Celanese
The chemistry inside innovation™

CELANYL® A2 HH GF35 BK 9005 (NX) - PA66

Description

Polyamide 66 compound, 35% glass fibre reinforced, heat stabilized.
Designed for Automotive Industry and for any application that require mechanical performance combined with long term heat ageing resistance.

Physical properties	Value	Unit	Test Standard
Density	**88**	lb/ft³	ISO 1183
Molding shrinkage, parallel (flow)	**0.3 - 0.6**	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	**0.6 - 0.9**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**5.3**	%	Sim. to ISO 62
Humidity absorption, 23°C/50%RH	**1.3**	%	ISO 62

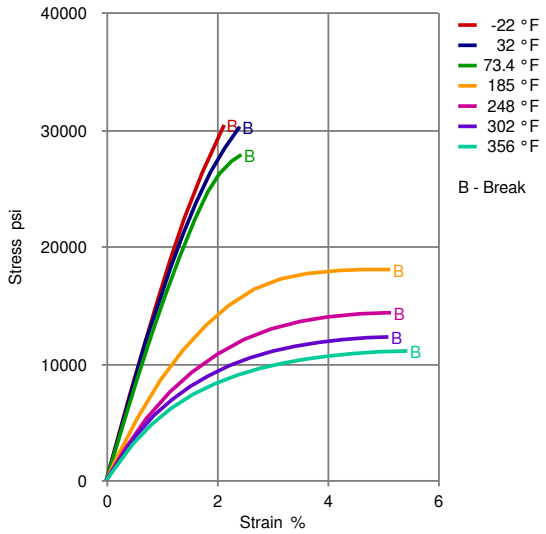
Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**1.67E6/1.16E6**	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	**29000/17400**	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	**2.5/4.6**	%	ISO 527-1, -2
Poissons ratio	**0.38**	-	ISO 527-1, -2
Flexural modulus, 23°C	**1.45E6/-**	psi	ISO 178
Charpy impact strength, 23°C	**38.1/40.4**	ft-lb/in²	ISO 179/1eU
Charpy impact strength, -30°C	**24.7/27.6**	ft-lb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	**6.18/7.61**	ft-lb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	**3.81/-**	ft-lb/in²	ISO 179/1eA
Izod impact notched, 23°C	**5.23/-**	ft-lb/in²	ISO 180/1A
Izod impact unnotched, 23°C	**26.2/-**	ft-lb/in²	ISO 180/1U

Thermal properties	Value	Unit	Test Standard
Melting temperature, 20°C/min	**505**	°F	ISO 11357-1/-3
DTUL at 1.8 MPa	**482**	°F	ISO 75-1, -2
DTUL at 0.45 MPa	**500**	°F	ISO 75-1, -2
Burning rate, thickness 1 mm	**29.6**	in/min	ISO 3795 (FMVSS 302)
Flammability @1.6mm nom. thickn.	**HB**	class	UL 94
CLTE below Tg, parallel	**0.128**	E-4/°F	ISO 11359-2
Start Temp	**-22**	°F	ISO 11359-2
End Temp	**158**	°F	ISO 11359-2
CLTE above Tg, parallel	**0.117**	E-4/°F	ISO 11359-2
Start Temp	**158**	°F	ISO 11359-2
End Temp	**302**	°F	ISO 11359-2
CLTE below Tg, normal	**0.437**	E-4/°F	ISO 11359-2
Start Temp	**-22**	°F	ISO 11359-2
End Temp	**158**	°F	ISO 11359-2
CLTE above Tg, normal	**0.844**	E-4/°F	ISO 11359-2
Start Temp	**158**	°F	ISO 11359-2
End Temp	**302**	°F	ISO 11359-2

VDA Properties	Value	Unit	Test Standard
Burning rate, thickness 1 mm	**29.6**	in/min	ISO 3795 (FMVSS 302)

Diagrams

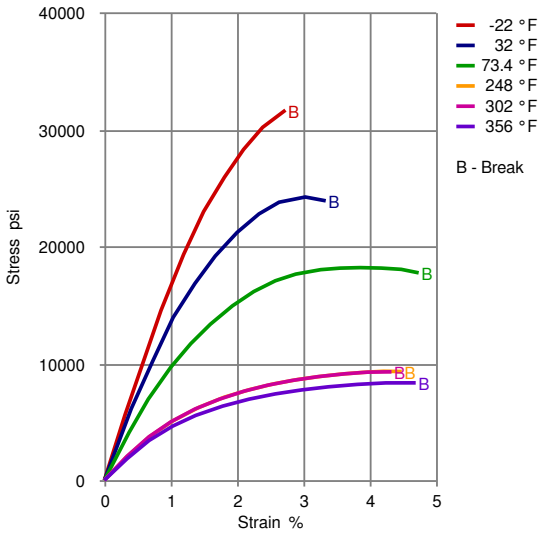
Stress-strain (dry)



Dry samples are dry as molded

Conditioned samples are conditioned according to ISO 1110

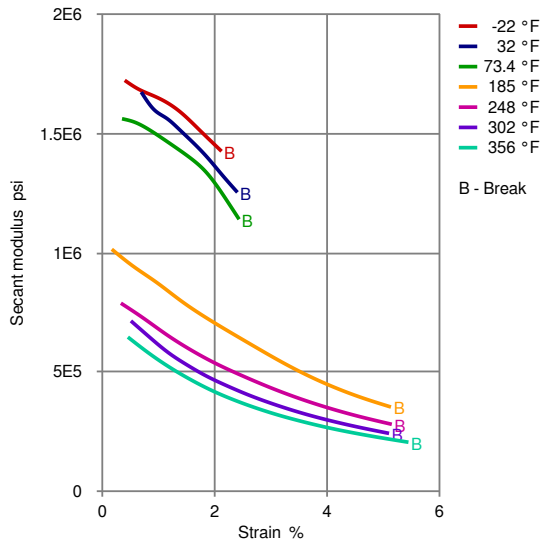
Stress-strain (cond.)



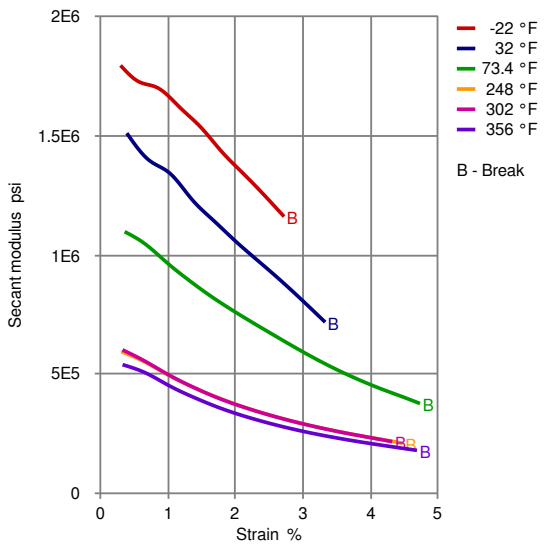
Dry samples are dry as molded

Conditioned samples are conditioned according to ISO 1110

Secant modulus-strain (dry)

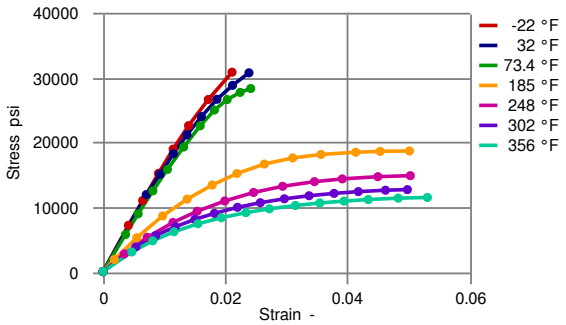


Secant modulus-strain (cond.)



CELANYL® A2 HH GF35 BK 9005 (NX) - P

True Stress-strain (dry)

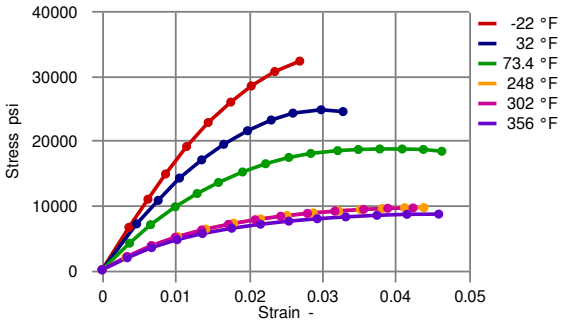


Dry samples are dry as molded
- no yield at all temperatures

Conditioned samples are conditioned according to ISO 1110
- no yield at all temperatures

Poisson's ratio used: 0.35

True Stress-strain (cond.)



Dry samples are dry as molded
- no yield at all temperatures

Conditioned samples are conditioned according to ISO 1110
- no yield at all temperatures

Poisson's ratio used: 0.35

Other text information

Injection Molding Preprocessing

PA materials, stocked in a moisture-proof packaging, can be processed without drying; however, it is always recommended drying the product that comes from a large package (e.g. Octabin). The moisture content suggested for the injection molding process should be lower than 0.15%, according to the grade and to the molded part characteristics. The materials containing flame retardants should have moisture content below 0.10%. Red phosphorous containing grades must always be dried below 0.08%. The drying time depends on the moisture content and the drying conditions. Typically, 4-8 hours at 80-90°C using dehumidified air (dew point of -20°C) are suitable conditions for a starting moisture content of 0.20%-0.40%.

Injection molding

The following conditions apply to a standard injection molding process. Machine temperatures: barrel 265-290°C (PA66), 235-270°C (PA6), nozzle and hot runners up to 300°C (up to 290°C products with flame retardants). Mold temperatures: 60-80°C, (80-100°C highly reinforced grades). Back pressure: typically, 5-10 bar (hydraulic pressure). Temperatures exceeding 300°C and long residence time could lead to additives degradation and brittleness of the material. In case of gas generation in the melt, please verify moisture content and processing temperatures. Usage of regrind is possible depending on the molded part characteristics. For further details, please refer to the document 'Instructions for injection molding' or contact our technical support team.

Injection Molding Postprocessing

PA materials reach their final performance with a water content of about 1.5 to 3.5% by weight, depending on the type. This percentage corresponds to the point of equilibrium between the rates of absorption and desorption of moisture. After molding, in favorable environmental conditions, a part can quickly absorbs moisture up to 0.5-1.0%, while the equilibrium will be reached during its life. A conditioning treatment can accelerate further the initial water absorption of the molded parts. Conditioning is usually carried out in hot and humid environment (for example 50°C, 100% RH), inside climatic chambers. Slight dimensional variations (increase in volume due to the water absorbed) must be considered, especially in unfilled grades. Post-treatments of parts may also include the annealing (60-80°C in oven, up to four hours). This procedure can be useful to relax any internal stresses.

Characteristics

Special Characteristics	Heat resistant
Product Categories	Glass reinforced
Processing	Injection molding
Delivery Form	Granules