

## TECHNICAL DATA SHEET

### KEXCELLED PLA K5

|                      |                         |                       |                 |
|----------------------|-------------------------|-----------------------|-----------------|
| <b>Product code:</b> | <b>Revision Number:</b> | <b>Revision date:</b> | <b>TDS No.:</b> |
| PLA K5               | 02                      | 2/04/2020             | KT04.012.0121   |

### CHARACTERISTIC

Environmentally friendly | good interlayer bond | no buckling deformation | high melt flow rate.

#### IDENTIFICATION OF THE MATERIAL

|                      |                 |
|----------------------|-----------------|
| <b>Trade name</b>    | PLA K5          |
| <b>Chemical name</b> | Polylactic Acid |
| <b>Use</b>           | 3D printing     |
| <b>Origin</b>        | KEXCELLED       |

#### GUIDELINE FOR PRINT SETTINGS

|                           |                         |
|---------------------------|-------------------------|
| <b>Nozzle temperature</b> | 205±15°C                |
| <b>Bed temperature</b>    | 30~60°C                 |
| <b>Bed modification</b>   | Tape or glue below 60°C |
| <b>Active cooling fan</b> | ON, 100%                |
| <b>Layer height</b>       | 0.2mm                   |
| <b>Shell thickness</b>    | ≥0.8mm                  |
| <b>Print speed</b>        | 40-80mm/s               |

Settings are based on a 0.4mm nozzle.

#### MATERIAL PROPERTIES

|   |                             | Test Method |
|---|-----------------------------|-------------|
| <b>Melt temperature</b>                             | ~160°C                      | ISO 11357   |
| <b>Glass transition temperature</b>                 | ~60 °C                      | ISO 11357   |
| <b>Melt flow rate (MFR)<sup>1</sup></b>             | 7~15 g/10min                | ISO 1133    |
| <b>Heat deflection temperature(HDT)<sup>2</sup></b> | 57 °C                       | ISO 75      |
| <b>Vicat softening temperature(VST)<sup>3</sup></b> | 57 °C                       | ISO 306     |
| <b>density</b>                                      | 1.23~1.26 g/cm <sup>3</sup> | ISO 1183    |
| <b>Odor</b>   | Odorless                    | /           |
| <b>Solubility</b>                                   | Insoluble in water          | /           |

1. test conditions: T= 190°C; m=2.16 kg.

2. test conditions:0.45MPa;120°C/h.

3. test conditions:10N; 120°C/h.

**MECHANICAL PROPERTIES|TENSILE TEST**
**Test Method ISO 527**

All test specimens were printed using an FlashForge Guider 2s under the following conditions:

- Printing temperature: 205°C
- Heated bed temperature: 50°C
- Print speed: 50mm/s
- Shell thickness: 0.8mm
- Infill under 45°



Printed Vertical Z-axis

Printed horizontal X,Y-axis

|                         | 50%   | 100%  | 50%   | 100%  |
|-------------------------|-------|-------|-------|-------|
| Infill                  | 50%   | 100%  | 50%   | 100%  |
| Tensile strength (Mpa)  | 18~25 | 32~35 | 32~38 | 44~48 |
| Elongation at break (%) | 3~5   | 3~5   | 4~6   | 4~6   |

**MECHANICAL PROPERTIES|IMPACT TEST**
**Test Method ISO 179**

The same conditions as tensile test.

1→impact direction



|   | 50%   | 100%  | 50%   | 100%  |
|---|-------|-------|-------|-------|
| Infill  | 50%   | 100%  | 50%   | 100%  |
| Impact strength (KJ/m <sup>2</sup> )                    | 15~18 | 22~28 | 14~18 | 22~26 |
| Notch impact strength <sup>1</sup> (KJ/m <sup>2</sup> ) | 2~4   | 4~6   | 2~4   | 4~6   |

**MECHANICAL PROPERTIES |FLEXURAL TEST**
**Test Method ISO 178**

The same conditions as tensile test.

1→bending direction



|                        | 50%       | 100%      | 50%       | 100%      |
|------------------------|-----------|-----------|-----------|-----------|
| Infill                 | 50%       | 100%      | 50%       | 100%      |
| Maximum force (Mpa)    | 75~78     | 78~82     | 82~85     | 92~98     |
| Flexural modulus (Mpa) | 2700~2900 | 2900~3200 | 2700~2900 | 3200~3400 |

1.notch type: type A

| <b>FILAMENT SPECIFICATION</b>         |             | <b>Test Method</b> |
|---------------------------------------|-------------|--------------------|
| <b>Diameter 1.75mm</b>                | 1.75±0.03mm | EX1125             |
| <b>Diameter 2.85mm</b>                | 2.85±0.03mm | EX1125             |
| <b>Diameter 3.00mm</b>                | 3.00±0.03mm | EX1125             |
| <b>Max roundness deviation (1.75)</b> | 0.03mm      | EX1125             |
| <b>Max roundness deviation (2.85)</b> | 0.03mm      | EX1125             |
| <b>Max roundness deviation (3.00)</b> | 0.03mm      | EX1125             |
| <b>Net weight on reel</b>             | 1kg         | EX1125             |