

# Ultracur3D<sup>®</sup> DM 2304

## Dental | Gingiva Mask | Pink

## Extended TDS

Complete Technical Documentation  
and Testing Summary



Version: 2.0

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# Technical Data Sheet

**Flexible resin specifically developed for non-medical gingiva masks.**

General Properties	Norm	Typical Values
Appearance	-	Pink
Viscosity, 25°C	Cone/Plate Rheometer <sup>1)</sup>	200 mPas
Viscosity, 30°C	Cone/Plate Rheometer <sup>1)</sup>	160 mPas
Density (Printed Part)	ASTM D792	1.08 g/cm <sup>3</sup>
Density (Liquid Resin)	ASTM D4052-18a	1.01 g/cm <sup>3</sup>

Tensile Properties <sup>2)</sup>	Norm	Typical Values
Ultimate Tensile Strength	ASTM D412 C	4 MPa
Elongation at Break	ASTM D412 C	160%

Thermal Properties	Norm	Typical Values
Glass transition temperature (DMA, tan(d))	ASTM D4065	-4°C
Vicat temperature <sup>3)</sup>	ASTM D1525	88°C

Other	Norm	Typical Values
Hardness Shore A	ASTM D2240	50
Water Absorption, Short-Term (24 hours)	ASTM D570	1.22%
Water Absorption, Long-Term (>1500 hours)	ASTM D570	>5%

### *Mechanical properties overview*

- 1) Determined with TA-Instrument DHR rheometer, cone/plate, diameter 60 mm, shear rate 100 s<sup>-1</sup>
- 2) Pulling speed 500 mm/min
- 3) 120 K/h, 10N
- 4) If not noted otherwise, all specimens are 3D printed. Samples were tested at room temperature, 23°C.

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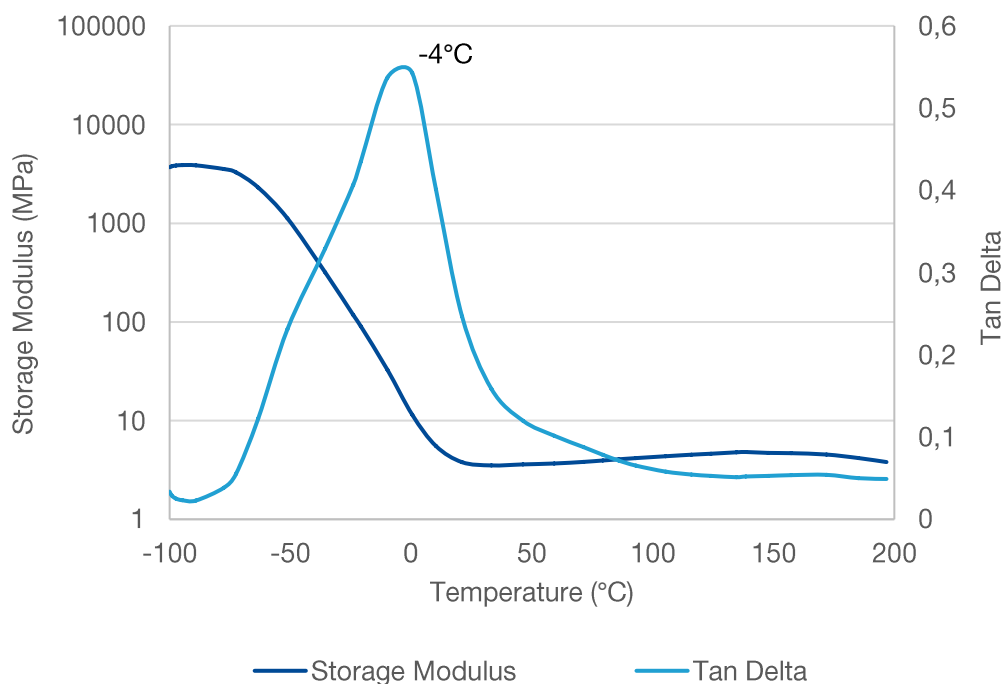
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# Dynamic Mechanical Analysis (DMA)

In this DMA measurement, a cyclic strain is applied to the sample, and the response of the sample is recorded as a function of temperature. This can give a good impression of the changes in material behavior, both at low and high temperatures. The measured Storage modulus is a good indication of the stiffness of the material. The maximum in Tan Delta gives the glass transition temperature.

	Setting
Measurement	Strain-controlled
Temperature sweep	3°C / min
Strain	0.14% (linear viscoelastic regime)
Type of loading	Single cantilever
Frequency	1 Hz

*Testing conditions DMA*



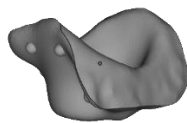
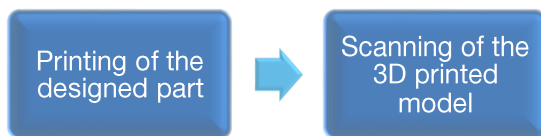
*DMA curve*

# Accuracy for dental applications

In the dental field, the fit of dental restoration or orthodontic appliances is an important aspect. To make sure the appliance or restoration fits well in the patient's mouth, the accuracy of the part needs to be ensured. With 3D printing, we can scan and compare the printed parts with the original designed file. This chapter demonstrates the high accuracy that can be achieved with Ultracur3D® DM 2304 for non-medical gingiva mask for implant models.

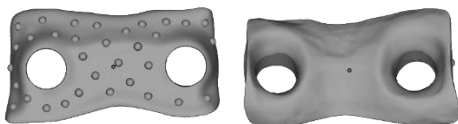
## Test Method and Specimens

For printing Ultracur3D® DM 2304, a MiiCraft Ultra 125 Y printer was used. Print parameters and post-processing was done as described in the corresponding User Guideline of the material. For scanning we used the FINOSCAN MOTION HR scanner.



### Demo Gingiva Mask 1:

Upper jaw, tooth position 11, non-medical gingiva mask with small retention pearls for a better fit.



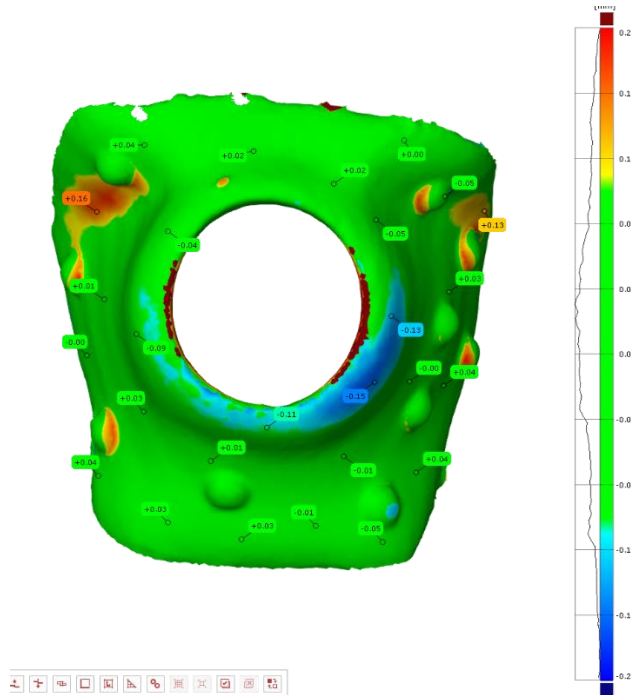
### Demo Gingiva Mask 2:

Upper jaw, tooth position 14 – 16, non-medical gingiva mask with small retention pearls for a better fit

The 3D printed part of the non-medical gingiva mask is compared with the original designed STL file and the fitting on the 3D printed model will be investigated.

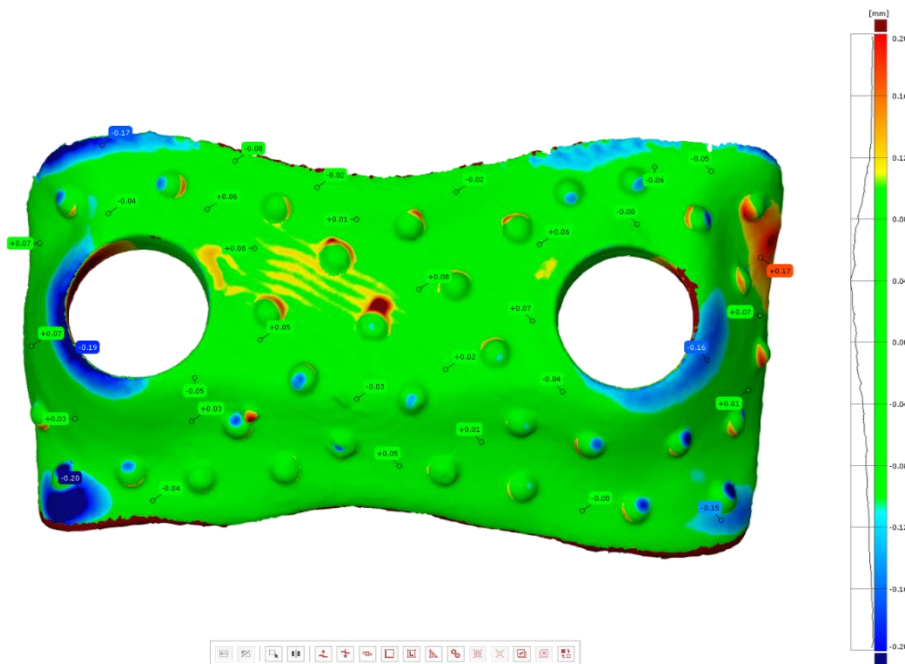
## Accuracy Scan Test

Demo model – gingiva mask upper jaw, tooth position 11: scan of 3D **printed model** vs. **original STL**.



*Ultracur3D® DM 2304 is within tolerance +/- 100µm*

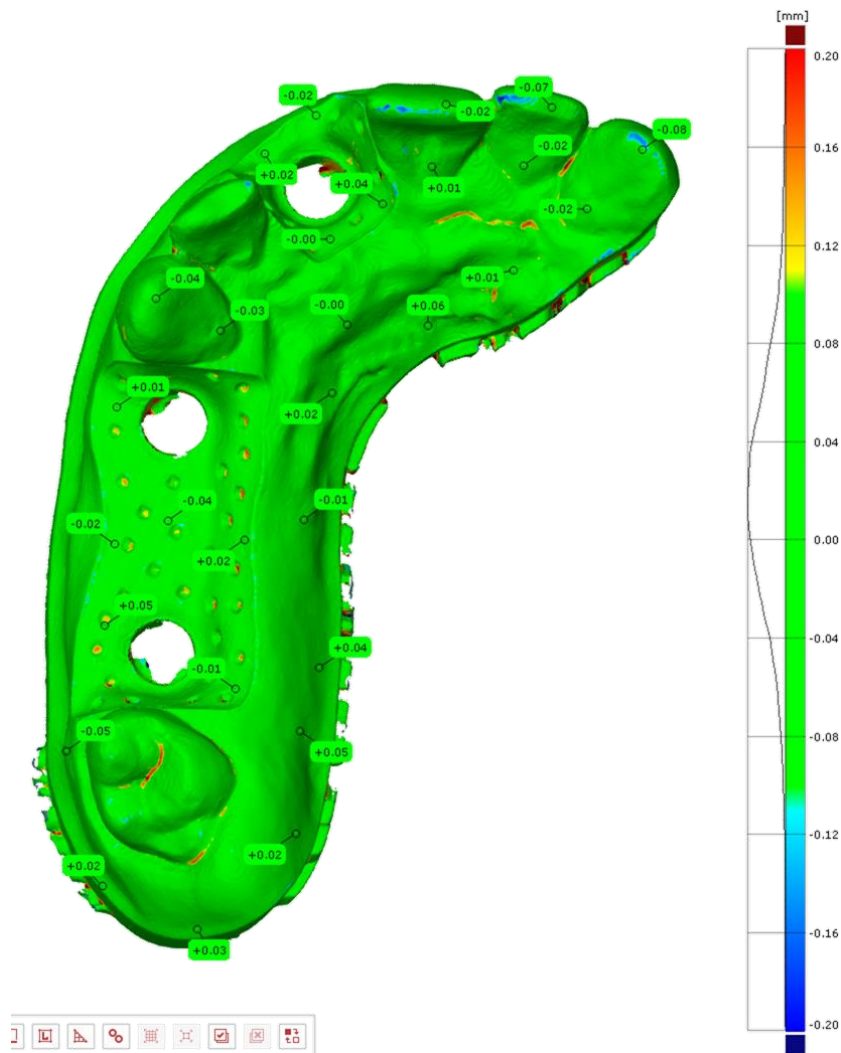
Demo model – gingiva mask upper jaw, tooth position 14-16: scan of 3D **printed model** vs. **original STL**.



*Ultracur3D® DM 2304 is within tolerance +/- 100µm*

## Accuracy Fitting Test

To check the fitting of the gingiva mask, it was fitted inside a dental model printed with Ultracur3D® DM 2505. The dental model was scanned to confirm its accuracy, and the fitting of the gingiva mask was then checked with the help of a microscope, which showed a very good fit.



*Ultracur3D® DM 2505 Model without gingiva mask is within tolerance +/- 100µm (solid)*





*3D printed gingiva mask tooth position 11*



*3D printed gingiva mask tooth position 14-16*