

# Ultrason® E 1010 NAT

## PESU

BASF

Unreinforced, low viscosity injection moulding grade, flows very readily.  
Abbreviated designation according to ISO 1043-1: PESU

Processing/Physical Characteristics	Value	Unit	Test Standard
<b>ASTM Data</b>			
Mold Shrinkage, MD	0.007	mm/mm	ASTM D 955
Density, 73°F	1370	kg/m³	ASTM D 792

Rheological properties	dry / cond	Unit	Test Standard
<b>ISO Data</b>			
Melt volume-flow rate, MVR	150 / *	cm³/10min	ISO 1133
Temperature	360 / *	°C	-
Load	10 / *	kg	-
Molding shrinkage, parallel	0.8 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8 / *	%	ISO 294-4, 2577

Mechanical Properties	dry / cond	Unit	Test Standard
<b>ISO Data</b>			
Tensile Modulus	- / 2650	MPa	ISO 527
Yield stress	- / 85	MPa	ISO 527
Yield strain	- / 6.8	%	ISO 527
Tensile Creep Modulus, 1h	* / 2800	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	- / no break	kJ/m²	ISO 179/1eU
Impact Strength (Charpy), -30°C	- / no break	kJ/m²	ISO 179/1eU
Notched Impact Strength (Charpy), +23°C	- / 6.5	kJ/m²	ISO 179/1eA
Notched Impact Strength (Charpy), -30°C	- / 6.5	kJ/m²	ISO 179/1eA
<b>ASTM Data</b>			
Tensile Strength at Yield	90.3 / -	MPa	ASTM D 638
Elongation at Yield	6.7 / -	%	ASTM D 638
Elongation at Break	40 / -	%	ASTM D 638
Flexural Modulus	2599 / -	MPa	ASTM D 790
Notched Impact Strength (Izod), 1/8 in	10 / -	J/m	ASTM D 256

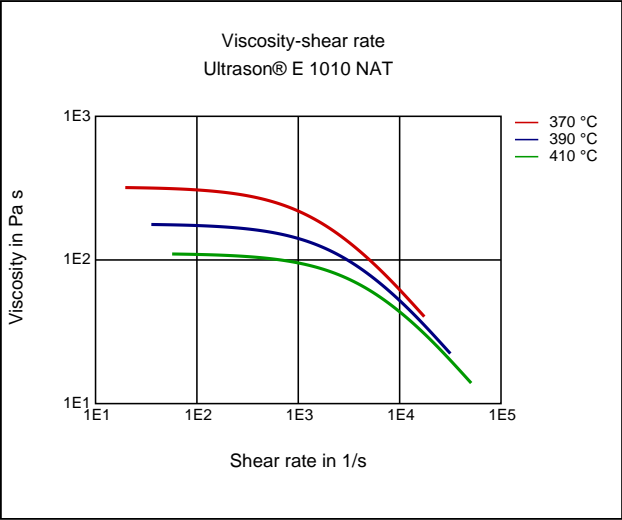
Thermal Properties	dry / cond	Unit	Test Standard
<b>ISO Data</b>			
Glass Transition Temperature (10°C/min)	222 / *	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	203 / *	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	216 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	215 / *	°C	ISO 306
Coeff. of Linear Therm. Expansion, parallel	52 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	V-1 / *	class	UL 94
Thickness tested	1.6 / *	mm	-
UL recognition	yes / *	-	-
Burning Behav. at thickness h	V-0 / *	class	UL 94
Thickness tested	3.0 / *	mm	-
UL recognition	yes / *	-	-
Oxygen index	38 / *	%	ISO 4589-1/-2
<b>ASTM Data</b>			
DTUL @ 66 psi	208	°C	ASTM D 648
DTUL @ 264 psi	195	°C	ASTM D 648

Electrical Properties	dry / cond	Unit	Test Standard
<b>ISO Data</b>			
Relative permittivity, 100Hz	- / 3.9	-	IEC 62631-2-1
Relative permittivity, 1MHz	- / 3.8	-	IEC 62631-2-1
Dissipation Factor, 100Hz	- / 17	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	- / 140	E-4	IEC 62631-2-1
Volume Resistivity	- / >1E13	Ohm*m	IEC 62631-3-1
Surface Resistivity	* / >1E15	Ohm	IEC 62631-3-2
Electric Strength	- / 37	kV/mm	IEC 60243-1
Comparative tracking index	- / 125	-	IEC 60112

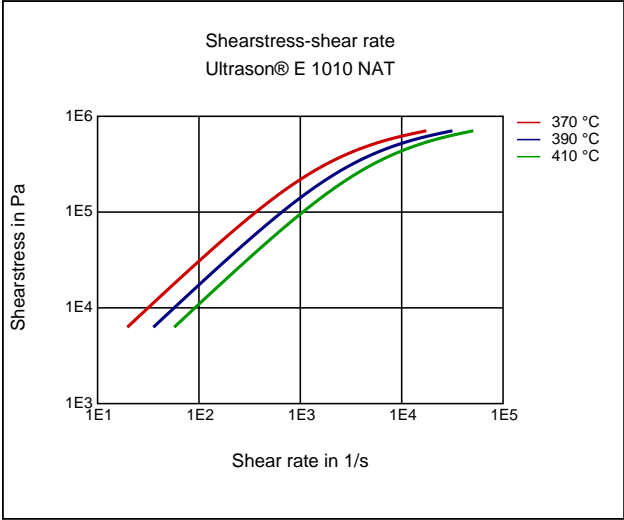
Other Properties	dry / cond	Unit	Test Standard
<b>ISO Data</b>			
Water Absorption	2.2 / *	%	Sim. to ISO 62
Humidity absorption	0.8 / *	%	Sim. to ISO 62
Density	1370 / -	kg/m³	ISO 1183
<b>Material Specific Properties</b>			
<b>ISO Data</b>			
Viscosity number	48 / *	cm³/g	ISO 307, 1157, 1628
<b>Rheological calculation properties</b>			
<b>ISO Data</b>			
Density of melt	1230	kg/m³	-
Thermal Conductivity of Melt	0.18	W/(m K)	-
Spec. heat capacity of melt	1950	J/(kg K)	-
Eff. thermal diffusivity	7.53E-8	m²/s	-
Ejection temperature	200	°C	-
<b>Test specimen production</b>			
<b>ISO Data</b>			
Injection Molding, melt temperature	360	°C	ISO 294
Injection Molding, mold temperature	160	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	70	MPa	ISO 294
<b>Processing Recommendation Injection Molding</b>			
Pre-drying - Temperature	140	°C	-
Pre-drying - Time	4	h	-
Processing humidity	≤0.02	%	-
Melt temperature	340 - 390	°C	-
Mold temperature	140 - 180	°C	-

Diagrams

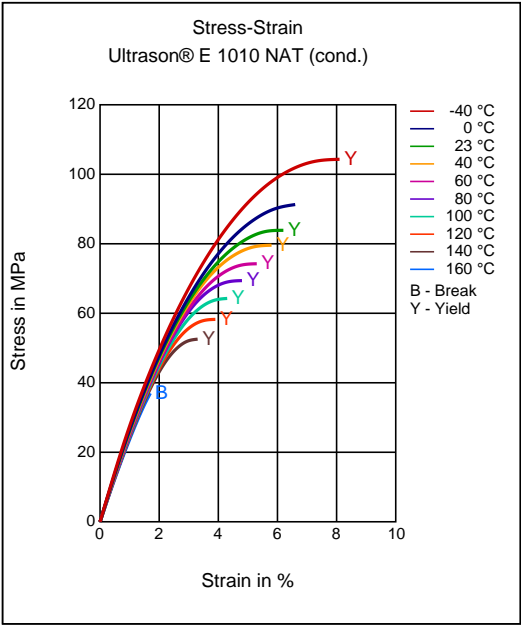
Viscosity-shear rate



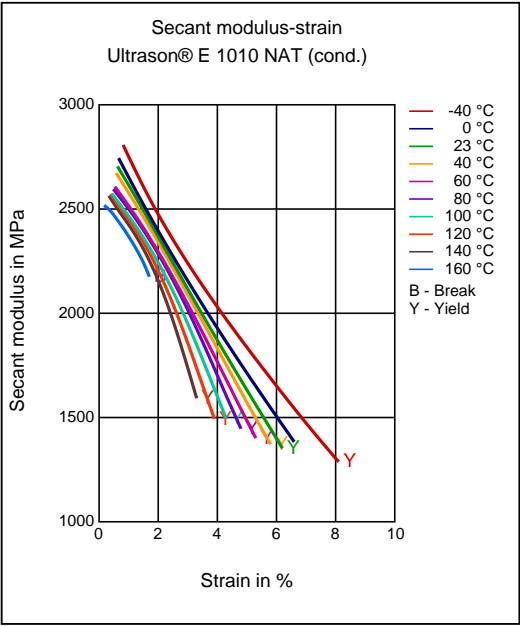
Shearstress-shear rate



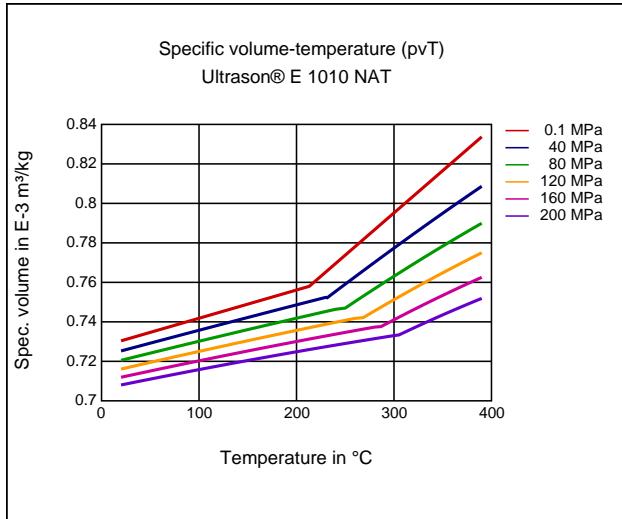
Stress-strain



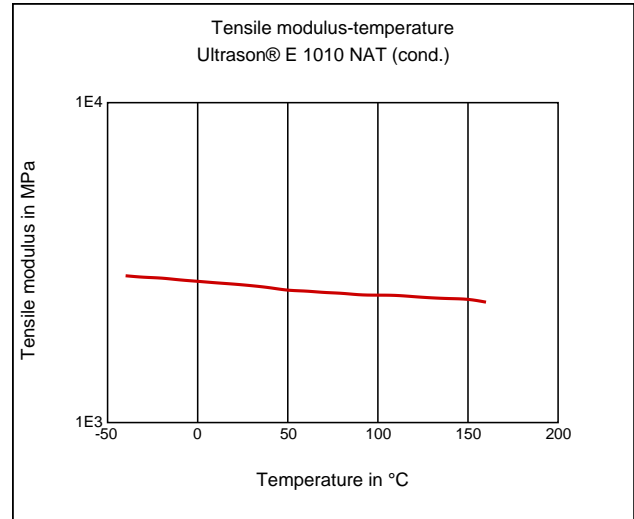
Secant modulus-strain



**Specific volume-temperature (pvT)**



**Tensile Modulus-Temperature**



**Characteristics**

**Processing**

Injection Molding, Film Extrusion

**Delivery form**

Pellets, Natural Color

**Injection Molding**

**PREPROCESSING**

Pre/Post-processing, max. allowed water content: .02 %  
Pre/Post-processing, Pre-drying, Temperature: 140 °C  
Pre/Post-processing, Pre-drying, Time: 4 h

**PROCESSING**

injection molding, Melt temperature, range: 340 - 390 °C  
injection molding, Melt temperature, recommended: 360 °C  
injection molding, Mold temperature, range: 140 - 180 °C  
injection molding, Mold temperature, recommended: 160 °C  
injection molding, Dwell time, thermoplastics: 10 min

**Pretreatment**

Drying temperature: 130 - 150 °C  
Drying time: minimum 4h  
recommended dryer: vacuum or dry air dryer  
maximum moisture: 0,02 - 0,05%

Ultrason® can be injection molded by any type of machinery on the market, provided that the plasticizing unit and the mold temperature control system have been configured appropriately. The machinery manufacturer must be consulted if any doubts exist on the ability of various parts to withstand the high temperatures required (e.g. barrel, barrel head, bolted connections, etc.)

Long residence time in combination with high temperatures should be avoided e.g. by pump out material at regular intervals. During extended interruptions, the barrel temperature should be lowered to about 250-280 °C.

It has been found out that heating to the requested processing temperature and shutting down or lowering the temperature is best carried out in two steps.

First, the barrel temperatures are set at the lower processing temperature range for the particular thermoplastic (340 - 350 °C). As soon as these temperatures have reached a steady state, the material in the barrel is pumped out. Second, the barrel temperature can be set to the required processing temperature or the heaters can be shut down.

**Chemical Media Resistance**

**Acids**

- ✓ Acetic Acid (5% by mass) (23°C)

## Disclaimer

### Liability Exclusion

These guide values are measured and provided by the product manufacturer and have been determined on standardised test specimens and can be affected by pigmentation, mould design and processing conditions. M-Base has taken the guide values from the producer's original Technical Data Sheet. **ALBIS AND M-BASE ARE THEREFORE NOT RESPONSIBLE FOR THE ACCURACY OF THE GUIDE VALUES AND CANNOT GIVE ANY WARRANTY WITH REGARD TO THEIR CORRECTNESS.**

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