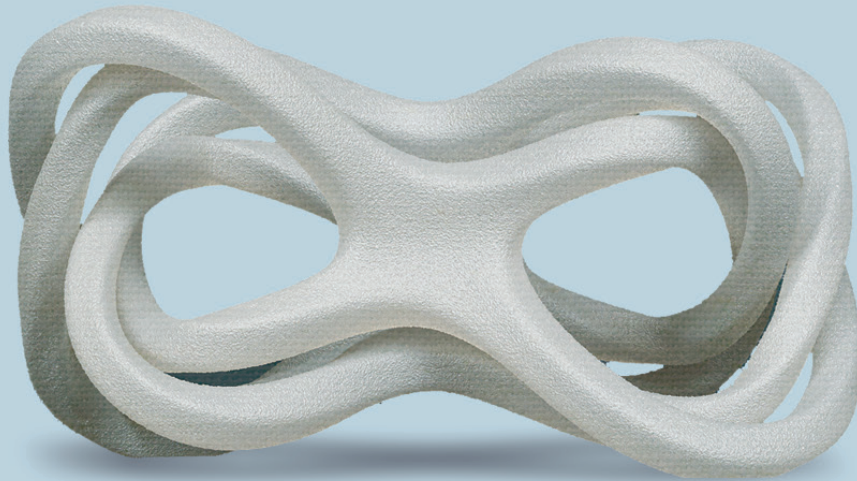




KIMYA TPU-92A



TPU-92A FILAMENT offers the possibility to print flexible objects and resists to different solvents.

| ELASTIC | ABRASION RESISTANCE

| CHEMICAL RESISTANCE | FLEXIBLE

FILAMENT PROPERTIES

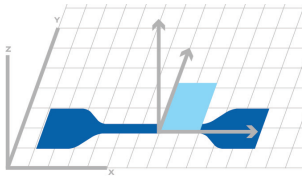
| DESCRIPTION | TEST METHODS | UNITS | VALUES |
|--|--------------|-------------------|----------------------------|
| Diameter | INS-6712 | mm | 1.75 ± 0.15 2.85 ± 0.15 |
| Density | ISO 1183-1 | g/cm ³ | 1,159 |
| Moisture rate | INS-6711 | ppm | < 1 |
| Melt Flow Index (MFI) (@210°C – 2.16 kg) | ISO 1133-1 | g/10min | 16,5 |

PRINT PARAMETERS AND SPECIMENS DIMENSIONS

| | |
|------------------------------|--------------------|
| PRINTING DIRECTION | XY |
| PRINTING SPEED | 33 mm/s |
| INFILL | 100% - rectilinear |
| INFILL ANGLE | 45°/-45° |
| EXTRUSION TEMPERATURE | 210°C |
| BED TEMPERATURE | 85°C |

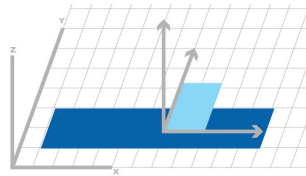
RESULTS

TENSILE TEST



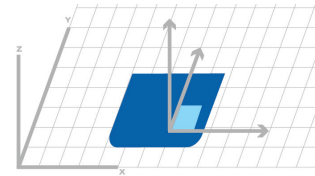
Dim.(mm): 75x12.5x2
Specimen type: ISO 527-5A

BENDING TEST - CHARPY IMPACT



Dim. (mm): 80x10x4

HARDNESS



Dim.(mm): 45x45x4

PRINTED SPECIMENS PROPERTIES

| | PROPERTIES | TEST METHODS | UNITS | VALUES |
|------------------------------|---|---------------|-------------------|----------|
| MECHANICAL PROPERTIES | Tensile modulus | ISO 37/2/500 | MPa | 90 |
| | Tensile strength | ISO 37/2/500 | MPa | 43,1 |
| | Tensile strain at strength | ISO 37/2/500 | % | 350 |
| | Tensile stress at break | ISO 37/2/500 | MPa | 41,7 |
| | Tensile strain at break | ISO 37/2/500 | % | 351,6 |
| | Flexural modulus | ISO 178 | MPa | 81 |
| | Flexural stress at conventionnal deflection (3,5% strain)** | ISO 178 | MPa | 3 |
| | Flexural strength | ISO 178 | % | >5* |
| | Charpy impact resistance | ISO 179-1/1EA | kJ/m ² | no break |
| | Shore Hardness | ISO 868 | Shore A | 92,0 |

*According to ISO 178, end of the test at 5% deformation even if there is no specimen break

** The data should be considered as indicative values - Properties can be influenced by production conditions.

CERTIFICATION

FOOD CONTACT APPROVAL EU 10/2011 (for all colors) & FDA 21 CFR (for all colors except black)