

# FLOORING SOLUTIONS THAT LAST FOR 30+ YEARS

## STRUCTURAL FLOORING SYSTEM WITH INTEGRATED COVERING

The ABRASTOP™ / FOAM LITE system combines the ABRASTOP™ Floor Covering and an integrated sub-floor to provide structural support for passenger load. It results in a flooring system that is durable, light-weight and fully adapted to the Mass Transit market.

- Bonded to car structural beams
- Reduced installation time
- Meets Mass Transit standards
- Very high resistance to wear
- Light-weight system
- Good noise attenuation
- Rot-proof
- Sized as per customer's requirements
- Available in variable thicknesses
- Customized colours available
- Options for integrated logo, HPPL or tactile strips



*Never Underestimate Materials Intelligence.*



**mason grogan**  
**INDUSTRIAL**

SPECIALIST MATERIALS FOR DESIGN ENGINEERS

## SPECIFICATIONS

The Abrastop™ / Foam Lite is a laminate of the Abrastop™ Floor Covering, a lightweight thermosetting foam and a reinforcement fiber. This integrated floor is bonded directly on the vehicle's floor structure with a flexible high-performance adhesive. The 5mm (3/16 inch) seams between the panels are filled with a coloured flexible sealant.

| General                                                            |                 |                                                                        |                 |                         |                                 |                                                                                   |                 |                 |
|--------------------------------------------------------------------|-----------------|------------------------------------------------------------------------|-----------------|-------------------------|---------------------------------|-----------------------------------------------------------------------------------|-----------------|-----------------|
| Dimensions                                                         |                 | Panels size up to<br>1,500mm x 3,000mm (59in x 118in)                  |                 |                         |                                 |                                                                                   |                 |                 |
| Thickness*                                                         |                 | From 13mm ± 1.0mm (0.512 ± 0.04in)<br>to 18mm ± 1.0mm (0.709 ± 0.04in) |                 |                         |                                 |                                                                                   |                 |                 |
| Surface Density                                                    |                 | Thickness +<br>mm (in)                                                 |                 |                         |                                 | Weight<br>kg/m² (lbs/ft² )                                                        |                 |                 |
|                                                                    |                 | 13 (0.51)                                                              |                 |                         |                                 | 13.18 ± 1 (2.7 ± 0.2)                                                             |                 |                 |
|                                                                    |                 | 15 (0.59)                                                              |                 |                         |                                 | 14.16 ± 1 (2.9 ± 0.2)                                                             |                 |                 |
|                                                                    |                 | 18 (0.71)                                                              |                 |                         |                                 | 15.62 ± 1 (3.2 ± 0.2)                                                             |                 |                 |
| Foam Density                                                       |                 | 0.5g/cm³ (31.2 lbs/ft³)                                                |                 |                         |                                 |                                                                                   |                 |                 |
| Physical Properties                                                |                 |                                                                        |                 |                         |                                 |                                                                                   |                 |                 |
| Thickness                                                          |                 | 13mm                                                                   |                 |                         |                                 | 18mm                                                                              |                 |                 |
| Deflection**                                                       |                 | Distributed Load<br>kg/m² (lbs/ft²)                                    |                 |                         |                                 |  |                 |                 |
|                                                                    |                 | 375<br>(76.6)                                                          | 450<br>(92.0)   | 525<br>(107.3)          | 600<br>(122.6)                  | 375<br>(76.6)                                                                     | 450<br>(92.0)   | 525<br>(107.3)  |
| Span                                                               |                 | Deflection value mm (in)                                               |                 |                         |                                 |                                                                                   |                 |                 |
| 400<br>(15.75)                                                     | 0.37<br>(0.015) | 0.45<br>(0.018)                                                        | 0.52<br>(0.021) | 0.60<br>(0.024)         | 0.17<br>(0.007)                 | 0.20<br>(0.008)                                                                   | 0.24<br>(0.009) | 0.27<br>(0.011) |
| 450<br>(17.62)                                                     | 0.60<br>(0.024) | 0.72<br>(0.028)                                                        | 0.84<br>(0.033) | 0.95<br>(0.038)         | 0.27<br>(0.011)                 | 0.32<br>(0.013)                                                                   | 0.38<br>(0.015) | 0.43<br>(0.017) |
| 500<br>(19.69)                                                     | 0.91<br>(0.036) | 1.09<br>(0.043)                                                        | 1.27<br>(0.050) | 1.46<br>(0.057)         | 0.41<br>(0.016)                 | 0.49<br>(0.019)                                                                   | 0.58<br>(0.023) | 0.66<br>(0.026) |
| Tensile                                                            |                 |                                                                        |                 |                         |                                 |                                                                                   |                 |                 |
| Tensile properties of plastics<br>(ASTM D638)<br>Ultimate Stress   |                 |                                                                        |                 | 41.6 Mpa<br>(6.03 ksi)  | —                               |                                                                                   |                 |                 |
| Edgewise Tensile Strength<br>(ASTM C364)<br>Ultimate Stress        |                 |                                                                        |                 | 151.7 Mpa<br>(22 ksi)   | 137.2MPa<br>(19.90 ksi)         |                                                                                   |                 |                 |
| Flatwise Tensile Strength<br>(ASTM C297)<br>Maximum Tensile Stress |                 |                                                                        |                 | 6.96 Mpa<br>(1083 psi)  | 5.22 Mpa<br>(757 psi)           |                                                                                   |                 |                 |
| Compressive                                                        |                 |                                                                        |                 |                         |                                 |                                                                                   |                 |                 |
| Stress at Yield<br>(ASTM C365)                                     |                 |                                                                        |                 | 13.38 MPa<br>(1941 psi) | 2.13 Mpa<br>(1759 psi)          |                                                                                   |                 |                 |
| Shear                                                              |                 |                                                                        |                 |                         |                                 |                                                                                   |                 |                 |
| Shear properties<br>(ASTM C273)                                    |                 |                                                                        |                 | 3.15 Mpa<br>(457 psi)   | 3.14 Mpa<br>(455 psi)           |                                                                                   |                 |                 |
| Core Shear Ultimate Strength<br>(ASTM C393)                        |                 |                                                                        |                 | 3.37 Mpa<br>(489 psi)   | 4.02 MPa<br>(583 psi)           |                                                                                   |                 |                 |
| Impact Resistance<br>(ASTM D5420-10)                               |                 |                                                                        |                 |                         | GC geometry with a 2 lbs hammer |                                                                                   |                 |                 |
| Mean Failure Height                                                |                 |                                                                        | —               |                         | 43.18cm (17in.)                 |                                                                                   |                 |                 |
| Mean Failure Energy                                                |                 |                                                                        | —               |                         | 1.9 Joules                      |                                                                                   |                 |                 |

+Additional thicknesses may be available upon request. ++Deflections are evaluated with a Young's modulus calculated with a three-span continuous beam. \*Results for 13mm thickness. Results may vary depending of thickness panel. \*\*Bombardier SMP 800 available upon request.

| Physical Properties (continued)                        |                   |                                                         |                               |                 |
|--------------------------------------------------------|-------------------|---------------------------------------------------------|-------------------------------|-----------------|
| Thickness                                              |                   | 13mm                                                    |                               | 18mm            |
| Thermal (ASTM C518-04)                                 |                   | W/m*K*(Btu*in/h*pi² *oF)                                |                               |                 |
| Apparent Thermal Conductivity (λ)                      |                   | 0.126<br>(0.874)                                        | 0.135<br>(0.939)              |                 |
| Acoustical Performance                                 |                   |                                                         |                               |                 |
| Sound Transmission Loss<br>(ASTM E90)                  |                   | STC: 29<br>Rw: 29<br>OITC: 26                           | STC: 30<br>Rw: 30<br>OITC: 27 |                 |
| Sound Absorption<br>(ASTM C423)                        |                   | NRC: 0.05<br>SAA: 0.04                                  | NRC: 0.05<br>SAA: 0.04        |                 |
| Coefficient of Linear Thermal Expansion (ASTM D696-08) |                   | 2.5 x 10 <sup>-5</sup> /°C<br>(between -30°C and +60°C) |                               |                 |
| Chemical Properties                                    |                   |                                                         |                               |                 |
| Water Absorption (ASTM D570)                           |                   |                                                         |                               |                 |
| After 48h                                              |                   | 0.90%                                                   | 1.00%                         |                 |
| After 14 days                                          |                   | 2.00%                                                   | 2.29%                         |                 |
| Safety*                                                |                   |                                                         |                               |                 |
| Fire Resistance (NF P92 501/507)                       |                   |                                                         | M2                            |                 |
| Smoke Test (NF F16-101/102)                            |                   |                                                         | F1                            |                 |
| Critical Radiant Flux (ASTM E648)                      |                   |                                                         | > 1.09 W/cm²                  |                 |
| Specified Minimum                                      |                   |                                                         | 0.5 W/cm²                     |                 |
| Specific Optical Density of Smoke (ASTM E662)          |                   |                                                         |                               |                 |
| Mode                                                   | Specified Maximum | Flaming                                                 | Non-flaming                   |                 |
| D <sub>s</sub> at 1.5 min                              | 100               | 0                                                       | 0.1                           |                 |
| D <sub>s</sub> at 4.0 min                              | 200               | 25.6                                                    | 6.3                           |                 |
| Toxic Gas Generation** (Boeing BSS 7239) (ppm)         |                   |                                                         |                               |                 |
| Mode                                                   | Specified Maximum | Flaming                                                 | Non-flaming                   |                 |
| CO max                                                 | 3500              | 750                                                     | 30                            |                 |
| NO²                                                    | 100               | < 1                                                     | < 1                           |                 |
| SO²                                                    | 100               | 6                                                       | < 6                           |                 |
| HCl                                                    | 500               | 12                                                      | 12                            |                 |
| HF                                                     | 200               | 12                                                      | 12                            |                 |
| HBr                                                    | —                 | < 3                                                     | < 3                           |                 |
| HCN                                                    | 150               | 8                                                       | 1                             |                 |
| Caloric Content (ASTM E1354)                           |                   | 13 mm                                                   | 18 mm                         |                 |
| Heat Flux                                              | 20 kW/m²          | 50 kW/m²                                                | 20 kW/m²                      | 50 kW/m²        |
| Average Effective Heat of Combustion MJ/Kg (BTU/lbs)   | 21.00<br>(9042)   | 23.55<br>(10 141)                                       | 22.40<br>(9646)               | 21.29<br>(9170) |
| Overall average Caloric Content MJ/Kg (BTU/lbs)        | 6.73<br>(2899)    | 9.67<br>(4165)                                          | 6.67<br>(2871)                | 9.44<br>(4066)  |

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