## PTFE C15

Polytetrafluoroethylene (PTFE + 15% Carbon graphite)



**PTFE**, reinforced with Carbon graphite, offers improved compressive strength, wear resistance, thermal conductivity and makes the material electrically conductive.

Mechanical         Increase of the product of t	
Elongation at break  D 4894  Modulus of elasticity (tensile)  Modulus of elasticity (flexural)  D 790  MPa  - Notch impact strength  D 256  J / m  - Flexural strength  D 790  MPa  - Compressive strength (1% strain)  D 695  MPa  7  Deformation under load  D 621  D ≥ 10  Permanent deformation  D 621  MMPa  ≥ 6  Shore hardness  D 2240  MPa  ≥ 55  Thermal  Melting temperature  Glass transition temperature (Tg)  Thermal conductivity  C 177  W / (m * K)  - Coef. of linear thermal expansion  ASTM D696  Long tem service temperature  Tender therm service temperature  DIN 75 HDT/A  Plastical  Flammability (oxygen index)  Flammability (oxygen index)  Flectrical  Dielectric constant at 1MHz  D 150  Dielectric strength  D 149  KV / mm  - Tracking resistance (CTI)  P 390  MPa  -  APA  APA  APA  APA  APA  APA  APA	
Modulus of elasticity (tensile)         D 638         MPa         -           Modulus of elasticity (flexural)         D 790         MPa         -           Notch impact strength         D 256         J / m         -           Flexural strength         D 790         MPa         -           Compressive strength (1% strain)         D 695         MPa         7           Deformation under load         D 621         D         ≥ 10           Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal         To 200         MPa         ≥ 6           Short emperature         To 200         C         To 200         To 200 <td></td>	
Modulus of elasticity (tensile)         D 638         MPa         -           Modulus of elasticity (flexural)         D 790         MPa         -           Notch impact strength         D 256         J / m         -           Flexural strength         D 790         MPa         -           Compressive strength (1% strain)         D 695         MPa         7           Deformation under load         D 621         D         ≥ 10           Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal         B         C         -           Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10° (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         Dil 75 HDT/A         °C         -           Flammability	
Notch impact strength         D 256         J / m         −           Flexural strength         D 790         MPa         −           Compressive strength (1% strain)         D 695         MPa         7           Deformation under load         D 621         D         ≥ 10           Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal           Melting temperature         −         °C         −           Glass transition temperature (Tg)         −         °C         −           Thermal conductivity         C 177         W / (m * K)         −           Coef. of linear thermal expansion         ASTM D696         10 5 (mm/mm) / °C         ≥ 10           Long term service temperature         −         °C         −           Short term service temperature         −         °C         −           Heat deflection temperature         DIN 75 HDT/A         °C         −           Flammability         UL 94         −         −           Flammability (oxygen index)         −         %         −           Electrical         Dislectric constant at 1MHz         D150 <td< td=""><td></td></td<>	
Flexural strength	
Compressive strength (1% strain)         D 695         MPa         7           Deformation under load         D 621         D         ≥ 10           Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal           Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10° (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10° Hz         -           Dissipation factor at 1MHz         D150         10° Hz         -           Volume resisti	
Deformation under load         D 621         D         ≥ 10           Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal           Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10° (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10° Hz         -           Dissipation factor at 1MHz         D150         10° Hz         -           Volume resistivity         D257         Ω * cm         -           Surface resistivity         D257         Ω </td <td></td>	
Permanent deformation         D 621         M         ≥ 6           Shore hardness         D 2240         MPa         ≥ 55           Thermal         Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10 * (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10 * Hz         -           Dissipation factor at 1MHz         D150         10 * Hz         -           Volume resistivity         D257         Ω * cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         - </td <td></td>	
Shore hardness         D 2240         MPa         ≥ 55           Thermal         MPa         ≥ 55           Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10°5 (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1 MHz         D150         10° Hz         -           Dissipation factor at 1MHz         D150         10° Hz         -           Volume resistivity         D257         Ω * cm         -           Surface resistivity         D257         Ω * cm         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)	
Thermal           Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10° (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10° Hz         -           Dissipation factor at 1MHz         D150         10° Hz         -           Volume resistivity         D257         Ω * cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         -         -	
Melting temperature         -         °C         -           Glass transition temperature (Tg)         -         °C         -           Thermal conductivity         C 177         W / (m * K)         -           Coef. of linear thermal expansion         ASTM D696         10°5 (mm/mm) / °C         ≥ 10           Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10° Hz         -           Dissipation factor at 1MHz         D150         10° Hz         -           Volume resistivity         D257         Ω * cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         -         -	
Glass transition temperature (Tg) $-$ °C $-$ Thermal conductivity $-$ C 177 $-$ W / (m * K) $-$ Coef. of linear thermal expansion $-$ ASTM D696 $-$ 10°5 (mm/mm) / °C $-$ 10 Long term service temperature $-$ °C $-$ Short term service temperature $-$ °C $-$ Short term service temperature $-$ °C $-$ Elammability $-$ UL 94 $ -$ Flammability $-$ UL 94 $ -$ Electrical $-$ Dielectric constant at 1MHz $-$ D150 $-$ 106 Hz $-$ Dissipation factor at 1MHz $-$ D150 $-$ 106 Hz $-$ Volume resistivity $-$ D257 $  -$ Surface resistivity $-$ D257 $  -$ Dielectric strength $-$ D149 $-$ KV / mm $-$ Tracking resistance (CTI) $-$ V $-$	
Thermal conductivity C 177 W / (m * K) − Coef. of linear thermal expansion ASTM D696 $10^{-5}$ (mm/mm) / $^{\circ}$ C ≥ $10$ Long term service temperature − $^{\circ}$ C − Short term service temperature − $^{\circ}$ C − $^{\circ}$ C − Heat deflection temperature DIN 75 HDT/A $^{\circ}$ C − $^{\circ}$ C − $^{\circ}$ Flammability UL 94 − $^{\circ}$ C − $^{\circ}$ Flammability (oxygen index) − $^{\circ}$ % − $^{\circ}$ Flammability (oxygen index) − $^{\circ}$ 0 −	
Coef. of linear thermal expansion  ASTM D696 $10^{5}$ (mm/mm) / °C  ≥ 10  Long term service temperature  - °C  Short term service temperature  - °C  - Heat deflection temperature  DIN 75 HDT/A  °C  - Heat deflection temperature  DIN 75 HDT/A  °C  - Flammability  UL 94   Flammability (oxygen index)  - %  Electrical  Dielectric constant at 1 MHz  D150 $10^{6}$ Hz  - Dissipation factor at 1 MHz  D150 $10^{6}$ Hz  - Volume resistivity  D257 $\Omega$ * cm  - Surface resistivity  D257 $\Omega$ • C  Dielectric strength  D149  kV / mm  - Tracking resistance (CTI)	
Long term service temperature         -         °C         -           Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         -         W         -           Dielectric constant at 1 MHz         D150         10 <sup>6</sup> Hz         -           Dissipation factor at 1 MHz         D150         10 <sup>6</sup> Hz         -           Volume resistivity         D257         Ω* cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         V         -	
Short term service temperature         -         °C         -           Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical         -         -         *           Dielectric constant at 1MHz         D150         10 <sup>6</sup> Hz         -           Dissipation factor at 1MHz         D150         10 <sup>6</sup> Hz         -           Volume resistivity         D257         Ω* cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         V         -	
Heat deflection temperature         DIN 75 HDT/A         °C         -           Flammability         UL 94         -         -           Flammability (oxygen index)         -         %         -           Electrical	
Flammability         UL 94         _         _           Flammability (oxygen index)         _         _         _           Electrical         _         _         _           Dielectric constant at 1MHz         D150         106 Hz         _           Dissipation factor at 1MHz         D150         106 Hz         _           Volume resistivity         D257         Ω* cm         _           Surface resistivity         D257         Ω         _           Dielectric strength         D149         kV / mm         _           Tracking resistance (CTI)         _         V         _	
Flammability (oxygen index)         -         %         -           Electrical         Dielectric constant at 1MHz         D150         10 <sup>6</sup> Hz         -           Dissipation factor at 1MHz         D150         10 <sup>6</sup> Hz         -           Volume resistivity         D257         Ω* cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         V         -	
Electrical         Dielectric constant at 1 MHz         D150         10 <sup>6</sup> Hz         -           Dissipation factor at 1 MHz         D150         10 <sup>6</sup> Hz         -           Volume resistivity         D257         Ω* cm         -           Surface resistivity         D257         Ω         -           Dielectric strength         D149         kV / mm         -           Tracking resistance (CTI)         -         V         -	
Dielectric constant at 1 MHz D150 $10^6$ Hz $$ Dissipation factor at 1 MHz D150 $10^6$ Hz $$ Volume resistivity D257 $\Omega$ * cm $$ Surface resistivity D257 $\Omega$ $\Omega$ $$ Dielectric strength D149 kV / mm $$ Tracking resistance (CTI) $$ V $$	
Dissipation factor at 1MHz D150 $10^6$ Hz = Volume resistivity D257 $\Omega^*$ cm = Surface resistivity D257 $\Omega$ $\Omega$ = Dielectric strength D149 kV / mm = Tracking resistance (CTI) = V = $\frac{10^6}{10^6}$ Hz = $\frac{10^6}{10^6}$	
Volume resistivity     D257 $\Omega^*$ cm     -       Surface resistivity     D257 $\Omega$ -       Dielectric strength     D149     kV / mm     -       Tracking resistance (CTI)     -     V     -	
Surface resistivity         D257         Ω         _           Dielectric strength         D149         kV / mm         _           Tracking resistance (CTI)         _         V         _	
Dielectric strength         D149         kV / mm         _           Tracking resistance (CTI)         _         V         _	
Tracking resistance (CTI) v	
Additional Data	
Density D 792 g / cm <sup>3</sup> 2,1 - 2,15	
Water absorption (saturation) D 570 % _	
Humidity absorption (saturation) D 570 % _	
Food compliance EEC	
Food compliance FDA	
Coefficient of Friction (dynamic → static) D 1894 – 0,07	
Shapes Rod $(10 \rightarrow 50 \varnothing)$ - Tube (on re	
Colour Black	quest)

• Carbon fillers PTFE (powder - fibres - nanotubes) are less abrasive than glass. Providing less abrasion to counterparts.

The conditioned material values stated are average test results. The data provides information about our products and offers a guide for material selection. This does not provide an assurance of specific properties or the products suitability for a particular application.

It solely remains the customers responsibility to test and assess the suitability and compatibility of Plastim's products for it's intended applications, processes and uses. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product.

- \* Long term service temperature are based on the thermal ageing of the polymer by oxidation, resulting in a decrease in mechanical capabilities
- $* \ \ \text{Short term service temperature only applies to very low mechanical stress for a very limited time only.}$

Properties can vary depending on the raw shape selected and the degree of crystallisation. The actual property values of a finished product may differ from the indicated values stated.