

Ultracur3D® ST 7500 G

Tough | Durable | Grey

Extended TDS

Complete Technical Documentation
and Testing Summary



Version: 1.0

Contents

Technical Data Sheet	3
Long-Term UV	5
Industrial Chemical Resistance.....	7
Consumer Chemical Resistance.....	9
Biocompatibility.....	11

Technical Data Sheet

Multi-purpose resin with high durability and fast easy printing.

General Properties	Norm	Typical Values
Appearance	-	Grey
Viscosity, 25°C	Cone/Plate Rheometer ¹⁾	180 mPas
Viscosity, 30°C	Cone/Plate Rheometer ¹⁾	130 mPas
Density (Printed Part)	ASTM D792	1.21 g/cm ³
Density (Liquid Resin)	ASTM D4052-18a	1.10 g/cm ³
Tensile Properties ²⁾	Norm	Typical Values
E Modulus	ASTM D638	2300 MPa
Ultimate Tensile Strength	ASTM D638	54 MPa
Elongation at Break	ASTM D638	13 %
Flexural Properties	Norm	Typical Values
Flexural Modulus	ASTM D790	2150 MPa
Flexural Strength	ASTM D790	95 MPa
Impact Properties	Norm	Typical Values
Notched Izod (Machined), 23°C	ASTM D256	25 J/m
Unnotched Izod, 23°C	ASTM D256	546 J/m
Notched Charpy (Machined), 23°C	ISO 179-1	3.2 kJ/m ²
Thermal Properties	Norm	Typical Values
HDT at 0.45 MPa	ASTM D648	64°C
HDT at 1.82 MPa	ASTM D648	54°C

The data contained in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, this data does not relieve processors from carrying out their own investigations and tests; neither does this data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose.

Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

The safety data given in this publication is for informational purposes only and does not constitute a legally binding MSDS. The relevant MSDS can be obtained upon request from your supplier or you may contact BASF 3D Printing Solutions GmbH directly at sales@basf-3dps.com.

Biocompatibility	Norm	Typical Values
Cytotoxicity – Neutral Red	ISO 10993-5 (2009)	PASS ³⁾

Other	Norm	Typical Values
Hardness Shore D	ASTM D2240	82
Water Absorption, Short-Term (24 hours)	ASTM D570	0.9%

Mechanical properties overview

- 1) Determined with TA-Instrument DHR rheometer, cone/plate, diameter 60 mm, shear rate 100 s⁻¹
- 2) Pulling speed 5 mm/min
- 3) For the statement on Biocompatibility data see Chapter: [Biocompatibility](#).
- 4) If not noted otherwise, all specimens are 3D printed. Samples were tested at room temperature, 23°C. ASTM sample size (L x W x H): ASTM D790 80 x 4 x 10 mm, ASTM D256 63 x 3.2 x 12 mm, ASTM D648 127 x 3.2 x 13 mm, ISO 179-1 80 x 4 x 10 mm

Printing Performance

The combination of 3D printer and material has a huge impact on the quality of the parts produced. The measured design characteristics as well as the printing speed can be found in the [Printing Evaluation Guideline of Ultracur3D® Resins](#).

The data contained in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, this data does not relieve processors from carrying out their own investigations and tests; neither does this data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose.

Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

The safety data given in this publication is for informational purposes only and does not constitute a legally binding MSDS. The relevant MSDS can be obtained upon request from your supplier or you may contact BASF 3D Printing Solutions GmbH directly at sales@basf-3dps.com.

Long-Term UV

Durability is a key feature for the components utilized within many industries, as they expect the materials used to withstand years of exposure to the elements. Through the effects of UV radiation, photopolymers can degrade over time. The aging can be caused by the influence of UV light, heat and water. The degree of ageing depends on duration and intensity.

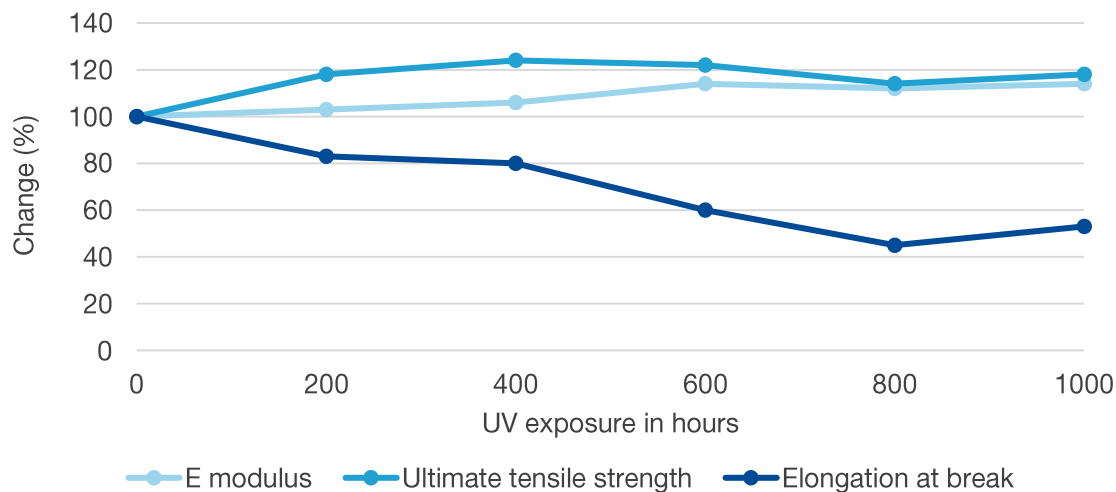
Test Method and Specimens

The ageing tests were performed with ASTM D638 type IV tensile bars and color cones as per ISO 4892-2:2013 method A, cycle 1.

Cycle No.	Exposure period	Irradiance		Black standard temperature in °C	Chamber temperature in °C	Relative humidity in %
		Broadband (300 nm to 400 nm) in W/m ²	Narrowband (340 nm) in W/(m ² nm)			
1	102 min dry	60 ± 2	0.51 ± 0.02	65 ± 3	38 ± 3	50 ± 10
	18 min water spray	60 ± 2	0.51 ± 0.02	-	-	-

Testing conditions for ISO 4892-2 method A, cycle 1

Mechanical Testing



Change in mechanical properties after accelerated weathering

The final values after 1000 hours of long-term UV exposure can be found below.

Property	Before long-term UV exposure	After 1000 hours of UV exposure
E modulus	2220 MPa	2520 MPa
Ultimate tensile strength	51 MPa	60 MPa
Elongation at break	12 %	6 %

Mechanical properties before and after 1000 hours of UV exposure as per ISO 4892:2 method A

Coloration

After being exposed up to 1000 hours, there was no visual change or additional yellowing compared to the reference sample.



Effect of UV exposure on color of the specimens

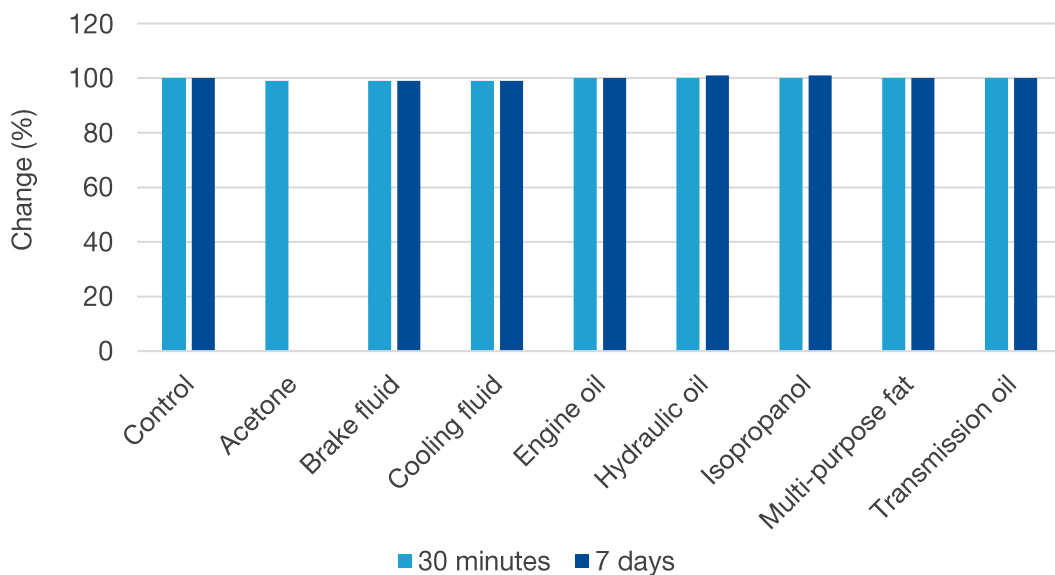
Industrial Chemical Resistance

The resistance of resin materials against chemicals, solvents and other contact substances is an important criterion of selection for many industrial applications. General chemical resistance depends on the period of exposure, the temperature, the quantity, the concentration and the type of the chemical substance. When exposed to industrial chemicals, the chemical bonds of photopolymers can break or degrade, causing a change in the mechanical properties.

Test Method and Specimens

ASTM D638 type IV tensile bars were soaked in each fluid at room temperature, one set for 30 minutes and one set for 7 days. Upon completion of the soaking time, the parts were removed from the test fluid and were dried to measure the weight and the mechanical properties.

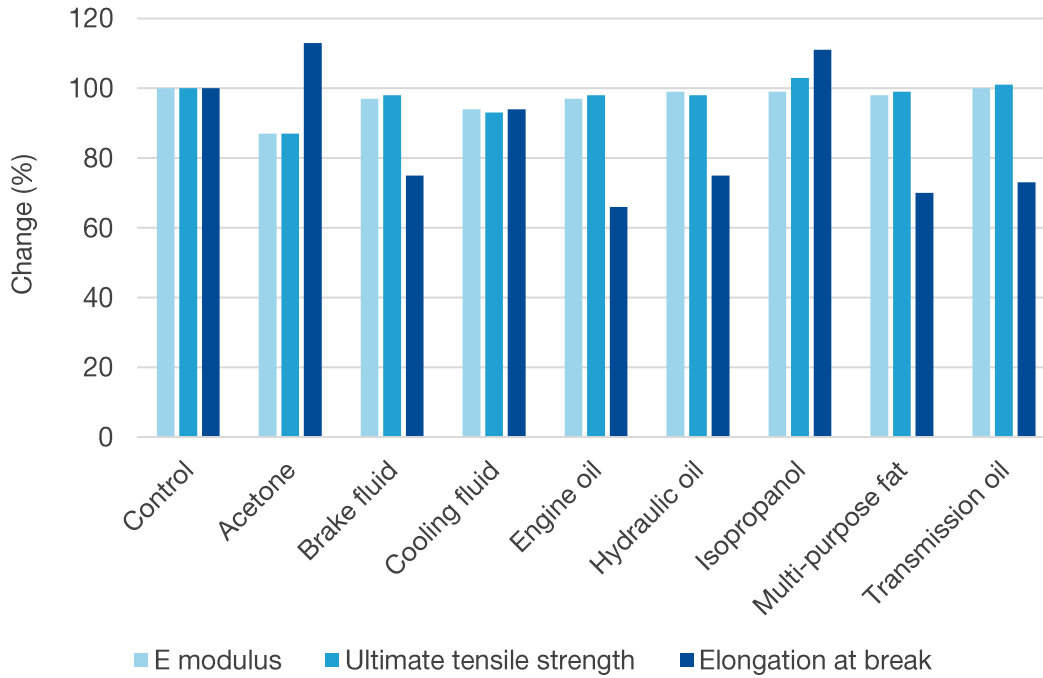
Weight Measurement



Change in weight after immersion time

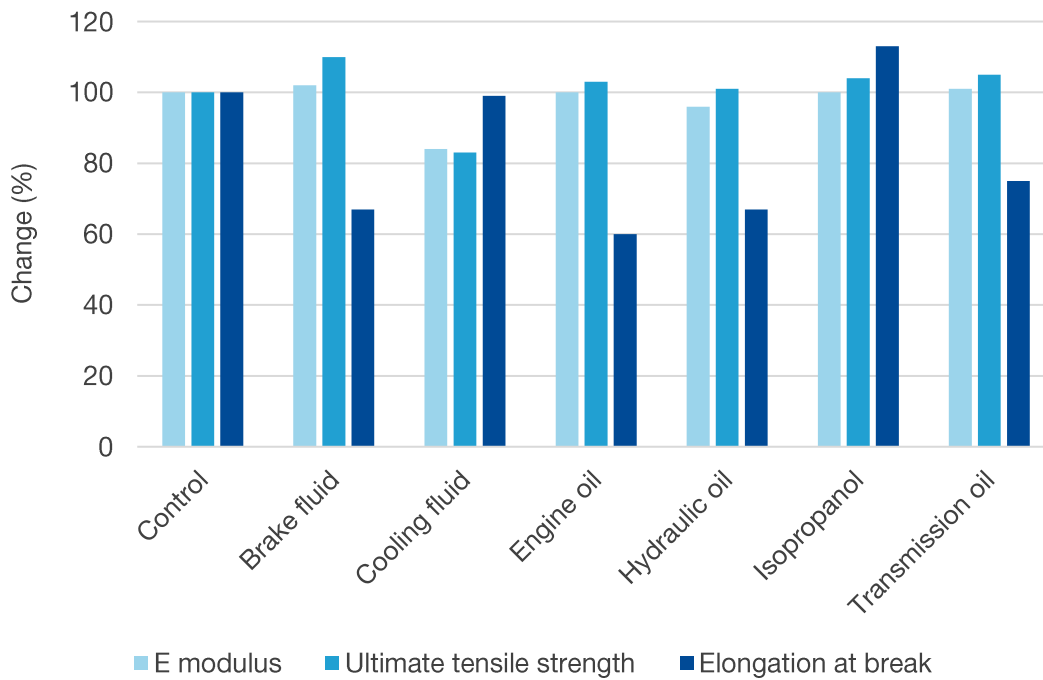
Mechanical Testing

30 minutes



Change in mechanical properties after 30 minutes immersion

7 days



Change in mechanical properties after 7 days immersion

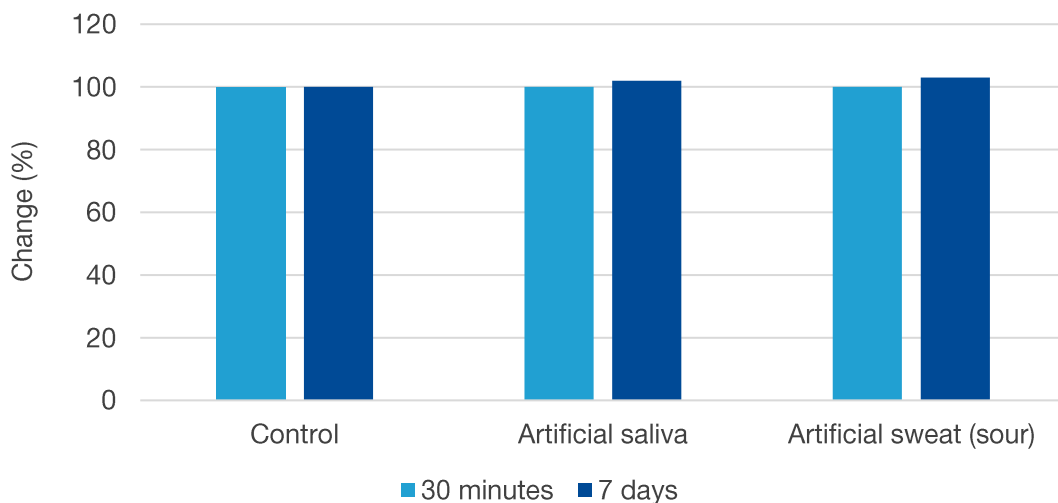
Consumer Chemical Resistance

Similar to the industrial sector, different consumer applications may also require resistance against various chemicals, solvents and other contact substances. Testing for these application-specific requirements helps to evaluate the suitability of photopolymers for the intended use.

Test Method and Specimens

ASTM D638 type IV tensile bars and discs for analyzing cytotoxicity were soaked in each fluid at room temperature, one set for 30 minutes and one set for 7 days. Upon completion of the soaking time, the parts were removed from the test fluid and were dried to measure the weight, cytotoxicity and mechanical properties.

Weight Measurement



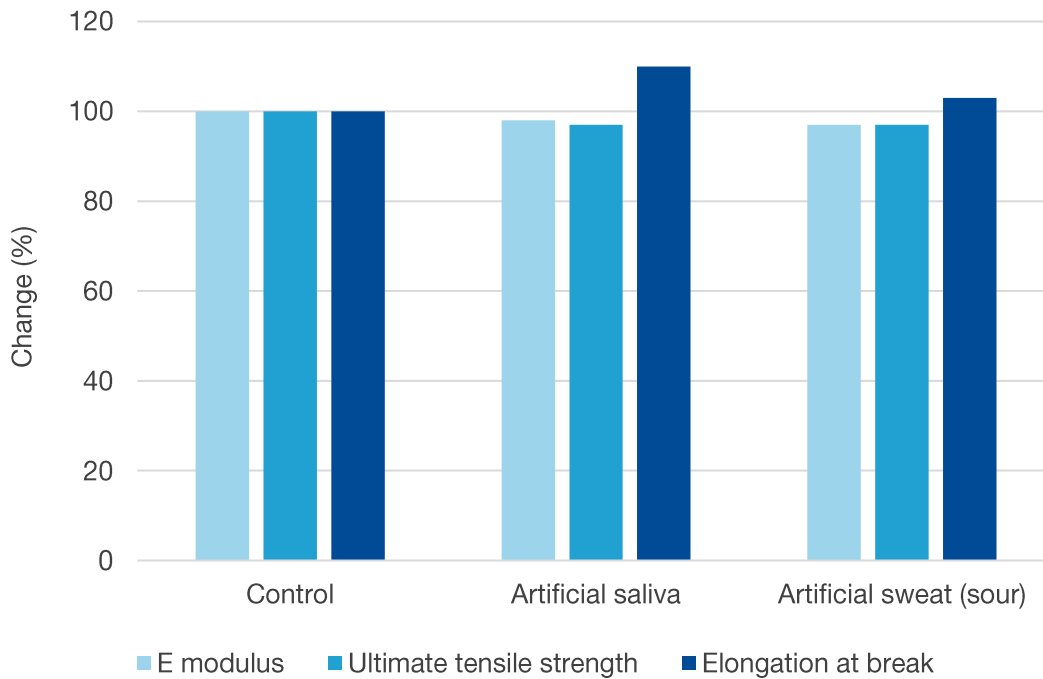
Change in weight after immersion time

Cytotoxicity Measurement

After immersion in artificial saliva for 30 minutes and for 7 days, the samples were sent out, for cytotoxicity testing- neutral red (ISO 10993-5 (2009)). The results show that there is **no observed cytotoxicity**.

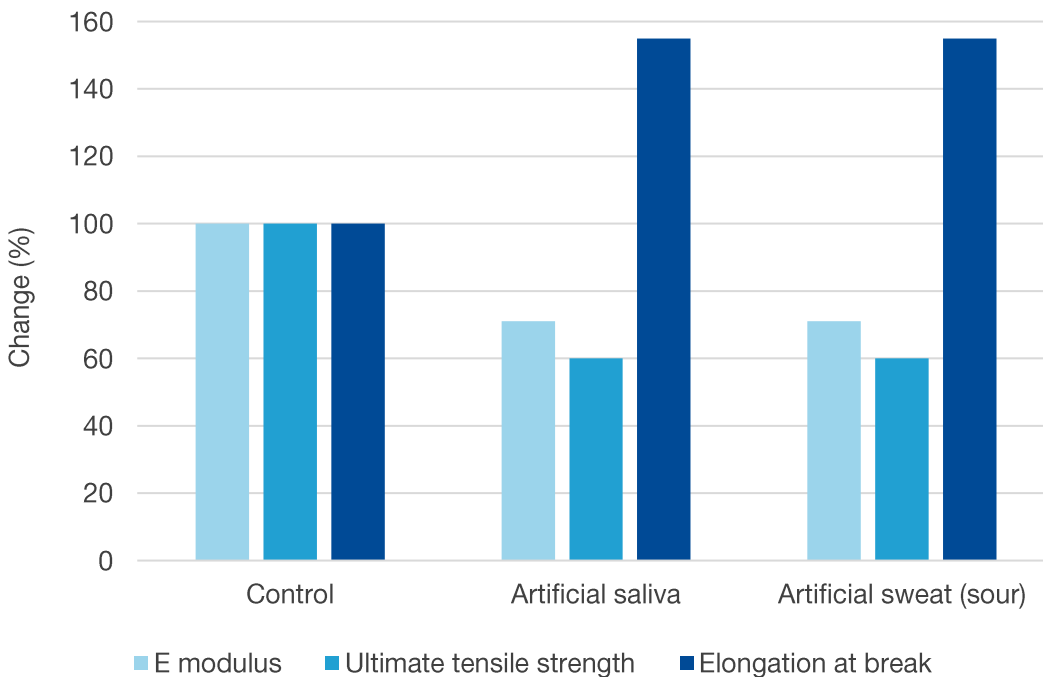
Mechanical Testing

30 minutes



Change in mechanical properties after 30 minutes immersion

7 days



Change in mechanical properties after 7 days immersion

Biocompatibility

Product: Ultracur3D® ST 7500 G

Revision: 17th of November 2022

3D printed test items of the above stated product have fulfilled the requirements of tests as stated below:

Cytotoxicity Testing- Neutral Red:

(ISO 10993-5 (2009))

The biocompatibility tests were recorded on test specimen of the above referenced product to show compatibility of the material in general. The biocompatibility tests listed are not part of any continuous production protocol. The test assessments reflect only the test specimen and have to be retested on the final product. It remains the responsibility of the device manufacturers and /or end-users to determine the suitability of all printed parts for their respective application.

For notice:

We give no warranties, expressed or implied, concerning the suitability of above-mentioned product for use in any medical device and pharmaceutical applications.

All information contained in this document is given in good faith and is based on sources believed to be reliable and accurate at the date of publication of this document.

It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed. The certificate is exclusively for our customers and respective competent authorities. It is not intended for publication either in printed or electronic form (e.g. via Internet) by others. Thus, neither partial nor full publication is allowed without written permission. This product information was generated electronically and is valid without signature.