TECHNICAL DATASHEET

Grilamid L 25 natural

PA12

EMS-GRIVORY
Material Database

Processing
Injection molding

Delivery form
Granules

Special Characteristics
Light stabilized or stable to light

Regional Availability
North America, Europe, Asia Pacific, South and Central America, Near East/Africa

Product Information

Product-nomenclature: ISO16396-PA12,,E,C24-010

Mechanical Properties	dry/cond	Unit	Standard
Tensile modulus	1400 / 1100	MPa	ISO 527
Yield stress	45 / 40	MPa	ISO 527
Yield strain	10 / 12	%	ISO 527
Nominal strain at break	>50 / >50	%	ISO 527
Charpy impact strength, +23°C	N / N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, +23°C	- / 10	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	- / 7	kJ/m²	ISO 179/1eA

Thermal Properties	dry/cond	Unit	Standard
Melting temperature, 10°C/min	178 / -	°C	ISO 11357-1/-3
Max. usage temperature (short term)	150	°C	EMS
Melt volume-flow rate, MVR	20 / -	cm³/10min	ISO 1133
Temperature	275 / -	°C	
Load	5 / -	kg	

General Properties	dry/cond	Unit	Standard
Density	1010 / -	kg/m³	ISO 1183
Water absorption	1.5 / -	%	Sim. to ISO 62
Humidity absorption	0.7 / -	%	Sim. to ISO 62

Film Properties	dry/cond	Unit	Standard
Stress at yield, parallel	35 / -	MPa	ISO 527-3
Stress at yield, normal	35 / -	MPa	ISO 527-3
Strain at yield, parallel	6 / -	%	ISO 527-3
Strain at yield, normal	6 / -	%	ISO 527-3
Stress at break, parallel	80	MPa	ISO 527-3

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Film Properties	dry/cond	Unit	Standard
Stress at break, normal	70	MPa	ISO 527-3
Maximum strain, parallel	850 / -	%	ISO 527-3
Maximum strain, normal	900 / -	%	ISO 527-3
Elmendorf tear resistance, parallel	10 / -	N	ISO 6383-2
Elmendorf tear resistance, normal	10 / -	N	ISO 6383-2
Trouser tear resistance, parallel	20 / -	N/mm	ISO 6383-1
Trouser tear resistance, normal	25 / -	N/mm	ISO 6383-1
WVTR, 23°C/85%r.h.	8 / -	g/(m²*d)	ISO 15106-1/-2
Oxygen transmission rate, 23°C/0%r.h.	350 / -	cm³/(m²*d*bar)	ISO 15105-1/-2
Oxygen transmission rate, 23°C/85%r.h.	370 / -	cm³/(m²*d*bar)	ISO 15105-1/-2
Carbon dioxide transm. rate, 23°C/0%r.h.	1500 / -	cm³/(m²*d*bar)	ISO 15105-1/-2
Carbon dioxide transm. rate, 23°C/85%r.h.	1600 / -	cm³/(m²*d*bar)	ISO 15105-1/-2
Gelboflextest	1300	holes/m²	EMS

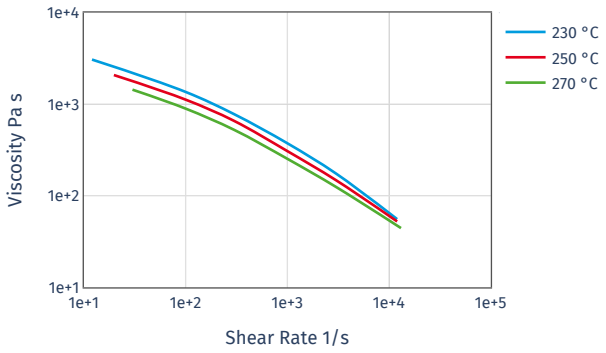
Processing Injection Molding	Value	Unit	Standard
Hopper zone	40 - 60	°C	
Feeding zone	220 - 240	°C	
Compression zone	230 - 260	°C	
Metering zone	230 - 270	°C	
Nozzle (IM)	230 - 270	°C	
Melt	240 - 270	°C	
Mold surface temperature	40 - 80	°C	
Injection speed	Low - Medium	-	
Pressure	300 - 800	bar	
Dynamic pressure (hydraulic)	50 - 100	bar	
Circumferencial screw speed	5 - 15	m/s	

Processing Extrusion	Value	Unit	Standard
Length	18 - 22	mm	
Compression ratio	2 - 2.5		
Hopper zone	15 - 60	°C	
Conveying zone	210 - 230	°C	
Compression zone	230 - 250	°C	
Metering zone	230 - 250	°C	
Melt	230 - 250	°C	
Die	230 - 250	°C	
Adapter	240 - 250	°C	

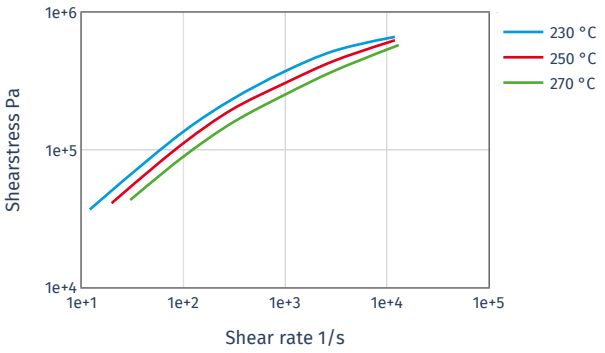
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Diagrams

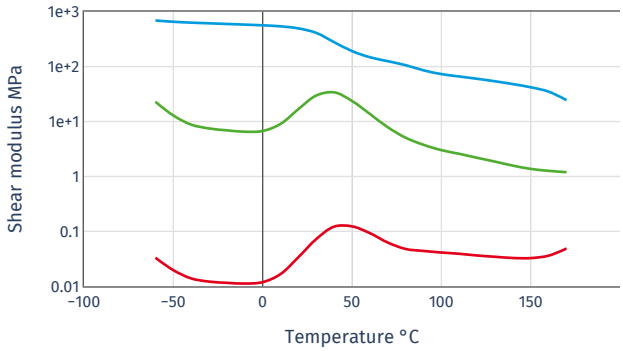
Viscosity-shear rate



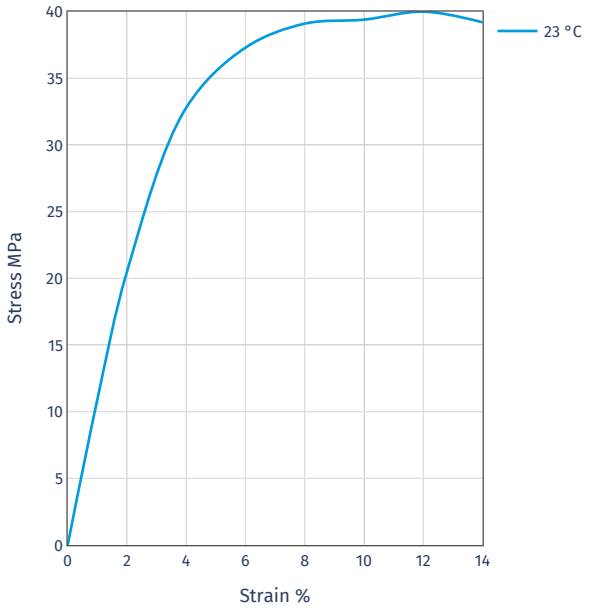
Shearstress-shear rate



Dynamic shear modulus-temperature (cond)

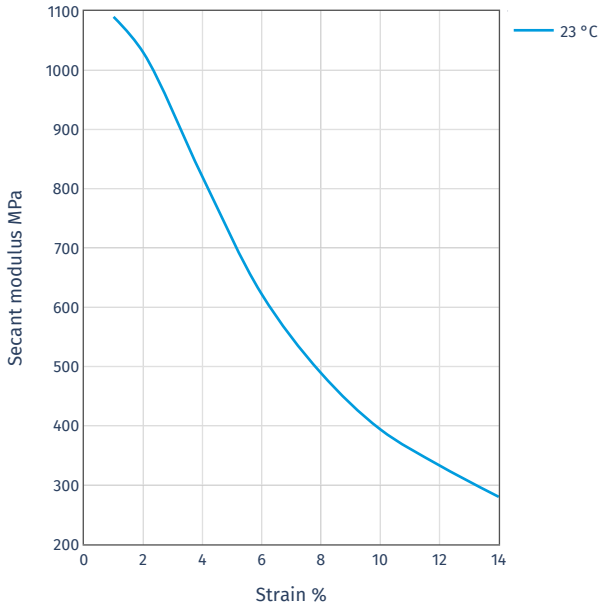


Stress-strain (cond)

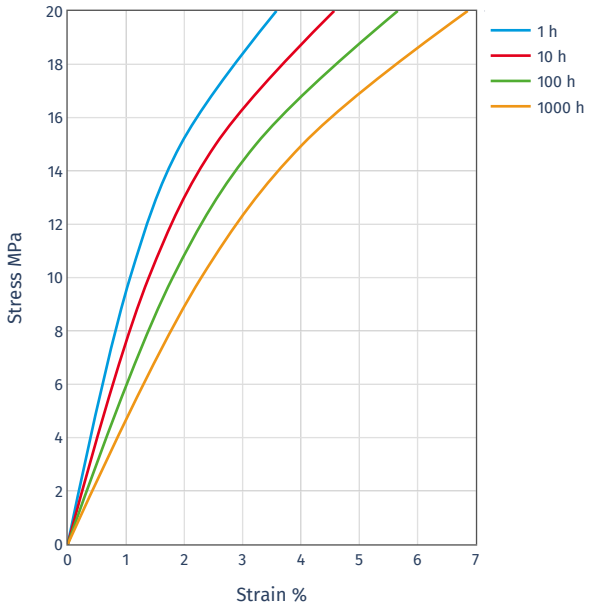


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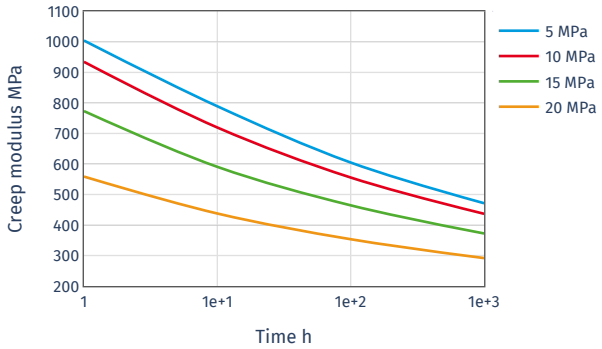
Secant modulus-strain (cond)



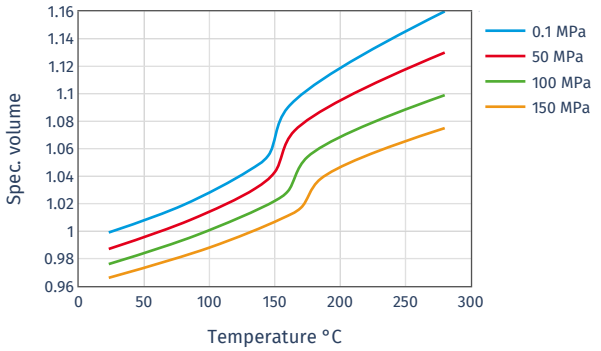
Stress-strain (isochronous) 23°C (cond)



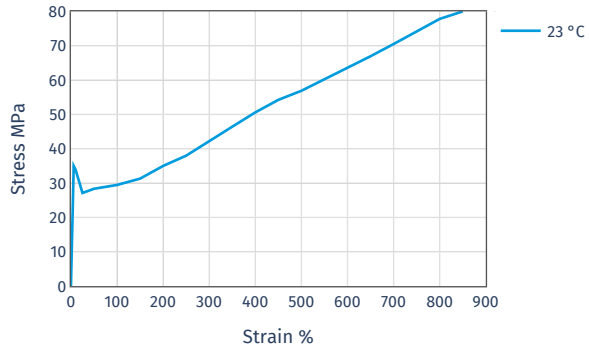
Creep modulus-time 23°C (cond)



Spec. volume-temperature (pvT)



Stress-strain (film grades) (cond)



Chemical Media Resistance

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Acids

✓ Acetic Acid (5% by mass) (23°C)
✓ Citric Acid solution (10% by mass) (23°C)
✓ Lactic Acid (10% by mass) (23°C)
✗ Hydrochloric Acid (36% by mass) (23°C)
✗ Nitric Acid (40% by mass) (23°C)
✓ Sulfuric Acid (38% by mass) (23°C)
✓ Sulfuric Acid (5% by mass) (23°C)
✗ Chromic Acid solution (40% by mass) (23°C)

Bases

✓ Sodium Hydroxide solution (35% by mass) (23°C)
✓ Sodium Hydroxide solution (1% by mass) (23°C)
✓ Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

✓ Isopropyl alcohol (23°C)
✓ Methanol (23°C)
✓ Ethanol (23°C)

Hydrocarbons

✓ n-Hexane (23°C)
✓ Toluene (23°C)
✓ iso-Octane (23°C)

Ketones

✓ Acetone (23°C)

Ethers

✓ Diethyl ether (23°C)

Mineral oils

✓ SAE 10W40 multigrade motor oil (23°C)
✓ SAE 10W40 multigrade motor oil (130°C)
✓ SAE 80/90 hypoid-gear oil (130°C)
✓ Insulating Oil (23°C)

Standard Fuels

✓ ISO 1817 Liquid 1 (60°C)
✓ ISO 1817 Liquid 2 (60°C)
✓ ISO 1817 Liquid 3 (60°C)
✓ ISO 1817 Liquid 4 (60°C)
✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
✓ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
✓ Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
✓ Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)

Salt solutions

✓ Sodium Chloride solution (10% by mass) (23°C)
✓ Sodium Hypochlorite solution (10% by mass) (23°C)
✓ Sodium Carbonate solution (20% by mass) (23°C)
✓ Sodium Carbonate solution (2% by mass) (23°C)
✓ Zinc Chloride solution (50% by mass) (23°C)

Other

✓ Ethyl Acetate (23°C)
✓ Hydrogen peroxide (23°C)
✓ DOT No. 4 Brake fluid (130°C)
✓ Ethylene Glycol (50% by mass) in water (108°C)
✓ 1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
✓ 50% Oleic acid + 50% Olive Oil (23°C)
✓ Water (23°C)
✓ Deionized water (90°C)
✗ Phenol solution (5% by mass) (23°C)

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