ELASTO95 HT

ELASTO HT (high temp) is a 95 A (or 55 D) flexible polymer based on a flexible co-polyester blend. It is adequately rigid to not require SPFU and it can have higher flow compared to other flexible filaments (like ELASTO 85 and ELASTO 95) with very good finish.

It has better mechanical, chemical and thermal resistance in comparison with other similar materials, like elastomers, making it possible to build functional parts also sterilizable with steam at about 121 °C.

The ideal applications are prototypes and functional parts in sectors which is required to combine also flexible behaviour and good thermal resistance, like in the automotive industry.

Suggested use

Automation	
Automotive (under-hood)	
Flexible hot water conduits	

Compatibilities

Support compatibility	SSU09 (Soluble with WAVE Powder[1])
Material compatibility	ABS
	ABS ESD+
	ASA (ASA Black)
	Elasto 95
	IGUS I180PF[2]

[1]The SSU09 support is degradable with an alkaline solution obtained by WAVE powder; the proportion of 170 g of powder per 7 liters of water is recommended. We recommend the use of an ultrasonic tank and water at 70 °C.

[2] The adhesion between IGUS I180PF and ELASTO HT is very high, but IGUS I180PF is not compatible with SSU09, so be careful with support position.

Easy profiles suggested

Layer (mm)	Ø 0.3 mm	Ø 0.4 mm	Ø 0.6mm	Ø 0.8 mm
0.10		**		
0.15		**		
0.20		**		
0.25		*		
0.30		*		
0.40				
0.50				

** : Recommended
* : Discrete quality

Before printing

Drying	Gentle drying (55 °C) before and during the job is recommended
Cleaning	It's suggested to clean the bed with IPA before print
Print directly on Veltra bed	Not recommended
Extruder	NORMAL
Nozzle	Standard
SPFU	Not required

General advice

Very large objects and/or with high infill percentage that are print with ELASTO HT can present deformation and warping. For this reason, it is suggested to use *brim* and *inflate support* functions.

*Physical properties**

Propriety	Symbol	Standard	Value
Density	ρ	D 792	1.13 g/cm^3
Water absorption	w_w	N/A	N/A
Durometer Hardness Shore A (Shore D)	–	D 2240	95 A (55 D)

*Thermal properties**

Propriety	Symbol	Standard	Value
Melting flow index	M. F. I.	ISO 1133	N/A
Glass transition temperature	T_g	//	130 °C
Brittleness temperature	–	D 746	< -70 °C
Vicat softening temperature	VST	D 1525 1 kg load	170 °C
Flammability		UL94	N/A

*Electrical properties**

Propriety	Symbol	Standard	Value
Surface resistivity	σ_e	N/A	N/A
Electric strength	E_B	N/A	N/A

* values provided by polymer supplier

Mechanical properties

Based on layer-by-layer deposition, additively manufactured parts, especially with the FDM technique, present a not negligible anisotropy on mechanical properties.

The user must think about the correct displacement of the part in the machine for maximize its mechanical properties.

For this reason, we report the mechanical properties of our specimens considering the three main orientations, by plane x-y (flat), by plane y-z (on edge), and by plane z-x (upright).

All specimens are made with the same printing conditions:

- Infill: 100%
- Nozzle: 0,4 mm
- Layer thickness: 0.2 mm
- Raster angle: 45 °

For more information about the test and specimens' conditions, we suggest checking the ISO references that are reported in the following tables.

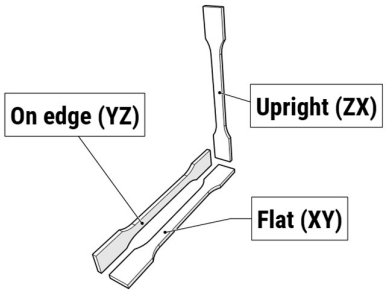


Figure 1: specimen displacement to determine tensile properties (ref. ISO 527-2)

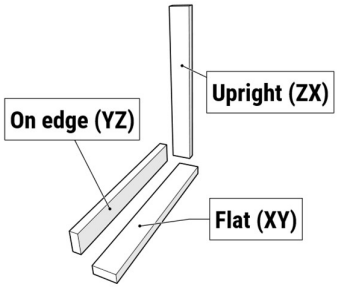
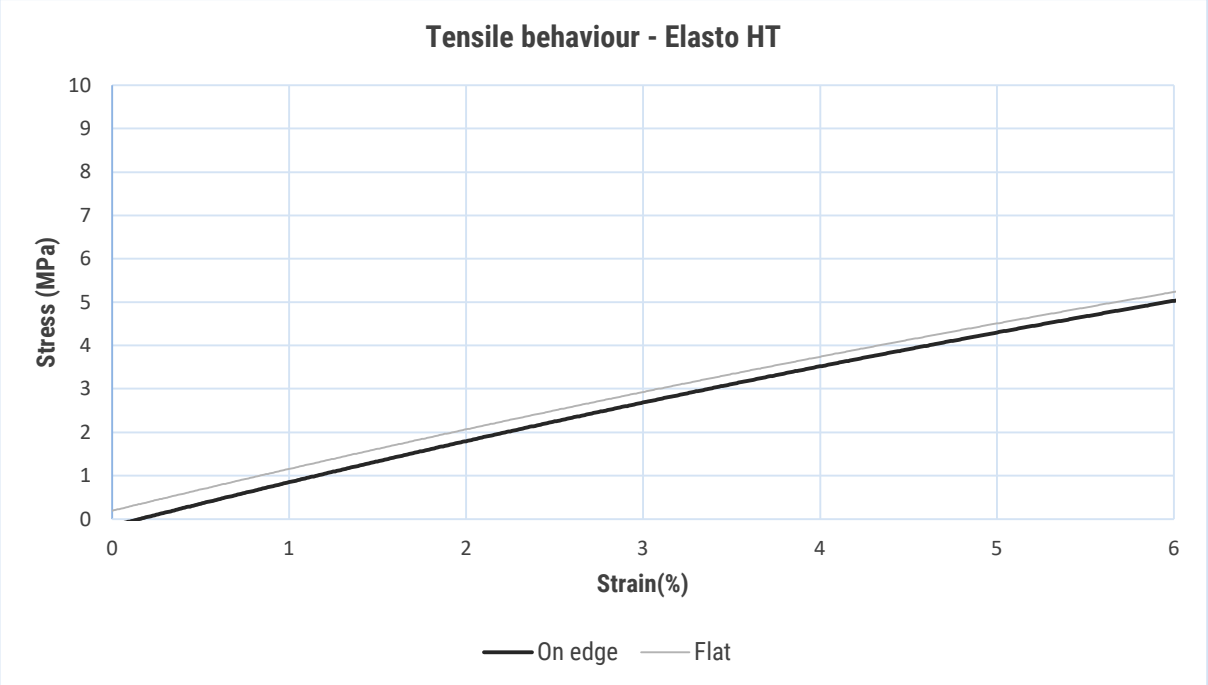


Figure 2: specimen displacement to determine flexural and impact properties (ref. ISO 178 and 179-1)

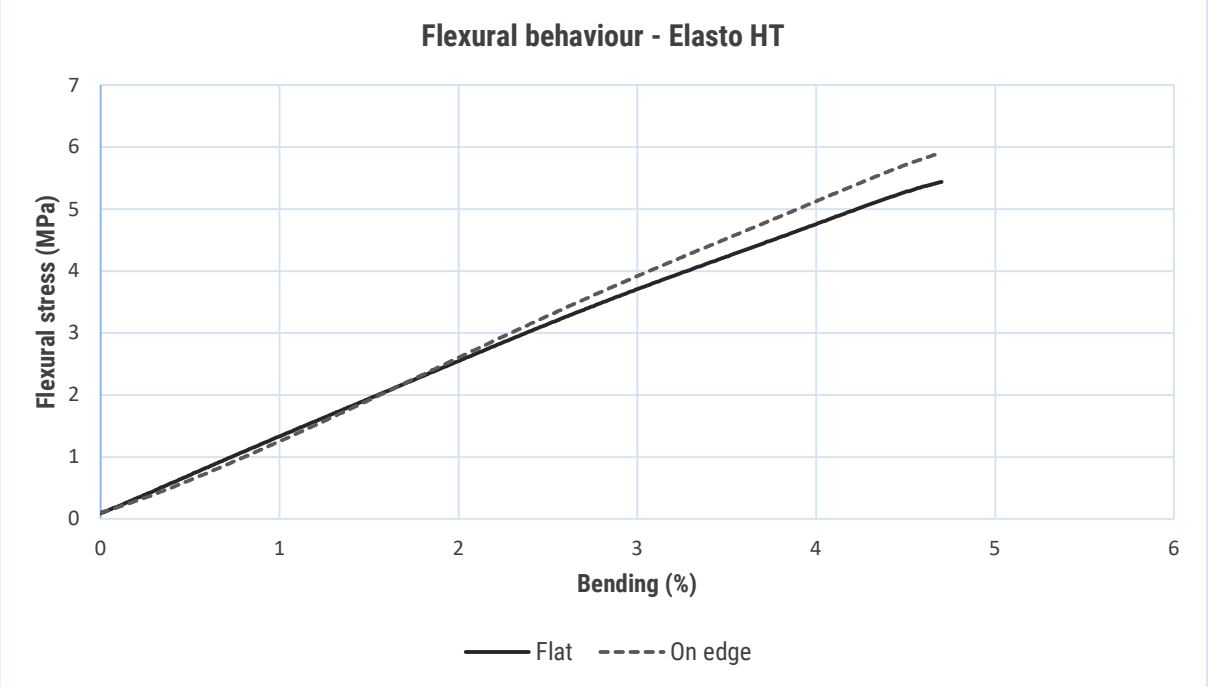
Tensile properties

Propriety	Symbol	Standard	Specimens build direction	Value
Tensile modulus	E_t	ISO 527-2	Flat	82 MPa
			On edge	57 MPa
			Upright	N/A
Yield stress	σ_y		Flat	Elastic Behaviour
			On Edge	Elastic Behaviour
			Upright	Elastic Behaviour
Yield strain	ε_y		Flat	Elastic Behaviour
			On Edge	Elastic Behaviour
			Upright	Elastic Behaviour
Strength at break	σ_b		Flat	17 MPa
			On Edge	13 MPa
			Upright	N/A
Strain at break	ε_b		Flat	285.4 %
			On Edge	199.2 %
			Upright	N/A



Flexural properties

Propriety	Symbol	Standard	Specimens build direction	Value
Flexural modulus	E_f	ISO 178	Flat	118 MPa
			On edge	87 MPa
			Upright	N/A
Flexural strength	σ_{fC}		Flat	4.3 MPa
			On Edge	4.5 MPa
			Upright	N/A



Impact properties

Propriety	Symbol	Standard	Specimens build direction	Value
Charpy unnotched impact strength	a_{cu}	ISO 179	Flat	N/A
			On edge	N/A
			Upright	N/A
Type of failure	ToF		Flat	N/A
			On Edge	N/A
			Upright	N/A

The fine print

The information and values listed into this document are provided in good faith, based on specimens printed with 3ntr machines according to the latest version of SSI print parameters valid at the date of issuance.

3ntr provides you with this information for your guidance to select the correct polymer and setup but user is responsible for determining that 3ntr material is safe, technically correct and legal for the selected application.

The values listed in this documents are not meant for design specification or quality control guidelines: is it user responsibility to design parts with appropriate safety margins to comply with any material variation due part design, production, test conditions, use conditions.

The user has also the responsibility to assess the suitability of the product to the selected use, built with part(s) made with 3ntr materials and/or technologies.

3ntr is not responsible for any warranty about suitability, merchantability or fitness of any part manufactured with 3ntr materials and/or technologies.

3ntr is not responsible for any patent infringement from use of any part printed with 3ntr materials and/or technologies.

The user is responsible for proper use and disposal or recycling of the material(s) listed here according to local laws and regulations.