



# xABS3843

## Basic Properties

Measurement	Unit	Test Method	2x30min in XiP Cure, 1x60min in xCure	1x60min @60°C in xCure	2x10min 100% in xCure Desktop
<b>Tensile Properties</b>					
Young's Modulus	MPa	ASTM D638	1353	1650	1657
Ultimate Tensile Strength	MPa	ASTM D638	39	51	51
Elongation at Break	%	ASTM D638	62	43	51
<b>General Properties</b>					
Viscosity at 25°C (77°F)	cP	ASTM D7867	720-870		
Liquid Density	g/cm <sup>3</sup>	ASTM D1475	1.07		
Solid Density	g/cm <sup>3</sup>	ASTM D1475	1.18		

## Henkel Extended Properties

Measurement	Unit	Test Method	Post Processed
<b>Flexural Properties</b>			
Flexural Modulus	MPa	ASTM D790	1783
Flexural Stress	MPa	ASTM D790	-
Flexural Elongation at Break	%	ASTM D790	>5
<b>Impact Property</b>			
IZOD Impact (Notched)	J/m	ASTM D256	53
<b>Thermal Properties</b>			
HDT at 1.82 Mpa	°C	ASTM D648	54
HDT at 0.45 Mpa	°C	ASTM D648	63
Thermal Conductivity	W/(m·K)	ASTM D5930	0.21
Heat Capacity	J/(g·K)	ASTM D5930	1.5
CTE (10°C to 60°C)	µm/(m·K)	ASTM E831	131.9
Tg	°C	ASTM E1640	113.9
<b>FST Property</b>			
Flammability		UL94	HB (2.0mm)
<b>Electrical Properties</b>			
Volume Resistivity	Ω·cm	ASTM D257	6.5E+14
Surface Resistivity	Ω	ASTM D257	5.7E+15
Electric Strength	kV/mm	ASTM D149	28
<b>AC Relative Permittivity (Dielectric Constant)</b>			
at 50 Hz (XY)		ASTM D150	4.8
at 1 kHz (XY)		ASTM D150	4.9
at 1 MHz (XY)		ASTM D150	4.4
<b>AC Loss Characteristic (Dissipation Factor)</b>			
at 50 Hz (XY)		ASTM D150	0.021
at 1 kHz (XY)		ASTM D150	0.021
at 1 MHz (XY)		ASTM D150	0.041

Other Properties			
Water Absorption (24hr)	%	ASTM D570	1.94
Water Absorption (72hr)	%	ASTM D570	3.21
Shore Hardness	D	ASTM D2240	84
Biocompatibility			
Cytotoxicity		ISO10993-5	Pass
Irritation		ISO10993-23	Pass

## Printing Process

The material should be processed at room temperature. Before usage, the material should be shaken well. Pour it slowly into the vat and wait a couple of minutes, until a smooth, bubble-free surface is obtained before starting the print job.

The 3D printer examples and settings stated above are only for general guidance. The fully optimized settings should always be determined by the users themselves, according to their specific needs. Please always refer to the user manual of the employed 3D printer for instructions on printer settings and handling.

Remove the parts carefully from the build platform with a suitable tool, for more information, refer to the user manual of the used 3D printer.

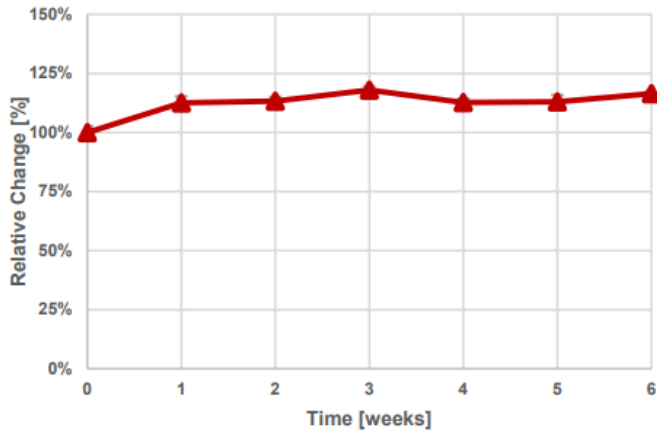
## Washing

xABS3843 requires post processing to achieve specified properties. Prior to post curing, the part should be washed. Nexa3D recommends using xClean followed by IPA as standard cleaning procedure. Parts should not be submerged in xClean for longer than 2 minutes or in IPA for longer than 5 minutes to avoid any impact on performance.

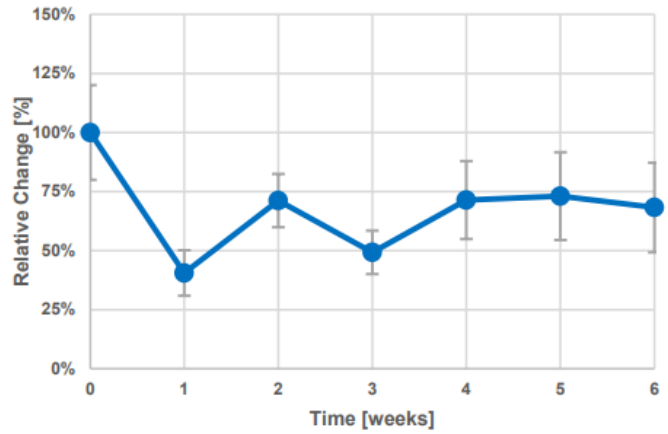
## Heat Ageing

The samples were heat aged without load according to ASTM D3045. Test samples were exposed for a defined time at 50°C and conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing. Based on temperature dependence of reaction rates a test time of 6 weeks at 50°C can be interpreted as approximately 12 months at ambient temperature.

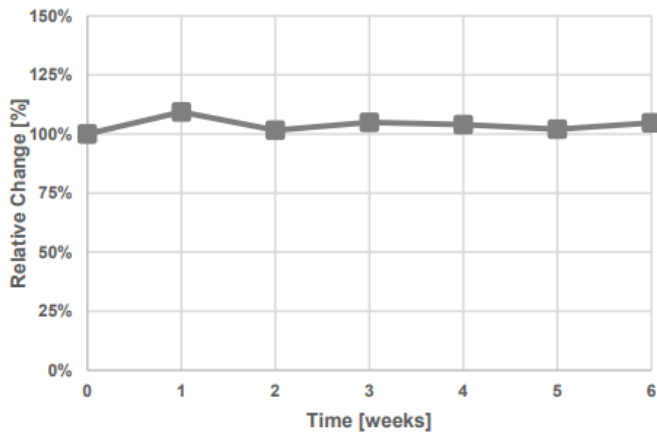
Young's Modulus after Heat Ageing at 50°C



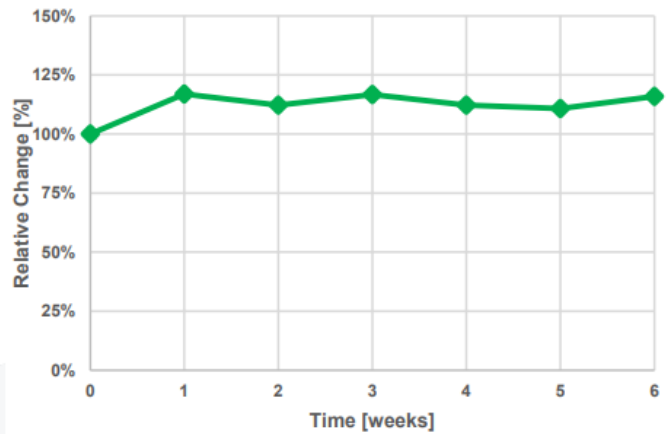
Elongation at Break after Heat Ageing at 50°C



Stress at Break after Heat Ageing at 50°C



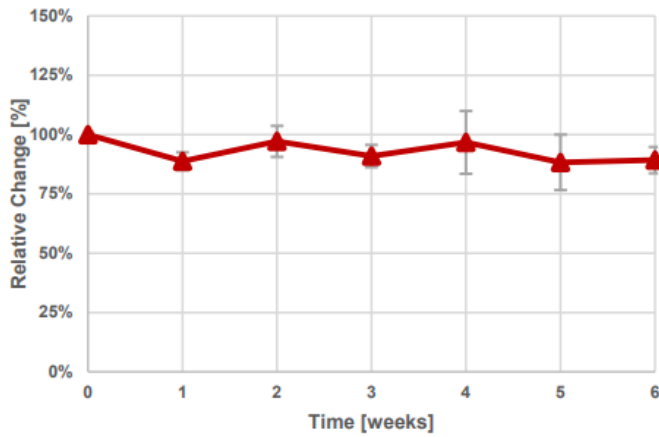
Stress at Yield after Heat Ageing at 50°C



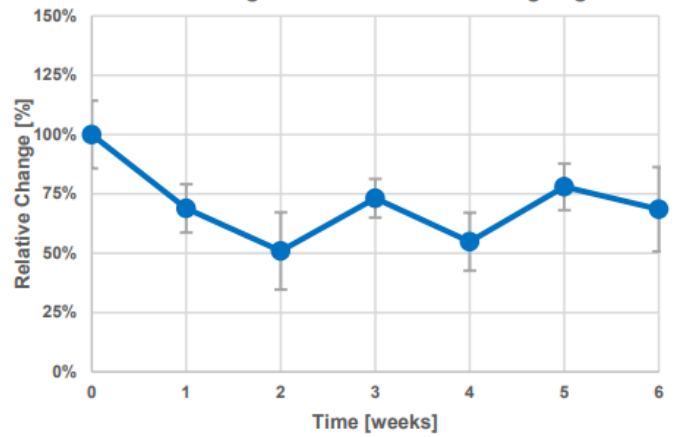
## UV Ageing

The samples were tested after accelerated outdoor weathering according to ASTM D4329 (Cycle A). Test samples were exposed to defined conditions of heat, water condensation and UV light. Exposed samples were conditioned for 24 hours at 22°C before mechanical testing. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). “0 weeks” represents non-aged samples stored at 22°C and tested 24 hours after post-processing. Please note, accelerated weathering testing can never fully represent real outdoor conditions and complexity. It is therefore recommended to conduct additional (outdoor) testing relevant for your specific application needs.

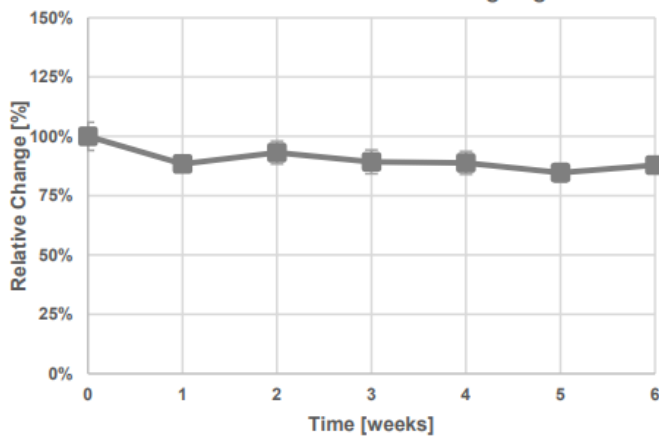
Young's Modulus after UV Ageing



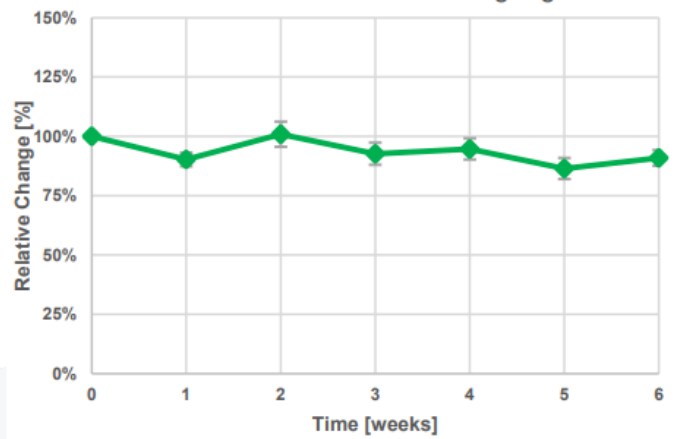
Elongation at Break after UV Ageing



Stress at Break after UV Ageing



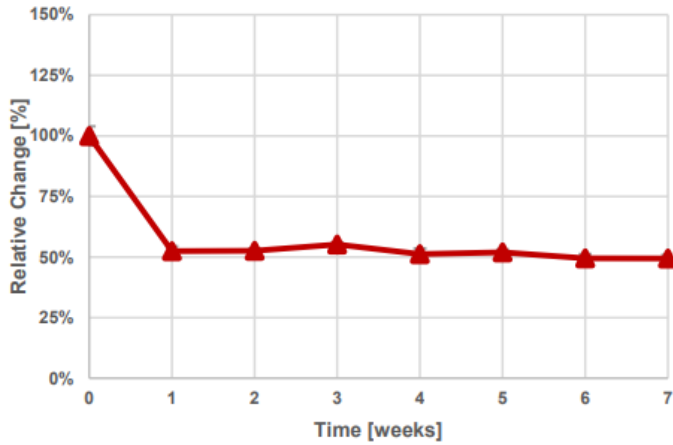
Stress at Yield after UV Ageing



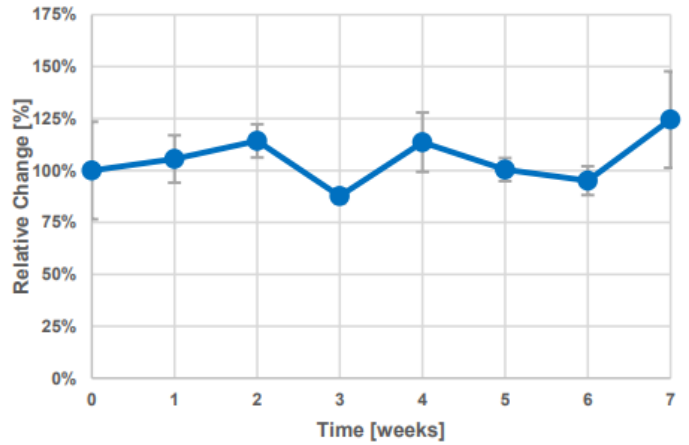
## Climate Cycling Test (PV1200)

The samples were tested in an environmental climate cycling test according to PV1200 specification. This specification was developed by Volkswagen AG to evaluate material durability and cycles between -40°C (4 hours) and 80°C (4 hours at 80 % rel. humidity) during a repeating 12-hour cycle. Test samples were exposed to this temperature cycle for a total duration of 7 weeks (100 cycles). Before mechanical testing samples were conditioned for 24 hours at 22°C. Control samples were stored at a constant 22°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "0 weeks" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

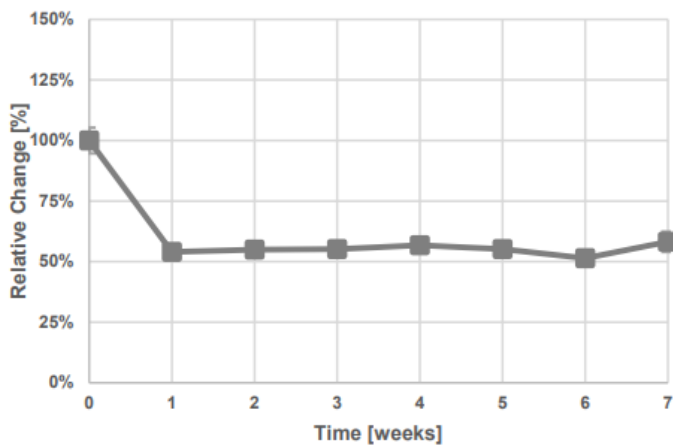
Young's Modulus after PV1200



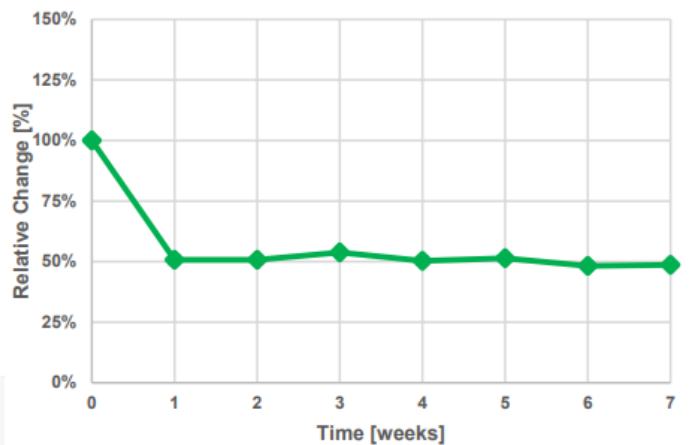
Elongation at Break after PV1200



Stress at Break after PV1200



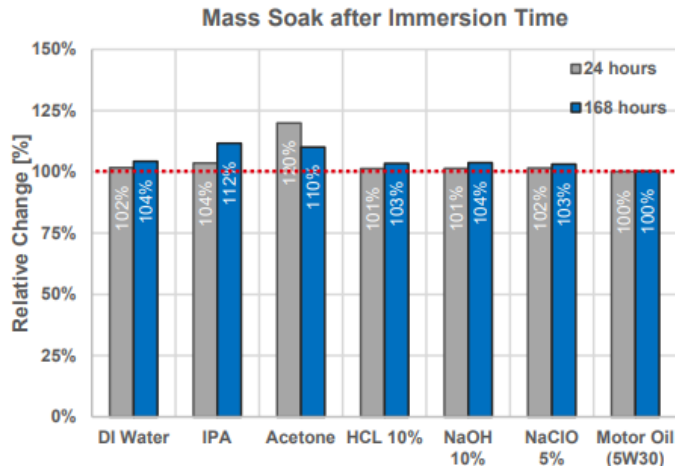
Stress at Yield after PV1200



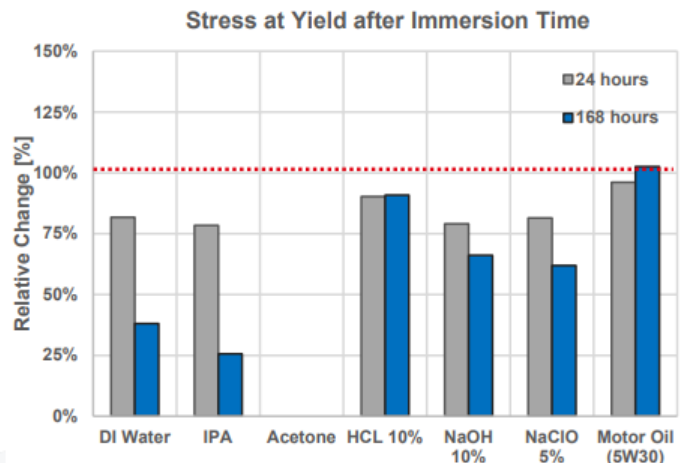
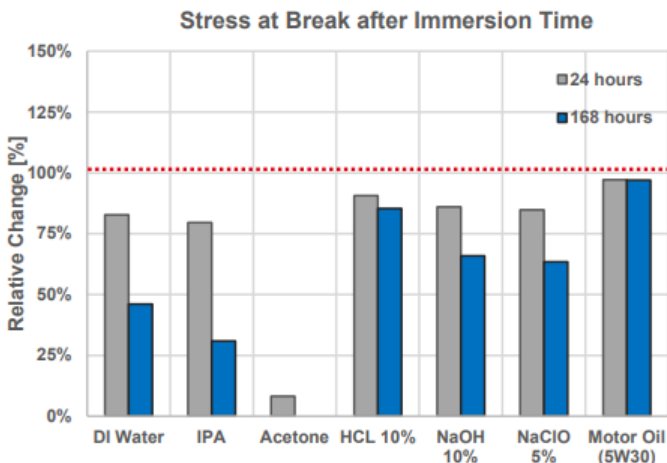
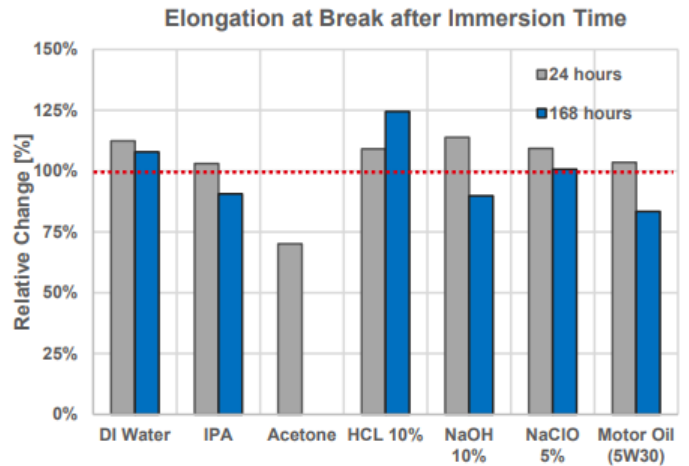
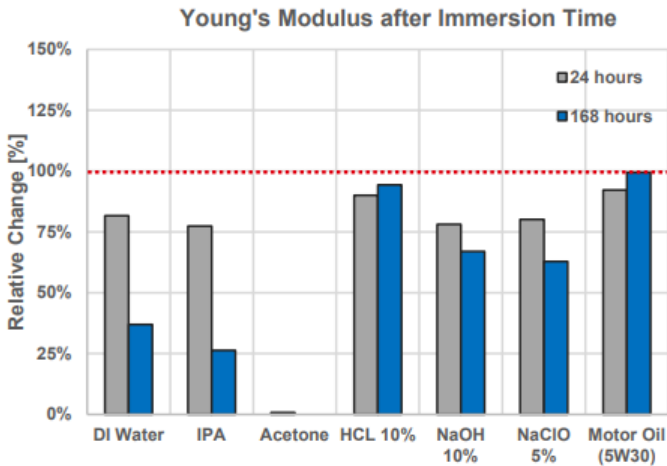
## Industrial Chemical Resistance

The test was conducted according to ASTM D543. The influence of chemicals was tested by measuring mechanical properties after different test times (Immersion test for 24 and 168 hours). Exposed samples were stored in containers and fully immersed in different chemicals. Samples were stirred every 24 hours using a shaker. After removal, exposed samples were washed and conditioned for 24 hours at 22°C before mechanical testing. All samples were printed using a validated workflow. Mechanical testing was conducted according to ASTM D638 at standard lab conditions (22°C). "100%" represents non-aged samples stored at 22°C and tested 24 hours after post-processing.

### Weight Measurement

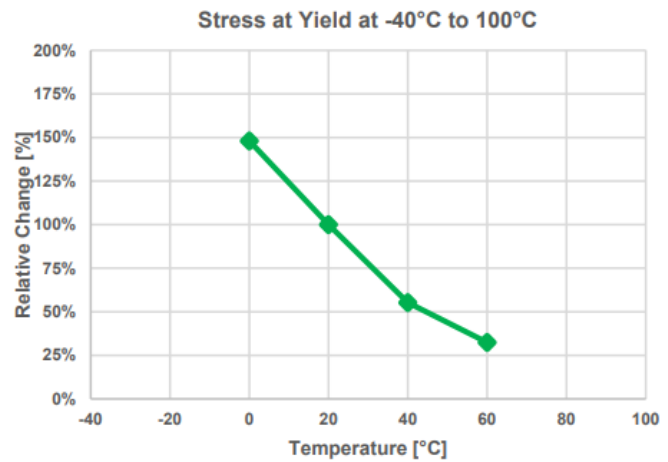
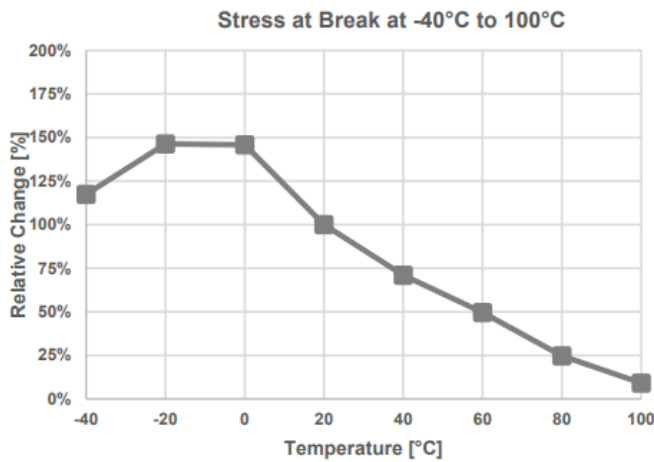
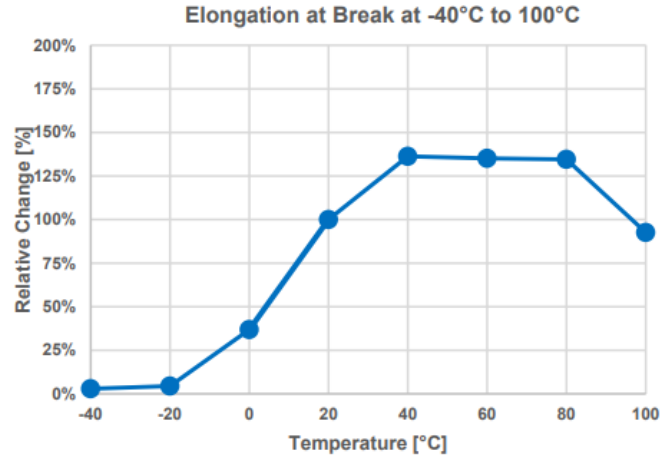
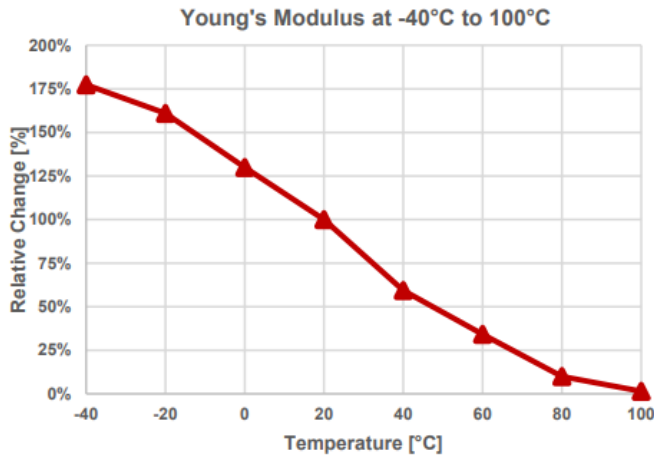


### Mechanical Testing



## Temperature Dependence of Mechanical Properties

The test was conducted according to ASTM D638 at varied environmental temperatures, from -40°C to 100°C. All samples were printed in the same print job using a validated workflow. Mechanical testing was conducted according to ASTM D638. Before each test series samples were conditioned for 60 minutes at the specific test temperature.



**Note:** The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Nexa3D is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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