AMERALABS

SiOmaster

3D PRINTED MASTERS FOR SILICONE RUBBER MOLD MAKING

PERFECT FOR

- Reusable masters for high temperature silicone mold production
- Manufacturers utilizing SiOcast and spin-casting machines

MB Labsamera
Company No. 304522059
VAT reg. No. LT100011574412
Address: Draugystes st. 14,
51259 Kaunas, Lithuania

Contacts:
+370 602 42 209
sales@ameralabs.com
https://ameralabs.com
https://www.linkedin.com/company/ameralabs

AMERALABS

SiOmaster

FOR SILICONE RUBBER MOLD MAKING

MATERIAL PROPERTIES

- TEMPERATURE RESISTANT. Masters can withstand several high temperature silicone vulcanizations without breaking. Resistant up to 180 °C vulcanization temperature.
- TOUGH. 3D printed models have a perfect balance of flexibility and tensile strength.
- HARD SURFACE. Surface is glossy and hard (80 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. Does not bend under pressure during vulcanization
- ACCURATE. Resin produces dimensionally accurate and stable resin models. Printed models do not crack or de-form because of shrinkage.
- THIN SUPPORT MARKS. When used with many thin supports leaves little support marks.
- GOOD BUILD PLATE ADHESION.
- 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.
- CAREFULLY PIGMENTED. Opaque colors, that expresses the most intricate details
- MEDIUM VISCOSITY. No heating is required. It is easy to clean your parts before post-curing and maintain all original model features.
- CONVENIENT PACKAGE. Comes in 500 g, 1 Kg, or 5 Kg containers.

TECHNICAL DATA

Tensile Properties	**Standard**	**Value**
Modulus of Elasticity	ISO 527-5A	1.87 GPa
Stress at Yield	ISO 527-5A	43.5 MPa
Strain at Yield	ISO 527-5A	5.1 %
Stress at Break	ISO 527-5A	37 MPa
Strain at Break	ISO 527-5A	44.3 %
Flexural Properties	**Standard**	**Value**
Modulus of Elasticity	ISO 178	1.66 GPa
Stress at Yield	ISO 178	64.2 MPa
Strain at Yield	ISO 178	6.4 %
Strain at Break	ISO 178	>10 %
Compression Properties	**Standard**	**Value**
Modulus of Elasticity	ASTM D695	1.13 GPa

Other Properties	**Standard**	**Value**
Impact resistance (notched)	ASTM D256	5.71 $kJ \cdot m^{-2}$
Vicat softening temperature (50 N, 50 °C min^{-1})	ASTM D1525	64.2 °C
Heat deflection temperature (0.45 MPa)	ISO 75	64.4 °C
Density (liquid)	ISO 2811-1	1.101 $g \cdot cm^{-3}$
Density (solid)	ISO 1183-1	1.222 $g \cdot cm^{-3}$
Viscosity at 25 °C	ISO 2555	660 mPa·s
Hardness	ASTM D2240	80 D
Water Absorption (24 h)	ASTM D570	3.32 %
Critical Dose	WCM[1]	1.44 $mJ \cdot cm^{-2}$
Penetration Depth	WCM[1]	0.11 µm

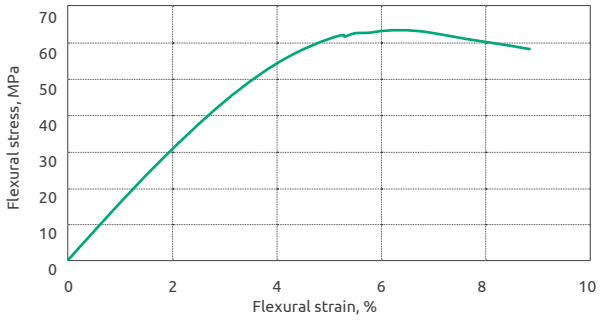
All specimens for various tests were printed using a DLP printer with 2.62 $mW \cdot cm^{-2}$ light intensity and a UV spectrum peak of 406.3 nm. A layer height of 50 µm was used to print the specimens, and the exposure was set at 1.8 s. After printing, the specimens were washed with isopropanol for 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).

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

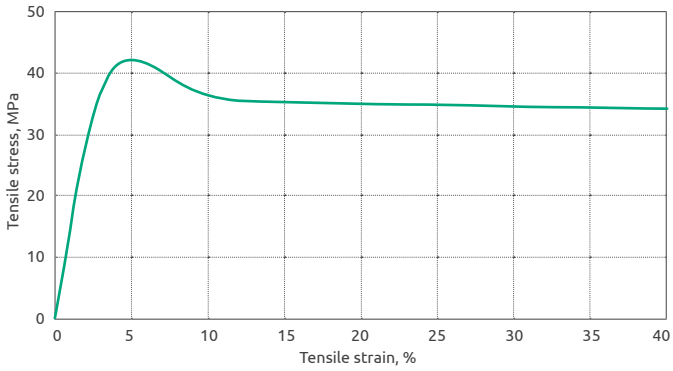
MB Labsamera
Company No. 304522059
VAT reg. No. LT100011574412
Address: Draugystes st. 14,
51259 Kaunas, Lithuania

Contacts:
+370 602 42 209
sales@ameralabs.com
https://ameralabs.com
https://www.linkedin.com/company/ameralabs

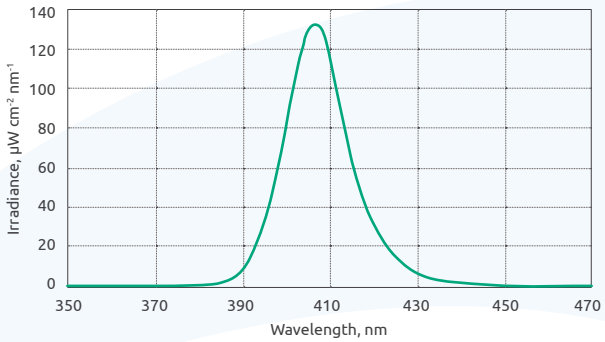
Flexural stress strain diagram of SioMaster



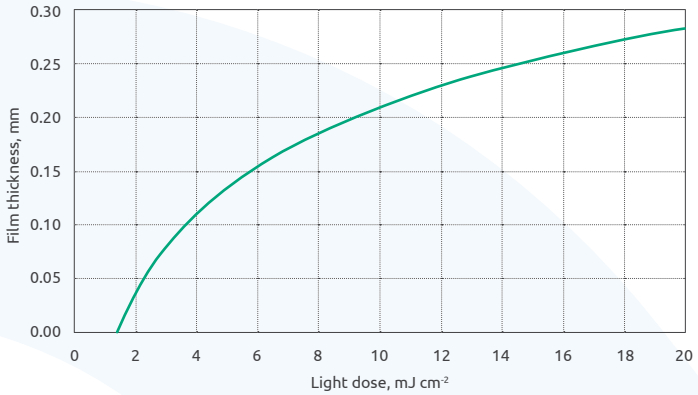
Tensile stress strain diagram of SioMaster



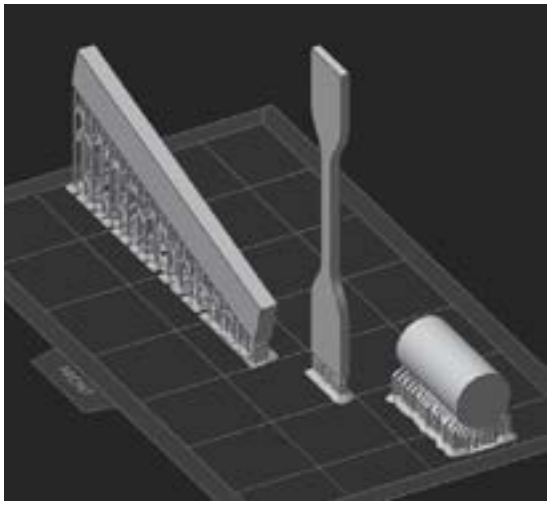
The spectrum of the DLP printer used for specimen preparation



Working curve measurement of SioMaster resin



Tensile, Flex and Compression specimen orientation



MB Labsamera
Company No. 304522059
VAT reg. No. LT100011574412
Address: Draugystes st. 14,
51259 Kaunas, Lithuania

Contacts:
+370 602 42 209
sales@ameralabs.com
https://ameralabs.com
https://www.linkedin.com/company/ameralabs

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/

SiOmaster 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

SiOmaster material has a bit higher viscosity than most 3D printing resins. If you use Wash and Cure or similar washing station, leave the printed object submerged in IPA for 12 minutes. Depending on the results, you can repeat this step again and leave for additional 6 minutes. This 3D material should not be left submerged in solvents for extended periods of time. By all means do not leave submerged in IPA or any other liquid for more than 40 minutes. Doing so might ruin your models and affect final properties of polymer material.

If you prefer cleaning with ordinary IPA baths, here is our easy 4 steps cleaning procedure:

1. After taking your printed object off the build plate, submerge it in the IPA bath for 10 minutes.
2. Swirl the IPA bath with our part in it actively for another 1 minute.
3. After swirling, leave it still, but fully submerged for another 10 minutes. At this point it would be wise to change IPA to clean one.
4. Finally, swirl the bath actively again for 1 minute.

Evaluate cleaning results and repeat this procedure only once (if needed).
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. No additional heating is necessary.

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 SiOmaster printed objects should be completely non-sticky and very hard to scratch.

MB Labsamera
Company No. 304522059
VAT reg. No. LT100011574412
Address: Draugystes st. 14,
51259 Kaunas, Lithuania

Contacts:
+370 602 42 209
sales@ameralabs.com
https://ameralabs.com
https://www.linkedin.com/company/ameralabs

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.

MB Labsamera
Company No. 304522059
VAT reg. No. LT100011574412
Address: Draugystes st. 14,
51259 Kaunas, Lithuania

Contacts:
+370 602 42 209
sales@ameralabs.com
https://ameralabs.com
https://www.linkedin.com/company/ameralabs