

## HP TPU

### Description

HP TPU is a versatile material developed by chemical giant BASF for HP, specifically designed for the Multi Jet Fusion (MJF) process. Parts produced with this material exhibit excellent balance, combining good flexibility and shock absorption with the ability to print highly intricate structures featuring exceptional details and high UV and hydrolysis resistance.



### Features

Color: White powder, with printed samples appearing gray-black.

Features: Good flexibility, shock absorption, and high details

Typical applications: Sports and leisure, footwear, transportation industry, jigs and fixtures.

### Parameters

| General Properties                       | Test Method          | Typical Value |
|------------------------------------------|----------------------|---------------|
| Bulk density / kg/m <sup>3</sup>         | DIN EN ISO 60        | 0.5           |
| Printed part density / g/cm <sup>3</sup> | DIN EN ISO 1183-1    | 1.1           |
| Average particle size d50/μm             | ISO 13320            | 70-90         |
| Melting temperature / °C                 | ISO 11357 (20 K/min) | 120-150       |
| Glass transition temperature / °C        | ISO 11357 (20 K/min) | -48           |
| Melting temperature / °C                 | ISO 11357 (20 K/min) | 120-150       |

| Thermal Properties                                          | Test Method           | Typical Value, X | Typical Value, Z |
|-------------------------------------------------------------|-----------------------|------------------|------------------|
| UL Flammability                                             | UL 94                 | HB (1.6-4.2 mm)  | HB (1.6-4.2 mm)  |
| Vicat Softening point 10N                                   | DIN EN ISO 306        | 97               | 98               |
| Mechanical Properties                                       | Test Method           | Typical Value, X | Typical Value, Z |
| 88-90                                                       | 88-90                 | 88-90            | 88-90            |
| Tensile Strength / MPa                                      | DIN53504, S2          | 9                | 7                |
| Elongation at Break / %                                     | DIN 53504, S2         | 280              | 150              |
| Tensile Modulus / MPa                                       | ISO527-2, 1A          | 85               | 85               |
| Flexural Modulus / MPa                                      | DIN EN ISO 178        | 75               | 75               |
| Tear Strength (propagation, Trouser) / kN/m                 | DIN ISO 34-1, A       | 21               | 18               |
| Tear Strength (initiation, Graves) / kN/m                   | DIN ISO 34-1, B       | 38               | 32               |
| Compression Resistance (23°C, 72h) / %                      | DIN ISO 815-1         | 23               | 24               |
| Resilience / %                                              | DIN 53512             | 63               | 63               |
| Abrasion Resistance / mm <sup>3</sup> (Method A)            | DIN ISO 4649          | 96               | 100              |
| Charpy Impact Strength (Notched, 23°C) / kJ/m <sup>2</sup>  | DIN EN ISO 179-1      | No break         | No break         |
| Charpy Impact Strength (Notched, -10°C) / kJ/m <sup>2</sup> | DIN EN ISO 179-1      | 46               | 44               |
| Fatigue Performance (Rossflex, 100k cycles, 23°C)           | ASTM D1052 (Method A) | No notch growth  |                  |
| Fatigue Performance (Rossflex, 100k cycles, -10°C)          | ASTM D1052 (Method A) | No notch growth  |                  |