

## TECAPET black - Stock Shapes

### Chemical Designation

PET (Polyethylene terephthalate)

### Colour

black

### Density

1.38 g/cm<sup>3</sup>

### Main features

- very good chemical resistance
- resistant to cleaning agents
- excellent wear properties
- excellent strength and stiffness
- low moisture absorption
- improved surface hardness
- resistance against high energy radiation

### Target Industries

- food engineering
- engineering for beverage filling systems
- packaging and paper machinery
- semiconductor technology
- printing machines
- mechanical engineering
- pharmaceutical industry

| Mechanical properties                 | condition                     | value                 |                                | test method | comment                              |
|---------------------------------------|-------------------------------|-----------------------|--------------------------------|-------------|--------------------------------------|
| Modulus of elasticity (tensile test)  |                               | 470,000               | psi                            | ASTM D 638  | (1) Injection molded specimen        |
| Tensile strength at yield             | @ 73 °F                       | 10,000                | psi                            | ASTM D 638  | (2) Injection molded specimen        |
| Elongation at yield                   | @ 73 °F                       | 4                     | %                              | ASTM D 638  | (3) Injection molded specimen        |
| Elongation at break                   | @ 73 °F                       | 12                    | %                              | ASTM D 638  |                                      |
| Flexural strength                     | @ 73 °F                       | 15,500                | psi                            | ASTM D 790  |                                      |
| Modulus of elasticity (flexural test) | @ 73 °F                       | 470,000               | psi                            | ASTM D 790  |                                      |
| Compression strength                  | @ 73 °F<br>10% strain         | 14,000                | psi                            | ASTM D 695  |                                      |
| Compression strength                  | @ 73 °F<br>1% strain          | 3,600                 | psi                            | ASTM D 695  |                                      |
| Compression modulus                   | @ 73 °F                       | 345,000               | psi                            | ASTM D 695  |                                      |
| Impact strength (Izod)                | @ 73 °F                       | 0.53                  | ft-lbs/in                      | ASTM D 256  |                                      |
| Rockwell hardness                     | @ 73 °F, M scale              | 93                    |                                | ASTM D 785  |                                      |
| Rockwell hardness                     | @ 73 °F, R scale              | 125                   |                                | ASTM D 785  |                                      |
| Coefficient of friction               | Static                        | 0.19                  | %                              | ASTM D 3702 | 1)                                   |
| Coefficient of friction               | Dynamic, 40 psi, 50 fpm       | 0.25                  | %                              | ASTM D 3702 | 2)                                   |
| Wear rate                             | Against Steel, 40 psi, 50 fpm | 2.10*10 <sup>-4</sup> | in <sup>3</sup> -min/ft-lbs-hr | ASTM D 3702 | 3)                                   |
| Thermal properties                    | condition                     | value                 |                                | test method | comment                              |
| Melting temperature                   |                               | 490                   | °F                             | -           | 1)                                   |
| Heat distortion temperature           | @264 psi                      | 175                   | °F                             | ASTM D 648  | (1) Per ASTM D3418                   |
| Heat distortion temperature           | @ 66 psi                      | 240                   | °F                             | ASTM D 648  | (2) Data obtained from public source |
| Service temperature                   | Long Term                     | 230                   | °F                             | -           |                                      |
| Service temperature                   | Intermittent                  | 320                   | °F                             | -           |                                      |
| Thermal expansion (CLTE)              |                               | 3.9                   | *10 <sup>-5</sup> in/in/°F     | ASTM D 696  | 2)                                   |
| Specific heat                         |                               | 0.28                  | BTU/lb-F°                      | -           |                                      |
| Thermal conductivity                  |                               | 2.01                  | BTU-in/hr-ft <sup>2</sup> -°F  | -           |                                      |
| Electrical properties                 | condition                     | value                 |                                | test method | comment                              |
| Volume resistivity                    |                               | 10 <sup>15</sup>      | Ω*cm                           | ASTM D 257  | 1)                                   |
| Dielectric strength                   |                               | 400                   | V/mil                          | ASTM D 149  | 2)                                   |
| Dissipation factor                    | @ 60 Hz, 73 °F                | 0.02                  | %                              | ASTM D 150  | 3)                                   |
| Dielectric constant                   | @ 60 Hz, 73 °F, 50% RH        | 3.4                   | %                              | ASTM D 150  | 4)                                   |
| Other properties                      | condition                     | value                 |                                | test method | comment                              |
| Moisture absorption                   | @ saturation, 73 °F           | 0.50                  | %                              | ASTM D 570  |                                      |
| Moisture absorption                   | @ 24 hrs, 73 °F               | 0.04                  | %                              | ASTM D 570  |                                      |

→ Resin specification:  
ASTM D5927-09 TPES0211 w ith black  
Shapes specification:  
ASTM D 6261-10 S-TPES0211

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