

Technical Data Sheet

FORCE 4000 DALLE

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| Description | FORCE 4000 DALLE is a stabilised polyester reinforced, SBS elastomeric modified bitumen waterproofing membrane. Both surfaces are finished with a film. The surface is marked with a line 10cm from the edge to help with positioning of laps. |
| Use | Top layer in single or multilayer waterproofing system for flat roofs: inaccessible with added protection; accessible to pedestrian traffic and protected by paving slabs, brick pavers, etc. |
| Application method | Fully or partially bonded, with fully sealed joints, using torch-on technique. |
| Storage | Rolls to be stored upright and away from heat. |
| Composition | (indicative) |

| | | |
|---|----------------------|-------|
| Reinforcement (g/m²) : | Stabilised polyester | 180 |
| Binder (g/m²) : | SBS elastomer | 4,600 |
| Surface finish (g/m²) : | Thermofusible film | 10 |
| Under surface finish (g/m²) : | Thermofusible film | 10 |

| Characteristics | | Standards (BS) | Units | Value | Tolerance | | |
|---|---------------------------------|----------------|---------|-----------|-----------|-----|---|
| | | | | | Min | Max | |
| Dimensions | Length | EN 1848-1 | m | 8 | -1% | | |
| | Width | | m | 1 | -1% | | |
| | Straightness | | - | Pass | | | |
| | Nominal roll weight | | kg | 42.0 | | | |
| | Thickness (on finished product) | EN 1849-1 | mm | 4.00 | 3.80 | | |
| Visible defects | New product | EN 1850-1 | - | None | | | |
| | After ageing to EN 1297 | | - | NA | | | |
| Adhesion of granules | | EN 12039 | % | NA | - | - | |
| Resistance to tearing (nail shank) | Longitudinal | EN 12310-1 | N | 180 | 160 | - | |
| | Cross direction | | | 230 | 210 | - | |
| Tensile properties: maximum tensile force | Longitudinal | EN 12311-1 | N/50 mm | 600 | 600 | - | |
| | Cross direction | | | 600 | 500 | - | |
| Tensile properties: elongation | Longitudinal | EN 12311-1 | % | 35 | 25 | - | |
| | Cross direction | | | 35 | 25 | - | |
| Peel resistance of joint | Maximum force | EN 12316-1 | N/50mm | Selvage | NA | - | - |
| | | | | End joint | NA | - | - |
| | Average force | | | Selvage | NA | - | - |
| | | | | End joint | NA | - | - |
| Shear resistance of joint | Maximum force | EN 12317-1 | N/50mm | Selvage | 600 | 500 | - |
| | | | | End joint | 600 | 500 | - |
| Flexibility at low temperature | Surface | EN 1109 | °C | -16 | ≤ | | |
| | Under surface | | | -16 | ≤ | | |
| Flow resistance at elevated temperature | New product | EN 1110 | °C | 100 | ≥ | | |
| | After ageing to EN 1296 | | | NA | | | |
| Resistance to impact | | EN 12691 | mm | 2000 | ≥ | | |
| Resistance to static loading | | EN 12730 (A) | kg | 20 | ≥ | | |
| Dimensional stability | | EN 1107-1 | % | 0.5 | ≤ | | |

| Characteristics | | Standards (BS) | Units | Value | Tolerance | |
|---|-------------------------|----------------|-------|---------|-----------|-----|
| | | | | | Min | Max |
| Form stability under cyclic temperature change | | EN 1108 | % | NA | | |
| Water vapour transmission properties | New product | EN 1931 | - | μ=20000 | | |
| | After ageing to EN 1296 | | - | NA | | |
| Watertightness | New product | EN 1928 | - | Pass | at 10 kPa | |
| | After ageing to EN 1296 | | - | NA | | |
| Watertightness after stretching at low temperature | | EN 13897 | % | NA | | |
| Reaction to fire | | EN 13501-1 | - | PND | | |
| Resistance to root penetration | | EN 13948 | - | NA | | |
| Dangerous substances consult: http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm | | - | - | None | | |

NA=not applicable due to use of product. PND=performance not determined.

The manufacturer reserves the right to modify, at any time, the characteristics of this product.