

## High Density Polyethylene GM5010T2U

### Description:

GM5010T2U is a High Density Polyethylene compound with high molar mass specially developed for the manufacturing of jacketing of umbilicals. It is produced with bimodal technology, shows high mechanical properties and has excellent resistance to stress cracking. GM5010T2U contains carbon black pigment that protects it against ultraviolet radiation action and photodegradation.

### Application:

Jacketing of umbilicals, risers and flowlines for oil field platforms.

### Process:

Extrusion.

### Control Properties:

	ASTM Method	Units	Values
Melt Flow Rate (190/5.0)	D 1238	g/10 min	0.45
Density	D 792	g/cm3	0.955

### Typical Properties:

Plaque Properties<sup>a</sup>

	ASTM Method	Units	Values
Tensile Strength at Yield	D 638	MPa	23
Tensile Strength at Break	D 638	MPa	34
Flexural Modulus – 1% Secant	D 790	MPa	1090
Shore D Hardness	D 2240	-	62
Notched Izod Impact Strength	D 256	J/m	220
Environmental Stress Cracking Resistance <sup>b</sup>	D 1693	h/F50	> 1000
Deflection Temperature under Load at 0.455 MPa	D 648	°C	70
Vicat Softening Temperature at 10 N	D 1525	°C	124
Elongation at Yield	D 638	%	9.1
Elongation at Break	D 638	%	800
Carbon Black Content	D 1603	%	2.3 to 2.7
OIT at 200oC	D 3895	min	> 50

(a) Test specimens prepared from compression molded sheet made according to ASTM D 4703.

(b) Compression molded 2 mm thickness, 0.3 mm notched-plaques; 100% Igepal; 50°C.

### Final Remarks:

1. HDPE is not a hygroscopic material. However, carbon black, which is used as an anti-UV additive, absorbs moisture from the environment. Therefore, all HDPE containing carbon black in its composition must be dried before use. The drying process must be made at least for 2 hours at 90°C. Under these conditions the amount of moisture decreases to values that will not interfere in the processability of the resin. The use of this resin without previous drying may cause problems in the finished product, such as blistering and/or roughness of the surface.
2. This resin meets the requirements for olefin polymers as defined in 21 CFR, section 177.1520 issued by FDA – Food and Drug Administration in force on the date of publication of this specification. The additives present are covered in appropriate regulation by FDA.
3. The information presented in this Data Sheet reflects typical values obtained in our laboratories, but should not be considered as absolute or as warranted values. Only the properties and values mentioned on the Certificate of Quality are considered as guarantee of the product.
4. In some applications, Braskem has developed tailor-made resins to reach specific requirements.
5. In case of doubt regarding utilization, or for other applications, please contact our Technical Assistance.
6. For information about safety, handling, individual protection, first aids and waste disposal, please see MSDS. CAS Registry number: 25087-34-7.
7. The mentioned values in this report can be changed at any moment without Braskem previous communication.
8. Braskem does not recommend this grade for packages, parts or any kind of product manufacture that will be used for storage or contact with solution that will have internal contact with human body.
9. The content of this Data Sheet replaces previous revisions published for this product.
10. This resin does not contain the substance Bisphenol A (BPA, CAS # No. 80-05-7) in its composition.