N3XTDIMENSION®

TECHNICAL DATA SHEET

# N3D-CAST245

Investment casting resin

DLP LCD

N3D-CAST245 is an investment casting material with outstanding feature replication and cast quality. The low viscosity allows for easy processing and the low thermal expansion is excellent for large pieces.

## KEY PROPERTIES

| N3D-CAST245 | |
|---|---|
| Liquid | |
| **Appearance** | Purple |
| **Viscosity @ 25°C** | 80 mPa.s |
| Material | |
| **Tensile Strength** | 12.5 MPa |
| **Tensile Modulus** | 900 MPa |
| **Tensile Elongation at Break** | 4% |
| **Flexural Strength** | 35 Mpa |
| **Flexural Modulus** | 1050 MPa |
| **Coefficient of Thermal Expansion (Below Tg/Above Tg)** | 20/210 |

## KEY FEATURES

- → Excellent cast quality
- → Low thermal expansion
- → Melts during burnout cycle

## APPLICATIONS

- → Metal casting
- → Jewelry casting

## MAIN MARKETS

- → Jewelry
- → Consumer goods
- → Dental
- → Industrial

ARKEMA

# N3D-CAST345

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## MATERIAL PROPERTIES

| Property | Units | Method | Green[1] | UV post-curing[2] |
|---|---|---|---|---|
| Ultimate Tensile Strength | MPa | ASTM D638 | 11 | 12.5 |
| Tensile Young's Modulus | MPa | ASTM D638 | 630 | 900 |
| Tensile Strain at Break | % | ASTM D638 | 13 | 4 |
| Flexural Strength | MPa | ASTM D790 | — | 1050 |
| Flexural Modulus | MPa | ASTM D790 | — | 35 |
| Hardness | Shore D | ASTM D2240 | — | — |
| CTE pre Tg | µm/m*C | IPC-TM-650 2.4.24.3 | — | 20 |
| CTE post Tg | µm/m*C | IPC-TM-650 2.4.24.3 | — | 210 |

1 Parts were printed in the XZ orientation with a 50 µm layer thickness on a 405 nm bottom-up DLP printer with an irradiance of 4 mW/cm$^2$. Green samples were conditioned for 40-80 hours following ASTM D618 Procedure A before testing.

2 Parts were printed in the XZ orientation with a 50 µm layer thickness on a 405 nm bottom-up DLP printer with an irradiance of 4 mW/cm$^2$. Parts were post-cured for 5 minutes per side with 5,700 mJ/cm2 of UVV energy dosage & 6,800 of UVA mJ/cm$^2$ energy dosage. Samples were conditioned for 40-80 hours following ASTM D618 Procedure A before testing.

## LIQUID PROPERTIES

| Property | Units | Method | Value |
|---|---|---|---|
| Appearance | — | — | Purple |
| Viscosity, 25°C | cP | ASTM D2983 | 80 |

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## PRINTING CONDITIONS

Printing conditions may be fine tuned depending on individual printer performance.

| 3D printing parameter | Units | | |
|---|---|---|---|
| Layer Thickness | µm | 35 | 50 |
| Wavelength | nm | 405 | 405 |
| Intensity | mW/cm² | 1.8 | 4 |
| Standard Exposure Time | Sec | 5 | 3.5 |
| Burn in Exposure Time | Sec | 30 | 30 |

Specific printing parameters are available on printers including Phrozen and Stratasys P3™ Origin®. For additional guidance on print parameter setup for specific 3D printers, consult with Arkema technical service teams.

## POST-CURING CONDITIONS

| Value | Units | Intelliray 400 | LED cure box |
|---|---|---|---|
| Time per side | Sec | 300 | 60 |
| UVA irradiance | mW/cm² | 100-120 | 50 |
| UVV irradiance | mW/cm² | 100-120 | 75 |

## CLEANING PROCESS

Submerge 3D printed parts in isopropyl alcohol and agitate or sonicate for no more than 10 minutes. Incorporate two-stage cleaning baths for improved efficacy. Use compressed air to remove any residual liquid material.

## STORAGE, HANDLING, & SHELF LIFE

Shake the bottle manually before use. Store N3D-CAST245 in a cool, dry place. Since N3D-CAST245 is a photo-reactive material, avoid exposing open bottles to ambient lighting or sunlight. Reseal the packaging immediately after use. When stored under these conditions, products should be used within 6 months from the date of manufacture. Refer to the Safety Data Sheet (SDS) for more detailed storage and handling recommendations.

## HEALTH AND SAFETY

For health and safety guidelines related to N3D-CAST245, please refer to the Safety Data Sheet (SDS).



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