



## Preliminary Technical Data Sheet

# Nexa3D xCE-Black



### PRODUCT DESCRIPTION

xCE-Black, a high-performance polymer for producing end-use plastic parts and injection molding tools in minutes. This new material is a single cure polymer that delivers higher flexural strength that is typically achieved only in dual cure cyanate ester resins. xCE-Black has excellent isotropic properties and exhibits long-term environmental stability making it well suited for a variety of automotive parts, electronics and many industrial components as well as the production of injection molding tools.

### TYPICAL PROPERTIES OF LIQUID RESIN

Specific Gravity, g/cm <sup>3</sup> @ 25°C	1.1
Viscosity, mPa*s (cP) @ 25°C	550 <sup>LMS</sup>
Appearance/Colour	Black

### 3D PRINTING MACHINE SETTINGS

Cure rate and ultimate depth of cure depend on light intensity, spectral distribution of the light source, exposure time and light transmittance of the printer window through which the light must pass.

### TYPICAL PROPERTIES OF PRINTED MATERIAL

The physical properties in the table below are reflective of what one may observe under the noted conditions. Contact your local Nexa3D Technical Service team for further information.

Measurement	Condition	Metric	Imperial
Tensile Strength	ASTM D638	69 ± 2 MPa	9932 ± 324 psi
Tensile Modulus	ASTM D638	2.84 ± 0.13 GPa	412 ± 18 kpsi
Elongation at Break	ASTM D638	3.0 ± 0.4%	
Flexural Strength	ASTM D790	135 MPa	19.6 kpsi
Flexural Modulus	ASTM D790	3.25 GPa	471 kpsi
Notched Izod	ASTM D256	20 J/m	0.33 ft-lbs/in
Impact Strength			
Glass Transition	DMA, E"	128°C	262°F
Hardness	ASTM D2240	89	

### CHEMICAL COMPATIBILITY

Compatibility of 3D-printed and post-cured resin parts were tested with several chemicals. From several resins, blocks of 20 x 20 x 20 mm were printed and post-cured according to the table below. The weight of the blocks were measured before the test and after 24 hour immersion in the specific chemical solution. Before weighing the surface of the immersed blocks were wiped dry.

Chemical	Results
Tap water	< 0,23%
Salt water (5 w% NaCl)	0,39%
Ethanol	0,47%
Dipropylene glycol methyl ether	0,23%
Dimethyl sulfoxide (DMSO)	0,31%
Tripropylene glycol monomethyl ether	0,16%
Diesel	< 0,1%
Petrol	< 0,1%
Bleach (5w% NaOCl)	< 0,1%
Methyl Ethyl Keton (MEK)	< 0,1%
Vinegar (8 w%)	< 0,1%
Hydrochloric Acid (0,1 M pH1)	< 0,1%
Sodium Hydroxide (1 M pH14)*	< 0,1%

\* Sodium Hydroxide had a soft outer surface.

### GENERAL INFORMATION

For safe handling information on this product, consult the Safety Data Sheet (SDS).

#### Directions for use:

- This product is light sensitive; exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
- **Shake or stir Nexa3D xCE-Black well before use.**
  - o Agitate resin before each print
  - o Do not leave resin in printer tray when not in use

- Recommended Post Print Processing:
  - o Rinse the printed part using an approved cleaner to remove uncured resin
  - o The use compressed air or impregnated wipes to remove excess residual solvent from the surface is recommended
  - o Remove any support structures prior to any post-curing step

### Nexa3D Material Specification<sup>LMS</sup>

Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Nexa3D Quality.

### Storage

Store product in the unopened container in a dry location.

Storage information may be indicated on the product container labelling.

**Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties.** Material removed from containers may be contaminated during use. Do not return product to the original container. Nexa3D cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Centre or Customer Service Representative.

### Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$	$\text{N}/\text{mm}^2 \times 145 = \text{psi}$
$\text{kV}/\text{mm} \times 25.4 = \text{V}/\text{mil}$	$\text{MPa} \times 145 = \text{psi}$
$\text{mm} / 25.4 = \text{inches}$	$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
$\mu\text{m} / 25.4 = \text{mil}$	$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
$\text{N} \times 0.225 = \text{lb}$	$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
$\text{N}/\text{mm} \times 5.71 = \text{lb}/\text{in}$	$\text{mPa}\cdot\text{s} = \text{cP}$

### Note

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Nexa3D is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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