PA NEXT Black V1 Powder Technical Data Sheet

High-toughness, high-density powder for bend-resistant, crack-resistant functional parts with isotropic strength in all directions

Raise3D PA NEXT Black Powder is a next-generation SLS 3D printing material engineered for superior toughness and exceptional isotropic performance. With 4-5x higher elongation at break compared to standard PA12, ultra-high powder flowability, and near-perfect isotropic mechanical properties (XYZ deviation within 1 MPa), PA NEXT is the ideal choice for dynamic load-bearing parts, flex-resistant components, and complex structures requiring multi-directional strength.

Benefits

- Exceptional toughness
- Ultimate isotropy
- Superior powder flowability
- High reuse rate
- Balanced mechanical properties
- Easy to print

Applications

- Industrial dynamic load-bearing components
- Automotive chemical-resistant structural parts
- Precision load-bearing structural components
- Custom tooling and fixtures
- Outdoor/low-temperature accessories

Mechanical Properties

Property	Testing Method	Typical Values (X-Direction)	Typical Values (Y-Direction)	Typical Values (Z-Direction)
Tensile Strength (MPa)	ISO 527-2	45	46	45
Elongation at Break (%)	ISO 527-2	36	35	30
Tensile Modulus (MPa)	ISO 527-2	1590	1670	1660
Flexural Strength (MPa)	ISO 178	55.1	53.15	49.05
Flexural Modulus (GPa)	ISO 178	1450	1530	1335
Impact Strength / notched A (kj/㎡)	ISO 179-2	2.89	2.48	2.54
Unnotched Charpy impact strength (kj/㎡)	ISO 179-2	35.58	32.36	34.07
Shore Hardness D	ISO 868-2003	79.5	80	80

Thermal Properties

Property	Testing Method	Typical Values (X-Direction)	Typical Values (Y-Direction)	Typical Values (Z-Direction)
Heat Deflection Temperature@0.45 MPa(°C)	ISO 75-2	156.5	145.1	147.8
Heat Deflection Temperature@1.8 MPa(°C)	ISO 75-2	48.3	45.3	48
VICAT Softening Temperature/10N(°C)	ISO 306	170.3	171	171
VICAT Softening Temperature/50N(°C)	ISO 306	152	154.4	154.4

Other Properties

Property	Testing Method	Typical Values
Powder Color	/	Black
Density (g/cm³)	ISO 1183.1-2004	1.065
Powder Bed Density (g/cm³)	/	0.492
Bulk Density (g/cm³)	ISO 60/ ASTM D1895/ GB-T 5162	0.66