

FILON Plate

The Substrate for Traffic Management

- △ **Superior Strength and Rigidity**
- △ **The Obvious Alternative to Aluminium**
- △ **No Salvage Value - No Theft Problems**
- △ **Used in Marine and Other Harsh Environments**
- △ **High Durability and Minimum Maintenance**
- △ **For Temporary Signs**



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BENEFITS

- △ **For signs that don't walk**
No theft value for potential thieves. GRP panels will not melt down or have any intrinsic value to provide illegal funds.
- △ **For durability and minimum maintenance**
Unaffected by high or low temperatures and by the extremes of European weather, the panels will retain their integrity for at least 30 years.
- △ **For impact resistance**
Panels pass the impact test specified under BS EN12899-1.
- △ **For superior strength and rigidity**
FILON Plate has been developed to provide improved rigidity and strength.
- △ **For minimum surface preparation and treatment**
Panels only require wiping clean prior to the application of the vinyl and being self coloured grey eliminates the need to surface paint the reverse face.
- △ **For use in marine and other harsh environments**
Panels will not rust or corrode from road salt and chemically aggressive conditions which otherwise would result in contamination and deterioration of the sign.
- △ **For compatibility with 3M™ Scotchlite and Nikkalite reflective films**
When tested by BSI, FILON Plate faced with the above company's Class 1 retro-reflective films passed the photometric requirements of BS EN12899-1 following accelerated weathering tests giving clients the confidence to use FILON Plate as an alternative sign substrate.

Following correct processing and handling in line with Filon and NCI technical information, regulatory warning and signs up to 2m² manufactured from one sheet of FILON Plate, are covered by the agreement.

FILON PRODUCTS LIMITED has fifty years experience in the manufacture of Glass Reinforced Polyester (GRP) by continuous pultrusion to provide profiled and flat sheeting for both internal and external applications.

The outstanding durability of GRP laminates, coupled with high strength and low weight has resulted in their use for many diverse applications from boat hulls to radar domes on advanced aircraft.

In order for the sign industry to benefit from the many advantages of this competitively priced alternative substrate, Filon Products Limited have established FILON Plate as a product with a unique formulation that has no theft value.

It has British Standards Institute certification with regard to weathering, resistance to atmospheric pollution and impact damage. FILON Plate faced with Class 1 retro-reflective sheeting from major manufacturers such as Nikkalite and 3M has met the photometric requirements of BS EN12899-1, following accelerated weathering tests. Both Nikkalite and 3M have house tested for peel adhesion, out-gassing and plasticizer migration, and have stated that FILON Plate faced with their respective Class 1 retro-reflective sheeting, gave comparable results to facings applied to aluminium. FILON Plate has also been tested for compatibility by other retro-reflective sheeting manufacturers with similar results. FILON Plate therefore is the ideal substrate for traffic management, temporary traffic sign and commercial sign applications.

PRODUCT RANGE

Panel sizes: Length 2440mm (8'0") x Width 1220mm (4'0") and Length 3050mm (10'0") x Width 1525mm (5'0")

Panel thickness: 3.2mm +/- 5%

Single colour panel colours: Sign Grey FPL 9114, White FPL 701

Other colours and sheet sizes can be produced to meet specific customer requirements subject to a minimum 100 sheet production order quantity.

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PERFORMANCE

Tests certified by BSI confirm that FILON Plate meets the performance specification under the following clauses to BS EN12899-1:

- Accelerated weathering **PASS**
- Saline mist **PASS**
- Sulphur dioxide **PASS**

These tests ensure long term resistance to atmospheric pollutants.

- Impact resistance **PASS**
- Photometric requirements **PASS**
- Accelerated weathering tests **PASS**

Wind Resistance

Road traffic signs made from FILON Plate have been tested in-house for wind resistance as prescribed in BS EN12899-1. Testing was carried out as described in BS EN12899-1. Results obtained indicated that FILON Plate exceeds the needs of this standard with regard to wind resistance.

Typical mechanical values under ISO 178 (formerly BS 2782: Part 3).

- Tensile strength: 96 - 108N/mm²
- Tensile modulus: 6.4 - 7.6 kN.mm²
- Flexural strength: 139 - 167N/mm²
- Flexural (bending) modulus: 4.7 - 5.5kN/mm²
- Elongation at break: 1.4 - 1.7%

Other properties (Typical values)

Manufactured to a purpose design formulation for which a UK patent has been secured, Patent No. GB 2258 235 B applies.

- Thermal movement coefficient of linear expansion: 20×10^{-6} per^oC
- Operating temperature: - 20^oC to +100^oC
- Density: 1.50g/cm³
- Panel weight (3.2mm): 5.0kg/m²
- Water absorption (24 hours at 25^oC): 0.3%
- Dielectric strength (step by step at 90^oC): 17450V/mm
- Glass content: 31%
- Barcol hardness: >50

CUTTING AND MACHINING

Panels may be cut to shape using either routers, guillotines, lasers or diamond grit saws.

COSHH Regulations (Refer to Filon's H&S document **Working with FILON GRP**)

When working in confined spaces adequate ventilation is required. For extensive operations dust extraction is necessary. Operators should wear suitable dust masks and goggles. In isolated cases GRP dust can cause slight transient irritation. Should effects be prolonged or any signs of a rash occur, obtain medical advice. All exposed skin must be thoroughly washed. Any eye contamination must be washed out with copious amounts of pure water. Do not smoke in or near stores or working areas.

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SIGN CONSTRUCTION

The adherable sign face can be applied to either face of the FILON Plate panels.

Stiffening and Rivetting

Support channels may be secured to the back of the panels by the following methods:

- BOLLHOFF non-penetrating rivet system (see recommendations below)
 - Adhesives using 3M 4980 VHB tape or 3M Scotchweld DP 460
- 3M have approved the use of these adhesives with FILON Plate.

Support Rail Recommendations

FILON Plate has good tensile strength and impact resistance. The nature of GRP is that it is more flexible than aluminium. To obtain the best use and service life it is recommended that the support rails, which provide stiffening, are fixed in accordance with **Table 1** specifications

Table 1

Height of Sign Section(m)	Number of Rails	Max Rail Spacing(mm)
0.50	2	400
0.75	3	325
0.90	3	400
1.00	4	300
1.20	4	366
1.50	5	350
1.75	6	380
2.00	7	317
2.25	8	340
2.44	8	335

Support rails should be fixed a minimum of 30mm from the running edge of the sign. If a sheet joining section is to be fitted by means of rivetting, then the rivet should not be within 15mm of the sheet edge.

FILON Plate is available in 3.2mm nominal thickness. When fixing aluminium support rails by means of a non-penetrating rivet system, a maximum rivet spacing of 150mm should be adopted.

Note: FILON Plate signs will flex more than aluminium signs of the same size until they are mounted on posts, hence it is advisable to store completed signs flat or with support rails vertical to prevent possible damage to the sign facings.

Bollhoff/Henrob Rivet Recommendations

Due to the different properties of the aluminium alloy and GRP sign plate used for signs, it is necessary to change rivets for each material thickness as per **Table 2**.

- a) At no time try to rivet within 15mm from the edge of the GRP sign plate.
- b) Rivetting pressure may need to be adjusted to suit the ductility of the materials being rivetted.
- c) It should not be necessary to change the Upsetting Die or the Nose Assembly.

Table 2

Rivet Part No.	R20845CK02	R20845CO5
Rivet Length(mm)	8mm	8mm
Total Rivetting Thickness(mm)	4.0	6.0
Sign Face	GRP	GRP
Stiffener	Aluminium	Aluminium

Note: These **self-piercing rivets** are supplied with either a silver or black Kalgard finish and are available from either Bollhoff or Henrob.



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