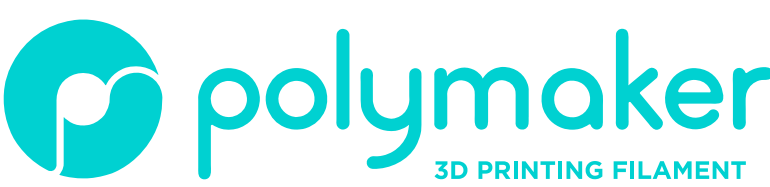


# TECHNICAL DATA SHEET

V5.5



## Polymaker™ Matte PLA

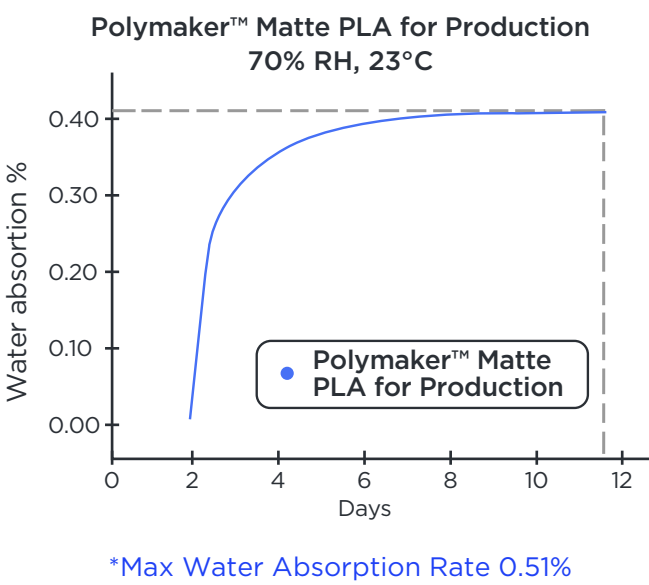
Matte PLA is the cost-effective PLA material for end use products which will be used in real world conditions: weather resistance, chemical resistance and the filament has already passed the food safety tests.

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### PHYSICAL PROPERTIES

| PROPERTY           | TESTING METHOD    | TYPICAL VALUE                  |
|--------------------|-------------------|--------------------------------|
| Density            | ISO1183, GB/T1033 | 1.33 g/cm <sup>3</sup> at 23°C |
| Melt index         | 210°C, 2.16kg     | 16g /10min                     |
| Light transmission | N/A               | N/A                            |
| Light transmission | N/A               | N/A                            |

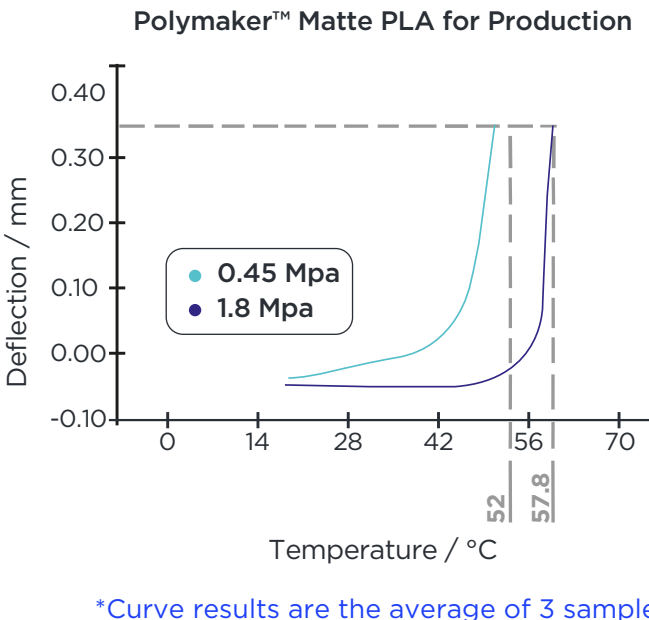
### MOISTURE ABSORPTION CURVE



### THERMAL PROPERTIES

| PROPERTY               | TESTING METHOD     | TYPICAL VALUE |
|------------------------|--------------------|---------------|
| Glass transition temp. | DSC, 10°C/min      | 60°C          |
| Melting temp.          | DSC, 10°C/min      | 164°C         |
| Decomposition temp.    | TGA, 20°C/min      | N/A           |
| Vicat softening temp.  | ISO 306, GB/T 1633 | 68°C          |
| Heat deflection temp.  | ISO 75 1.8MPa      | 55°C          |
| Heat deflection temp.  | ISO 75 0.45MPa     | 61°C          |

### HDT CURVE



### MECHANICAL PROPERTIES

| PROPERTY                             | TESTING METHOD     | TYPICAL VALUE               |
|--------------------------------------|--------------------|-----------------------------|
| Young's modulus (X-Y)                | ISO 527, GB/T 1040 | 1973 ± 64 MPa               |
| Young's modulus (Z)                  |                    | 1665 ± 54 MPa               |
| Tensile strength (X-Y)               | ISO 527, GB/T 1040 | 23.5 ± 0.5 MPa              |
| Tensile strength (Z)                 |                    | 12.9 ± 0.7 MPa              |
| Elongation at break (X-Y)            | ISO 527, GB/T 1040 | 29.8 ± 2.4%                 |
| Elongation at break (Z)              |                    | 0.8 ± 0.1%                  |
| Bending modulus (X-Y)                | ISO 178, GB/T 9341 | 2259 ± 75 MPa               |
| Bending modulus (Z)                  |                    | N/A                         |
| Bending strength (X-Y)               | ISO 178, GB/T 9341 | 41.4 ± 1.1 MPa              |
| Bending strength (Z)                 |                    | N/A                         |
| Notched Charpy impact strength (X-Y) | ISO 179, GB/T 1043 | 6.9 ± 0.5 kJ/m <sup>2</sup> |
| Notched Charpy impact strength (Z)   |                    | N/A                         |

### CHEMICAL RESISTANCE DATA

| PROPERTY                                   | TESTING METHOD |
|--------------------------------------------|----------------|
| Vinegar food grade (pH=4)                  | Resistant      |
| Vinegar concentrate (pH=4)                 | Resistant      |
| Household cleaners (sterilizer) (pH=4)     | Resistant      |
| 75% alcohol (pH=6)                         | Resistant      |
| Fertilizer nutrient solution (pH=6)        | Resistant      |
| Water (pH=7)                               | Resistant      |
| Household cleaners (stain remover) (pH=11) | Resistant      |

**Good:**  
Material may get minor attack after long periods of storage with chemical at ambient temperature

**Fair:**  
Material can be used for short time contact with chemicals at ambient temperature

**Poor:**  
Material becomes unstable on contact with chemical at ambient temperature

### RECOMMENDED PRINTING CONDITIONS

|                         |                     |
|-------------------------|---------------------|
| Nozzle temperature      | 190-230°C           |
| Build plate temperature | 25-60°C             |
| Build surface treatment | PC and Textured PEI |
| Cooling fan             | ON                  |
| Closure chamber         | Not needed          |

|                       |              |
|-----------------------|--------------|
| Printing Speed        | 50-300mm/s   |
| Drying temp. and time | 55°C/6H      |
| Retraction distance   | 1-3 (mm)     |
| Retraction Speed      | 20-40 (mm/s) |

\*Based on 0.4mm nozzle. Printing conditions may vary with different nozzle diameters.



PolyDissolve™ S1  
Recommended support material



PolyBox™ or PolyDryer™ Box  
Recommended storage for excellent printing quality

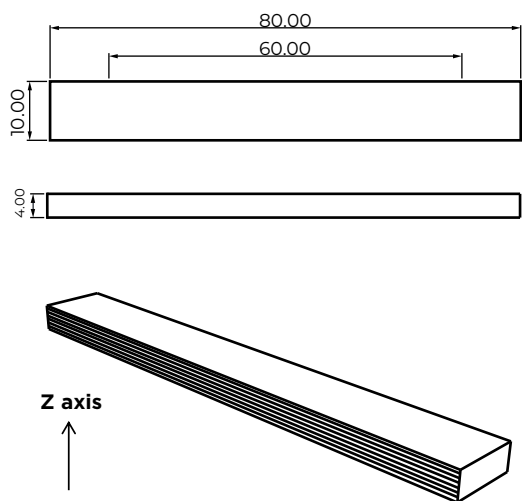
### HOW TO MAKE SPECIMENS

|                           |         |
|---------------------------|---------|
| Printing temperature      | 230°C   |
| Bed temperature           | 50°C    |
| Top & bottom layer        | 3       |
| Environmental Temperature | Ambient |

|             |      |
|-------------|------|
| Infill      | 100% |
| Shell       | 2    |
| Cooling fan | ON   |

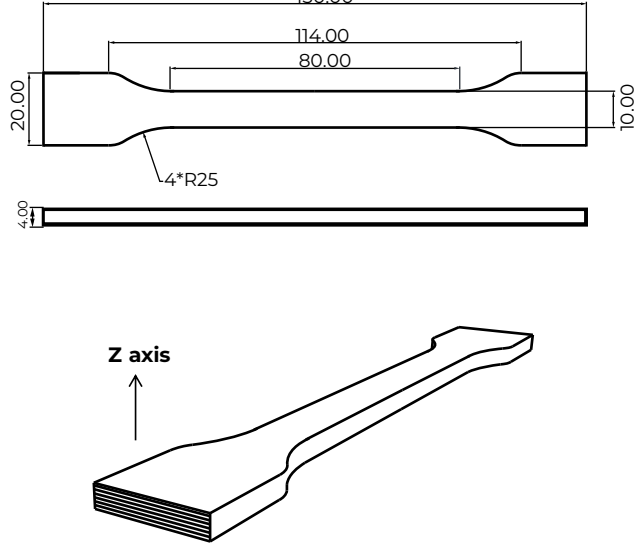
#### FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



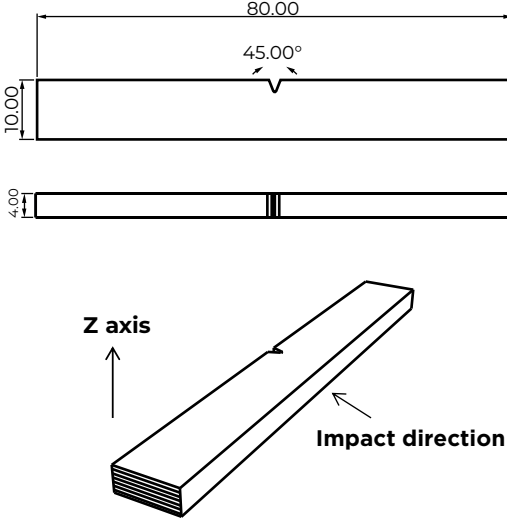
#### TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



#### IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



\*Based on testing with Polymaker™ Matte PLA (SKU: PA04034)

### DISCLAIMER

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End- use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice. Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/recycling practices of Polymaker™ materials for the intended application. Polymaker™ makes no warranty of any kind, unless announced separately, to the fitness for any use or application. Polymaker™ shall not be made liable for any damage, injury or loss induced from the use of Polymaker™ materials in any application.