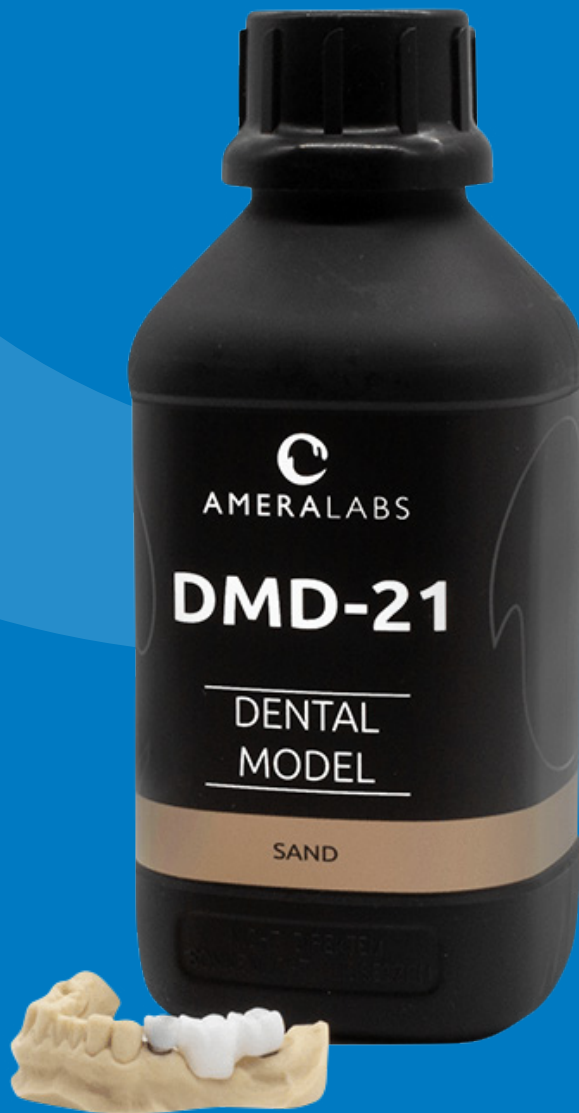




AMERALABS

DMD-21

ORTHODONTIC, WAX-UP, IMPLANT,
CROWN AND BRIDGE MODELS



MB Labsamera

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MATERIAL PROPERTIES

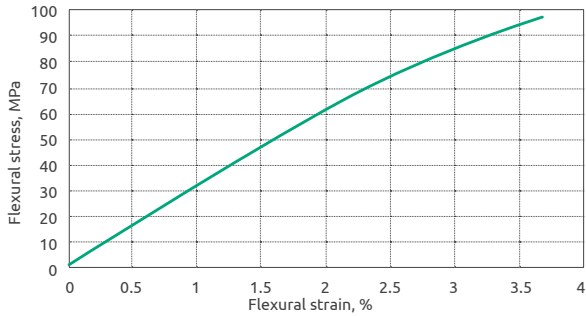
- **FAST.** Resin hardens extremely fast even on low powered LED/LCD 3D printers resulting in shorter printing time.
- **LOW VISCOSITY.** Easier to clean your parts before post-curing and to maintain all features of original model.
- **OUTSTANDING ACCURACY.** DMD-21 resin produces dimensionally accurate and stable prints. Due to its stiffness and a fair amount of hardness it can sustain straight edges and print out even the tiniest features. Supports do not bend during printing, keeping the model in place throughout the whole printing session and giving a higher rate of success with complex prints.
- **EXCELLENT DIMENSIONAL STABILITY.** Material has very low flexibility and produces models with accurate dimensions. Resistant to mechanical stress and chemicals.
- **LOW SHRINKAGE.** Printed models do not deform because of shrinkage.
- **LOW ODOR, LOW SKIN IRRITATION.** Gloves and simple ventilation is all you need to comfortably print with this resin.
- **NO PIGMENT SETTLING.** Stabilized pigment dispersion enables extremely long vertical 3D printing sessions. There is no significant pigment settling for days.
- **SAND COLOR.** Carefully pigmented to get ideal sand color, that expresses the most intricate details and is pleasing for patient-facing models. Color is almost fully opaque.
- **HARD.** Surface is glossy and hard (79 Shore D) allowing to capture accurate dimensions of the model. After post-cure, it does not feel sticky or tacky and is pleasant to touch.
- **CONVENIENT PACKAGE.** Comes in 500 ml and 1 L bottles or 5 L cans.

TECHNICAL DATA

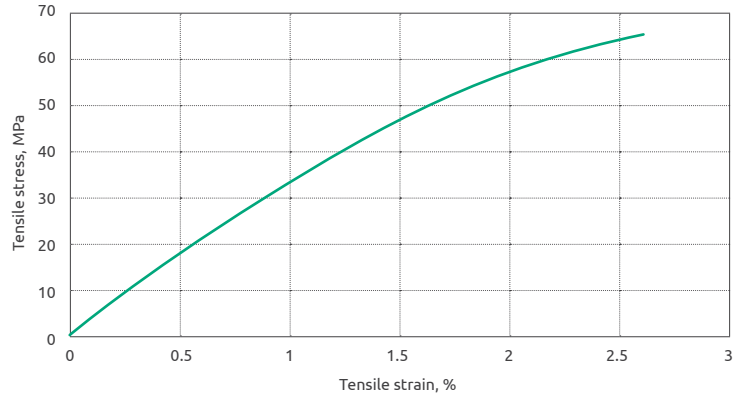
Tensile Properties	Standard	Value
Modulus of Elasticity	ISO 527-5A	3.42 GPa
Stress at Break	ISO 527-5A	65.6 MPa
Strain at Break	ISO 527-5A	2.6 %
Flexural Properties	Standard	Value
Modulus of Elasticity	ISO 178	3.16 GPa
Stress at Yield	ISO 178	95.9 MPa
Strain at Break	ISO 178	3.8 %
Compression Properties	Standard	Value
Modulus of Elasticity	ASTM D695	1.82 GPa

Other Properties	Standard	Value
Impact resistance (notched)	ASTM D256	0.96 kJ·m ⁻²
Heat deflection temperature (0.45 MPa)	ISO 75	152.2 °C
Density (liquid)	ISO 2811-1	1.123 g·cm ⁻³
Density (solid)	ISO 1183-1	1.237 g·cm ⁻³
Viscosity at 25 °C	ISO 2555	370 mPa·s
Hardness	ASTM D2240	79 D
Critical Dose	WCM ¹	1.496 mJ·cm ⁻²
Penetration Depth	WCM ¹	0.096 µm

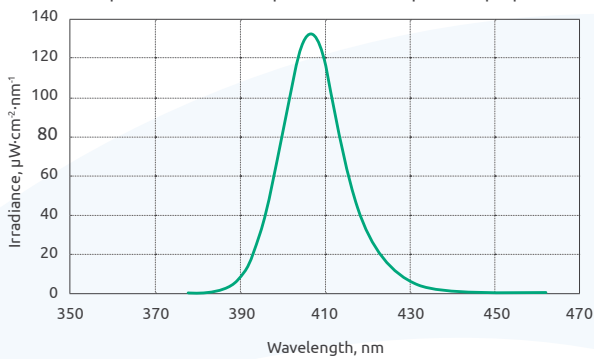
Flexural stress strain diagram of DMD-21



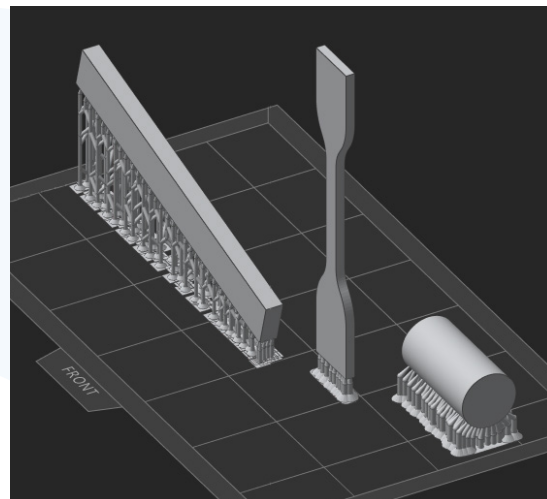
Tensile stress strain diagram of DMD-21



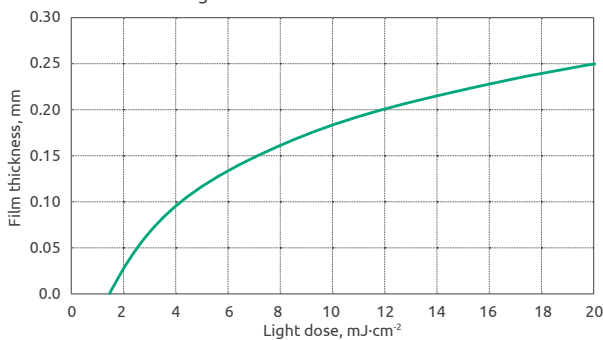
The spectrum of the DLP printer used for specimen preparation



Tensile, Flex and Compression specimen orientation



Working curve measurement of DMD-21 resin



All specimens for various tests were printed using a DLP printer with $2.62 \text{ mW}\cdot\text{cm}^{-2}$ light intensity and a UV spectrum peak of 406.3 nm. A layer height of $50 \mu\text{m}$ was used to print the specimens, and the exposure was set at 1.8 s. After printing, the specimens were washed with isopropanol for 14 min in a wash and cure station. Specimens were dried in the air for 30 min and then post-cured for 1 h in a UV chamber with 3 light sources of 365 nm (35 W), 380 nm (28 W) and 395 nm (92 W).

¹P. F. Jacobs, Rapid Prototyping and Manufacturing: Fundamentals of StereoLithography, McGraw-Hill, Inc., New York, NY, USA, 1993.



COMPATIBILITY

Designed to work with MSLA and DLP 3D printers with both color and monochrome LCD screens: Anycubic, Phrozen, Elegoo, Epax, Longer, Prusa, Asiga and similar 3D printers. List of initial 3D printing settings can be found here: <https://ameralabs.com/3d-printing-settings/>

DMD-21 should not be used with PDMS based resin trays, because it is too reactive and can damage your PDMS silicon layer. We strongly recommend using it with FEP, NFEP, PFA, ACF, HDF or similar film based resin trays only.

3D PRINTING

For a successful first print, we recommend:

- Level your build plate.
- If it's your first print with this resin, print something small first. We recommend this model: <https://ameralabs.com/blog/town-calibration-part/>
- Find initial printing settings here: <https://ameralabs.com/3d-printing-settings/>
- Use support column thickness of 1.5-2 mm, support tip thickness of 0.2-0.6 mm.
- Use attachment layer.
- Hollow your models.
- Shake resin bottle well before use.
- Make sure your room temperature is around 22-25 °C.
- Use slower lift speeds. 5mm/min for bottom layers, 40-60 mm/min for normal layers.

Let us know if you have any trouble. We are here to help: support@ameralabs.com

CLEANING

Viscosity of this material is relatively low so cleaning is quite easy. If you use Wash and Cure, leave the printed object submerged in IPA for 6 minutes. Depending on the results, you can repeat this step again and leave for additional 6 minutes. If you do not have ultrasonic cleaner or prefer cleaning with ordinary IPA baths, here is our 4 easy steps cleaning procedure:

1. After taking your printed object off the build plate leave it submerged in the IPA bath for 2 minutes.
2. Swirl the IPA bath with printed part in it actively for another 2 minutes.
3. After swirling, leave it still, but fully submerged for another 2 minutes.
4. Finally, swirl the bath actively again for 2 minutes.

Evaluate cleaning results and repeat this procedure only once (if needed) with clean IPA.

If you prefer cleaning with ultrasonic cleaner, we recommend to put a printed part into the container with IPA, close it well and put the container into the ultrasonic cleaner filled with water. Leave it for no more than 10 minutes without additional heating.

POST CURING

It is easier to remove supports before post-curing. However, you can also post-cure a print with supports and remove them later. Depending on the model, this can help to obtain better geometries if you have such goal. Post-curing time depends on your curing station. It can vary from 5 minutes to 1 hour (until the surface of your 3D print becomes non-sticky). You should post-cure immediately after cleaning and drying. After proper post-curing, the surface of DMD-21 printed objects should be completely non-sticky and very hard to scratch.



SAFETY

Consult the relevant Safety Data Sheet (<https://ameralabs.com/msds/>) for appropriate handling procedures and protective equipment before using this or any other material referred to in this bulletin. See Safety Data Sheet for emergency and first aid procedures.

This resin is not meant for contact with food, drinks, or medical use on or in a human body. Always read the material safety data sheet thoroughly.

Resins are classified as dangerous chemicals, and it is necessary to dispose of them properly in designated containers. Resin bottles (empty or full) must never be disposed of or poured into the general waste.

Store resin at room temperature away from direct sunlight.

Use protective gloves and glasses at all times when handling chemical products.

Provide adequate ventilation. This should be achieved using local exhaust ventilation and good general extraction where reasonably practicable. If these are insufficient to maintain concentrations of particulates and solvent vapors below the OEL, suitable respiratory protection must be worn.

The information in this document is based on general experience and knowledge of Ameralabs in developing and manufacturing 3D printing materials and reflects our current status of knowledge. The performance of our products depends on many factors, in particular, specific use, 3D printing and post-processing conditions, additional treatment, measuring conditions, etc. For this reason, general statements about our products' properties and functions are impossible. The information in this data sheet provides general, non-binding guidelines. They never contain an assurance of properties or guarantee regarding the product's suitability for the individual case.

It is the user's responsibility to test the functional safety of the product in the field of application and to ensure a careful use of the product. Before using the product, we recommend our customers have a personal consultation with one of our contact persons at Ameralabs to receive comprehensive information about this product's operating conditions and performance characteristics.

We are continuously developing our products for further improvements. We reserve the right to change, correct, and/or improve the product, the production process, and the product information without prior notice. With the appearance of this product information, all former information sheets lose their validity. Copying and/or reproductions in any form require the manufacturer's written consent.

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