetic membrane would not be easy, since a characteristic of the European Client, would he be Owner, Architect or Contractor, is to be quite reluctant to change. Such attitude is logical : very few indeed are prepared to bear eventual trial costs.

This is why the first question that comes at the time a new product is being introduced is : "what about references ? " This hurdle is now over with : to date, a total of about 4 million m² of Sintofoil membranes has been successfully installed in Europe and in other parts of the world (Japan, Saudi Arabia, United Arab Emirates, South Africa). And the Rubberfuse's " Top 50 List " includes projects ranging from 100.000m² to 8.000m², installed in 10 countries.

The next usual question relating to a newly introduced product is " what about certifications ? " Here again, the issue is cleared up. Let alone the fact that Rubberfuse systems and Sintofoil membranes meet most of the programs required by local Authorities (see the article below), Sintofoil has already completed the testing program as requested to meet the recent Guidelines as set at European level by UEAtc for TPO membranes. Furthermore, field tests carried out on a roof installed over 7 years ago have demonstrated that the actual performances of Sintofoil exceed by far the UEAtc requirements. Our credibility is well and truly established !

M. Aughuet.

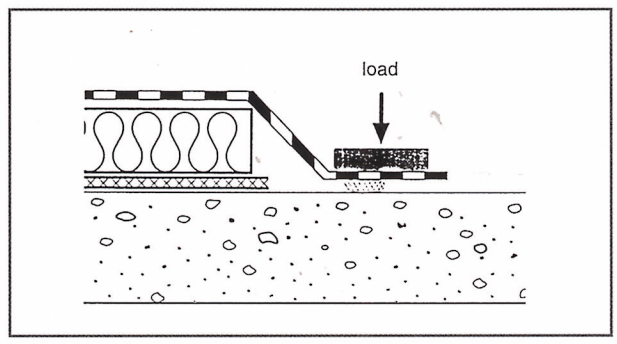
Rubberfuse references - Top 50 projects - > 1 million m² - 10 countries - as of 03.2002

1	Michelin Plants in Clermont-Ferrand	France	99.600 m²	ST / Loose-laid ballasted (55.100 m²) ST / Mechanically attached (44.500 m²)
2	Coca-Cola Bottling Plant in Sevilla	Spain	64.000 m²	RG / Mechanically attached
3	Business Centre in Ter Apel	Holland	55.000 m²	ST / Mechanically attached
4	Michelin Plant in Montceau les Mines	France	52.200 m²	ST / Mechanically attached (27.000 m²) ST / Loose-laid ballasted (25.200 m²)
5	Hitachi Plant in Amsterdam	Holland	34.000 m²	RG / Mechanically attached (30.000 m²) ST / Mechanically attached (4.000 m²)
6	Seat Plant in Martorell	Spain	33.100 m²	ST / Mechanically attached
7	Espigare in Barcelona	Spain	30.400 m²	ST / Mechanically attached
8	Tibbett-Britten Plant in Salvaterra	Spain	25.700 m²	ST / Mechanically attached
9	Clatesa Supermarket in Cordoba	Spain	24.000 m²	ST / Mechanically attached
10	Roca Manufacturing Plant in Gliwice	Poland	22.000 m²	ST / Mechanically attached
11	Michelin Plant in Bourgas	France	21.900 m²	ST / Mechanically attached
12	Carrefour Supermarket in Quartu S. Elena	Italy	20.000 m²	FB / Adhered
13	Port Aurely Armangol in Barcelona	Spain	19.100 m²	ST / Mechanically attached
14	Pisnice Market Hall in Prague	Czech Rep.	19.000 m²	ST / Mechanically attached
15	Ette Deli Tomb Centre in Budapest	Hungary	18.600 m²	ST / Loose-laid ballasted (10.000 m²) FB / Adhered (8.600 m²)
16	Midor Refinery in Alessandria d'Egitto	Italy	18.500 m²	ST / Reservoir lining
17	Seat Plant in Martorell	Spain	17.100 m²	ST / Mechanically attached
18	La Redoute in Tourcoing/Wattrelos	France	17.000 m²	FB / Loose-laidballasted (7.000 m²) FB / Adhered (5.000 m²) ST / Mechanically attached (5.000 m²)
19	Turkish Commercial Centre in Budapest	Hungary	16.700 m²	ST / Loose-laid ballasted
20	Fabrila in Sabadell	Spain	16.000 m²	ST / Mechanically attached
21	Michelin Plant in La Roche sur Yon	France	15.100 m²	ST / Mechanically attached (12.800 m²) ST / Loose-laid ballasted (2.300 m²)
22	AB Vasilopoulos Supermarket in Athens	Greece	15.000 m²	ST / Mechanically attached
23	Bordas Chinchurretta in Sevilla	Spain	14.600 m²	ST / Mechanically attached
24	Michelin Plant in Cholet	France	14.200 m²	ST / Loose-laid ballasted (8.600 m²) ST / Mechanically attached (5.400 m²)
25	Sommer Allibert Industries plant in Tarazona	Spain	14.000 m²	ST / Mechanically attached
26	Hospital in Serres	Greece	14.000 m²	ST / Basement tanking (5.000 m²) ST / Loose-laid ballasted (9.000 m²)
27	Tesco Supermarket in Bar Hill	UK	13.800 m²	ST / Mechanically attached
28	Hombach Supermarket in Kerkrade	Holland	13.000 m²	ST / Mechanically attached
29	Palacio Municipal in Jerez de la Frontera	Spain	13.000 m²	ST / Mechanically attached
30	Fuisa in Vitoria	Spain	12.100 m²	ST / Mechanically attached
31	Postal Centre in Palermo	Italy	12.000 m²	ST / Loose-laid ballasted
32	Hospital in Pyrgos	Greece	12.000 m²	ST / Basement tanking
33	Coca Cola Extension to Plant in Sevilla	Spain	11.000 m²	ST / Mechanically attached
34	Watco Plant in Turin	Italy	10.000 m²	FB / Adhered system
35	Sklavenits Supermarket in Athens	Greece	10.000 m²	ST / Loose-laid ballasted
36	Baumax Supermarket in Karlovy Vary	Czech Rep.	9.900 m²	ST / Mechanically attached
37	Temerose Shopping Mall in Johannesburg	South Africa	9.500 m²	ST / Parking deck waterproofing
38	Kanizsa Plaza in Nagykanizsa	Hungary	9.000 m²	ST / Mechanically attached
39	Printing Shop in Athens	Greece	9.000 m²	ST / Mechanically attached
40	Audi Porsche Centre in Budapest	Hungary	8.800 m²	FB / Adhered
41	Hombach in Wateringen	Holland	8.500 m²	ST / Mechanically attached
42	Kapos Plaza in Kaposvar	Hungary	8.300 m²	RG / Mechanically attached
43	Isabel Cabanillas in Barcelona	Spain	8.200 m²	ST / Mechanically attached
44	Kimberly Clark Plant Addition in Barton on Humber	UK	8.000 m²	ST / Mechanically attached (FM)
45	Makro Supermarket in Crete	Greece	8.000 m²	ST / Mechanically attached
46	Ministry of Defense in Catterick	UK	8.000 m²	FB / Adhered
47	Sklavenits Supermarket in Athens	Greece	8.000 m²	ST / Basement tanking (3.000 m²) ST / Loose-laid ballasted (5.000 m²)
48	Intercom Office Building in Athens	Greece	8.000 m²	ST / Basement tanking ST / Loose-laid ballasted
49	Centre for Life in Newcastle	UK	8.000 m²	FB / Adhered
50	HMP in Aylesbury	UK	8.000 m²	FB / Adhered

QUALITY CORNER - Temporary seal

Bad weather conditions often lead to prolonged exposure of the membrane to moisture. And whatever the type of membrane and/or the field assembly method used (splicing or welding), this may cause problems at the time the works resume and a new membrane has to be connected to the exposed membrane, especially if this membrane has absorbed water on both top and bottom surface.

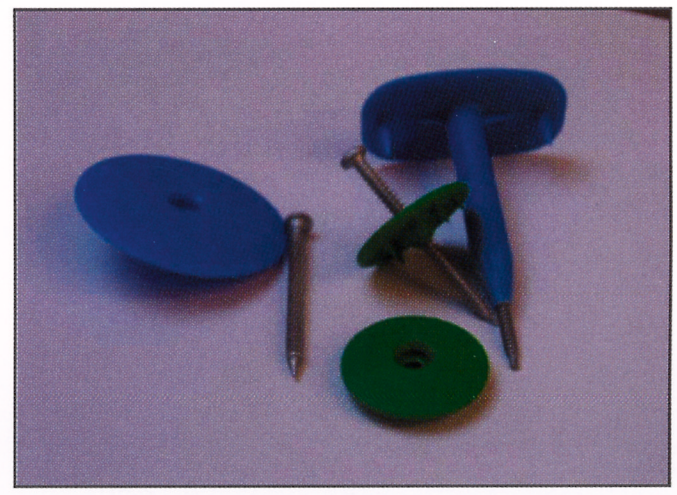
Anticipating such situation is the answer. Good practice recommends to protect the edge of the installed membrane. This can be easily achieved by installing a temporary seal, using Waterstop Mastic under compression. Such detail allows the bottom surface of the exposed membrane to remain dry, which is essential to obtain a good weld (for plastomeric or TPO membranes) or adhesion (for elastomeric membranes).



NEW ACCESSORIES MAST fixings

In order to meet the growing demand for high performance fixings, especially for mechanically attached systems, Rubberfuse has developed a new range of proprietary items.

The membrane plate is a ø 45mm polyamide plate especially designed and manufactured to meet the Rubberfuse quality standards (it shows the MAST logo). It is of the " locking " type, to prevent from fastener's back out.



The colour is green - of course. The heavy duty Ø 5.5mm thread ITD fastener is light grey, for improved aesthetics when the steel-deck is visible from the inside of the building. It offers high resistance to pullout (1.7 kN for 0.75mm steeldeck) and corrosion (> 15 Kesternich cycles).

Testing at CSTC (Belgium) according to UEAtc guidelines also confirmed a higher wind uplift performance. TPO/FPA Sintofoil ST (non reinforced) membrane on 50mm Taurox NP Rockwool insulation mechanically fixed on 0.75mm steeldeck successfully passed 5.500 Pa, resulting in a permissible load per fixing of 711N (according to Belgian calculation data) .

The new fixings are made in Europe and a buffer stock is in place to reduce delivery time and -last but not least- they are offered at a more competitive price.

FB SF - Solvent Free Adhesive

As part of the program aimed at offering totally green systems, the Rubberfuse accessories product line now includes the FB Solvent Free Adhesive, a moisture setting polyurethane based adhesive designed for bonding the FB (Fleece-Back) Sintofoil TPO/FPA membrane to acceptable substrates.

The new version has a 100% solid content (vs 83% for the previous version), which implies no loss of material during application and no risk of membrane bubbling due to solvent eventually trapped under the membrane. Finally, the FB SF Adhesive offers improved bonding performance. It is applied either in ridges or on the whole surface (fully adhered system).

rubberfuse
FB - SF Solvent Free Adhesive

Bonding adhesive for FPA Sintofoil FB membranes

Xn
harmful

Technical information - Installation

Moisture setting polyurethane based adhesive designed for bonding Sintofoil FB (Fleece-Back) membrane to acceptable substrates*.
Apply adhesive on substrate, in ridges (6 ea/m in field area, 9 ea/m at perimeter and corners), or on the whole surface in an even, very thin coat. Leave about 5 minutes open time to accelerate green strength. Roll the FB membrane into adhesive before skin formation (max. 15 minutes) and press down. Press again after +/- 30 minutes. Use in dry weather conditions, when temperature is 5°C and above. Moistening the membrane backing is recommended to improve green strength. In case of temperature under 5°C, it is recommended to heat up the pail in hot water at 50°C (do not boil).

Substrate	The substrate shall be clean, dry and free from contamination. Not suitable on unfleeced polystyrene. * For further details, contact the local Rubberfuse distributor.
Coverage rate	150 - 250 g/m², in field area * 225 - 375 g/m² at perimeter and corners*. * depending on substrate type and conditions.
Open time	Depending on weather conditions. Max. : 15 minutes.
Setting time	Within 1 - 3 hours, depending on temperature et humidity. Minimum processing temperature is 5°C. At this temperature, curing time might be slower.
Shelf life	9 months max., in unopened original packaging, properly stored under 25°C.

Refer to Manufacturers Specifications and Material Safety Data Sheet before use.

Risks and safety advice

EC # 615-005-01-6 Diphenylmethane-4,4'-diisocyanate (< 30%)

Contains isocyanates. Refer to manufacturer's instructions.
Harmful by inhalation
Irritating to eyes, respiratory system and skin.
May cause sensitization by inhalation and skin contact

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
After contact with skin, wash immediately with plenty of water.
In case of unsufficient ventilation, wear suitable respiratory equipment.
In case of accident or if you feel unwell, seek medical advice immediately (show the label if possible).

Hitachi Job

Altena, Rubberfuse Distributor in the Netherlands, recently added a nice reference to their projects list. The new Hitachi plant located in Amsterdam includes 3 buildings totalling about 34.000m². The requirements of the customer reflects the current market trends: quality, aesthetics, quick installation, all this of course at a competitive price. The system build up: steeldeck, vapour barrier, mineral wool and synthetic membrane cover.

The Rubberfuse mechanically attached system using the TPO/FPA Sintofoil light grey membrane proved to be most appropriate to meet these requirements. For the flat roofs of the two ancillary buildings, Sintofoil ST/Grey/ 1.2mm was selected. As aesthetics were a major concern (due to the rather steep slope, the roof is visible from the vicinity of the building), the RG version was preferred for the main building. The project had to move fast (see the picture), but this was not an issue for Dak en Gevel Systems as they were able to install over 4.000m² per week!

Certification Program

New certifications have been obtained from local Authorities in two countries where Rubberfuse recently started operating: Lithuania and Bulgaria.

So far, Approval and/or Testing Certification has been obtained from the following Authorities:

B.B.A.	United Kingdom	Roofing systems
Qualiconsult	France	Roofing systems
T. Ü. M.	Germany	Sintofoil membrane
B.D.A. - Intron	Holland	Roofing systems
Factory Mutual	U.S.A.	Mechanically attached roofing systems
E.M.I.	Hungary	Roofing systems
C.O.B.R.	Poland	Sintofoil membrane
C.S.T.C.	Belgium	Wind uplift - UEAtc testing
I.G.H.	Croatia	Sintofoil membrane
P.P.C.P.	Russia	Sintofoil membrane
S.P.S.C.	Lithuania	Sintofoil membrane
H.N.C.N.	Bulgaria	Sintofoil membrane

Further programs are underway, namely with UBAtc (Belgium), CSTB (France) and ZAG. (Slovenia).

Last Minute : Kimberly Clark

County Cladding Limited just completed the roofing of a 7.200m² expansion of the Kimberly Clark's plant in Barton on Humber (UK). The Client selected the FM approved Rubberfuse Mechanically Attached System using Sintofoil ST/Grey/1.2mm.

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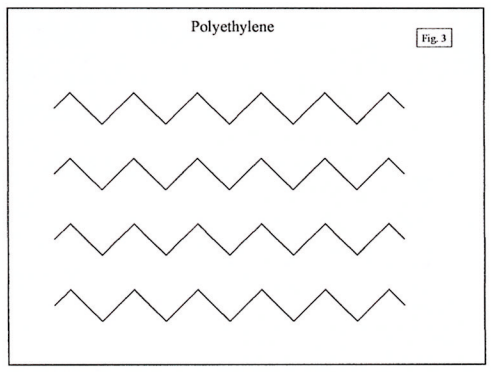
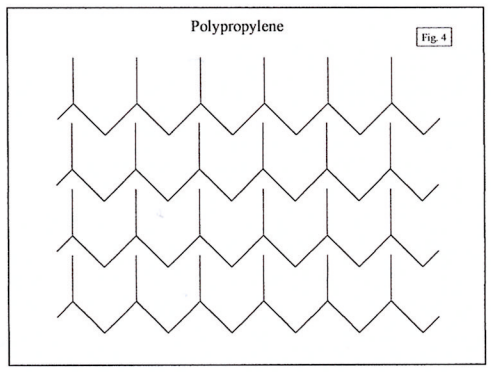
PP or PE?

The recent UEAtc Guidelines for TPO (Thermoplastic PolyOlefins) Membranes make a distinction between PolyPropylene (PP) and PolyEthylene (PE) based membranes. Many users wonder why. To help answering the question, here is a summary of a study carried out by Imper Italia/Rubberfuse's R&D.





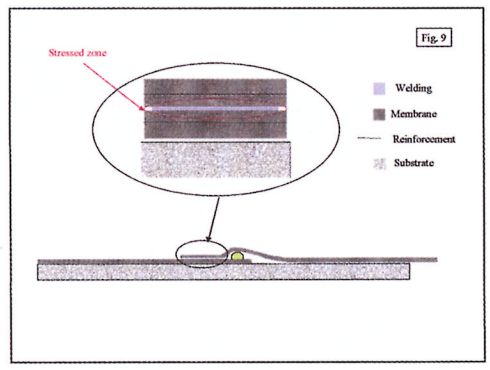
Melting point

This characteristic provides indications about the performance of the material in hot conditions. Not only both faster oxidation and accelerated ageing are directly linked to the material coming closer to its melting point, but also a different melting temperature results in different density, softness and mechanical properties. Typically, PP has a higher melting point than PE, which results in good softness (i.e. workability), high resistance to heat ageing and superior behaviour of welded seams. For PP based membranes, better performances also allow to avoid reinforcing the membrane.

Resistance to hydrocarbons

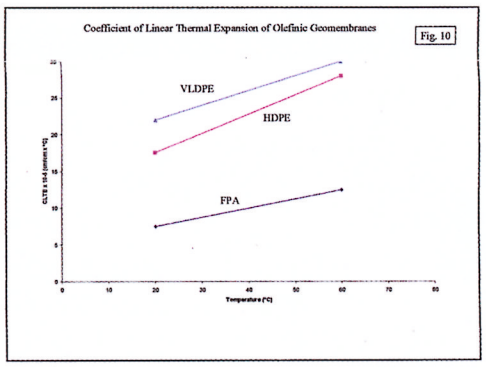
Waterproofing sheets typically are sensitive to mineral oil and fuels. In the case of PolyOlefins, oil penetrates between the macromolecular chains, generating a lubricating action, which reduces the chain's cohesion, hence reducing the mechanical properties.

While most PE's are made of linear polymeric chains, PP has a stronger "branch" chemical structure. A PP based membrane is consequently more suitable for use in contact with hydrocarbons, ex: reroofing on existing bituminous system.



Coefficient of Linear Thermal Expansion

CLTE is an index showing how much the material "moves" under temperature variation. It has 2 different effects on waterproofing membranes. Possible waving of the membrane is the first. This however is an issue of cosmetic nature only as the material's properties remain unaffected. Furthermore PP has a lower CLTE than PE, i.e. the waving effect is reduced. Reinforcing the membrane (using glass or composite - polyester is of no use as its CLTE is similar to polymer's) is the answer, would aesthetics be an issue. More important is the other effect, as it relates to field welded seams. During welding, the temperature increase generates a rapid expansion, immediately followed by a rapid contraction as the membrane cools off, which induces high stress into the membrane. Here, reinforcing does not help as the affected zone is where the external surface of top/bottom sheets meet, so only the polymer is subject to stress. As the welding temperature of PP membranes is lower than PE's (av. 350°C vs 400°C), PP sheets are subject to lower stress.



Conclusion

Sintofoil ST, a PP based non reinforced TPO membrane offers top performance in terms of resistance to heat ageing and hydrocarbons together with superior behaviour of welded seams.
Note: a complete report covering this subject is available upon request.

A Prestigious Czech Reference

When driving out the new Prague airport, you will certainly notice the CSA (Czech Airlines) Headquarters. This impressive high-tech building has recently be completed. SW LIBEREC s.r.o. won the contract of the roof cover, a Rubberfuse Mecha-nically Attached System using Sintofoil ST/Grey/1.2mm membrane.
Why a Rubberfuse system? "The Architect specified Rubberfuse because of the sytem's outstanding performance", explains J. Brandalik, head of Bitumen & Plastic, Rubberfuse Distributor in the Czech Republic.

B & P introduced Rubberfuse 3 years ago. Over 100.000m² roofing systems have been installed since in the Czech Republic.