

# TECHNICAL DATASHEET

# TECHLINE 1.0MM LLDPE

## PRODUCT DESCRIPTION

TECHLINE LLDPE is a geomembrane manufactured from maximum quality linear low density polyethylene LLDPE resins, duly contrasted, that comply with the most rigorous requirements established for their use.

TECHLINE LLDPE contains 97.5% of pure polymer, and approximately 2.5% of Carbon Black, antioxidants and thermal stabilisers. The product does not contain plasticisers or fillers that can migrate over time.

TECHLINE LLDPE is manufactured under permanent quality controls.



| TESTED PROPERTY  | UNIT                                | TEST METHOD                        | VALUES                |         |         |         |
|--|-------------------------------------|------------------------------------|-----------------------|---------|---------|---------|
| <b>RAW MATERIAL IDENTIFICATION</b>                       |                                     |                                    |                       |         |         |         |
| DENSITY OF RAW MATERIAL                                  | g/cm <sup>3</sup>                   | UNE EN ISO 1183-1                  | <0.932                |         |         |         |
| DENSITY OF GEOMEMBRANE                                   | g/cm <sup>3</sup>                   | UNE EN ISO 1183-1                  | ≤0.940                |         |         |         |
| MELT FLOW INDEX  | g/10min                             | UNE EN ISO 1133-1 (190°C/ 2.16 KG) | ≤1.2                  |         |         |         |
|  |                                     | UNE EN ISO 1133-1 (190°C/ 5 KG)    | ≤3.5                  |         |         |         |
| CARBON BLACK CONTENT                                     | %                                   | ASTM D 4218                        | 2.0-2.5               |         |         |         |
| CARBON BLACK DISPERSION                                  | -                                   | ISO 18553                          | ≤3                    |         |         |         |
| <b>DURABILITY</b>  |                                     |                                    |                       |         |         |         |
| OXIDATION INDUCTION TIME (OIT) STANDARD OIT              | min                                 | ASTM D 3895 (200°C)                | ≥100                  |         |         |         |
| HIGH PRESSURE OIT  |                                     | ASTM D 5885                        | ≥400                  |         |         |         |
| OVEN AGING AT 85°C HP O.I.T.% RETAINED AFTER 90 DAYS     | %                                   | ASTM D 5721<br>ASTM D 5885         | ≥60                   |         |         |         |
| UV RESISTANCE HP OIT RETAINED AFTER 1600 HRS             | %                                   | ASTM D 7238<br>ASTM D 5885         | ≥35                   |         |         |         |
| OXIDATION  | %                                   | UNE EN 14575                       | ≥15                   |         |         |         |
| <b>FUNCTIONAL PROPERTIES</b>                             |                                     |                                    |                       |         |         |         |
| LOW TEMPERATURE BRITTLINESS (t <sup>3</sup> : -40°C)     | -                                   | UNE EN 495-5                       | NO CRACKS             |         |         |         |
| WATER PERMEABILITY                                       | m <sup>3</sup> /m <sup>2</sup> .day | UNE EN 14150                       | <1.10 <sup>-6</sup>   |         |         |         |
| COEFFICIENT OF LINEAR THERMAL EXPANSION                  | 1/°C                                | ASTM D 696                         | 1,93.10 <sup>-4</sup> |         |         |         |
| WATER ABSORPTION   | %                                   | UNE EN ISO 62 (24h)                | ≤0.2                  |         |         |         |
|  |                                     | UNE EN ISO 62 (6 DAYS)             | ≤1.0                  |         |         |         |
| <b>STRENGTH CHARACTERISTICS QUALITY OF FINAL PRODUCT</b> |                                     |                                    |                       |         |         |         |
| THICKNESS  | mm                                  | UNE-EN 1849-2                      | 0.75                  | 1.00    | 1.50    | 2.00    |
| MEDIUM THICKNESS TOLERANCE                               | %                                   |                                    | ±5                    |         |         |         |
| PUNCTUAL MINIMUM THICKNESS TOLERANCE                     | %                                   |                                    | ±10                   |         |         |         |
| <b>MECHANICAL PROPERTIES (*)</b>                         |                                     |                                    |                       |         |         |         |
| TENSILE STRENGTH AT BREAK                                | N/mm                                | UNE-EN ISO 527, lo 25 mm           | 23 (19)               | 31 (26) | 46 (39) | 62 (52) |
| ELONGATION AT BREAK                                      | %                                   |                                    | 800 (750)             |         |         |         |
| TEAR RESISTANCE  | N                                   | ISO 34-1                           | ≥73                   | ≥98     | ≥145    | ≥195    |
| PUNCTURE RESISTANCE                                      | KN                                  | UNE-EN ISO 12236                   | 1.80                  | 2.30    | 2.90    | 3.90    |
| AXI-SYMMETRIC BREAK RESISTANCE STRAIN                    | %                                   | EN 14151                           | >15                   |         |         |         |
| DIMENSIONAL STABILITY                                    | %                                   | UNE EN ISO 14632 (100°C, 1h)       | ±1,5                  |         |         |         |

| PARAMETER                             | UNITS | 1.00 |  |  |  |
|---------------------------------------|-------|------|--|--|--|
| <b>PRESENTATION ( STANDARD SIZES)</b> |       |      |  |  |  |
| ROLL WIDTH                            | m     | 2.0  |  |  |  |
| ROLL LENGTH                           | m     | 50   |  |  |  |

## REGISTERED OFFICE ADDRESS

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1. TCS Geotechnics is a trading name of Technical Civils Solutions Ltd.
2. TCS Geotechnics Ltd reserves the right to alter product specifications without prior notice.
3. It is the responsibility of all users to satisfy themselves that the above data is current.
4. The above figures are average values obtained from testing to current EN ISO standards.
5. TCS Ltd cannot accept responsibility for the performance of these products as the conditions of use are beyond our control.
6. Installation details are available on request.
7. Values indicated are medium. In brackets minimum values with 95% confidence level.

