

CELANYL® XT1 GF50 BK 9005/W/FA

PPA compound, 50% glass fiber reinforced, heat stabilized.

Intended for engineering applications that require a maximum service temperature higher than that of normal aliphatic polyamides. In addition to the outstanding thermal and chemical resistance, it provides high and constant mechanical performance, unaltered even after moisture absorption. Excellent creep behavior and dimensional stability. Suitable for drinking water applications.

Product information

| | | |
|-------------------|------------|-----------|
| Part Marking Code | >PPA-GF50< | ISO 11469 |
|-------------------|------------|-----------|

Rheological properties

| | | |
|------------------------------------|-------------|-----------------|
| Moulding shrinkage range, parallel | 0.1 - 0.3 % | ISO 294-4, 2577 |
| Moulding shrinkage range, normal | 0.3 - 0.5 % | ISO 294-4, 2577 |

Typical mechanical properties

| | | | |
|---------------------------------------|-----------------|----------------------|--------------|
| | dry/cond. | | |
| Tensile Modulus | 2.68E6 / 2.68E6 | psi | ISO 527-1/-2 |
| Stress at break, 5mm/min | 37700 / 36300 | psi | ISO 527-1/-2 |
| Strain at break, 5mm/min | 1.95 / 2 | % | ISO 527-1/-2 |
| Flexural Modulus | 2.61E6 / 2.61E6 | psi | ISO 178 |
| Flexural Strength | 58000 / 53700 | psi | ISO 178 |
| Charpy impact strength, 23°C | 38.1 / 52.3 | ftlb/in ² | ISO 179/1eU |
| Charpy impact strength, -30°C | 38.1 / 42.8 | ftlb/in ² | ISO 179/1eU |
| Charpy notched impact strength, 23°C | 4.52 / 5.95 | ftlb/in ² | ISO 179/1eA |
| Charpy notched impact strength, -30°C | 4.04 / 7.14 | ftlb/in ² | ISO 179/1eA |
| Izod notched impact strength, 23°C | 5.23 / - | ftlb/in ² | ISO 180/1A |

Thermal properties

| | | |
|---|--------|----------------|
| Melting temperature, 10°C/min | 612 °F | ISO 11357-1/-3 |
| Temp. of deflection under load, 1.8 MPa | 536 °F | ISO 75-1/-2 |

Flammability

| | | |
|-------------------------------|----------|-------|
| Thickness tested | 0.1 in | UL 94 |
| Burning Behav. at thickness h | HB class | UL 94 |
| Thickness tested | 0.126 in | UL 94 |
| UL recognition | yes | UL 94 |

Electrical properties

| | | | |
|--------------------|-----------|-------|---------------|
| | dry/cond. | | |
| Volume resistivity | 1E13 / - | Ohm.m | IEC 62631-3-1 |
| Electric strength | 559 / - | kV/in | IEC 60243-1 |

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Other properties

| | | |
|--------------------------|-----------|----------------|
| Humidity absorption, 2mm | 1 % | Sim. to ISO 62 |
| Water absorption, 2mm | 2.9 % | Sim. to ISO 62 |
| Density | 14 lb/gal | ISO 1183 |

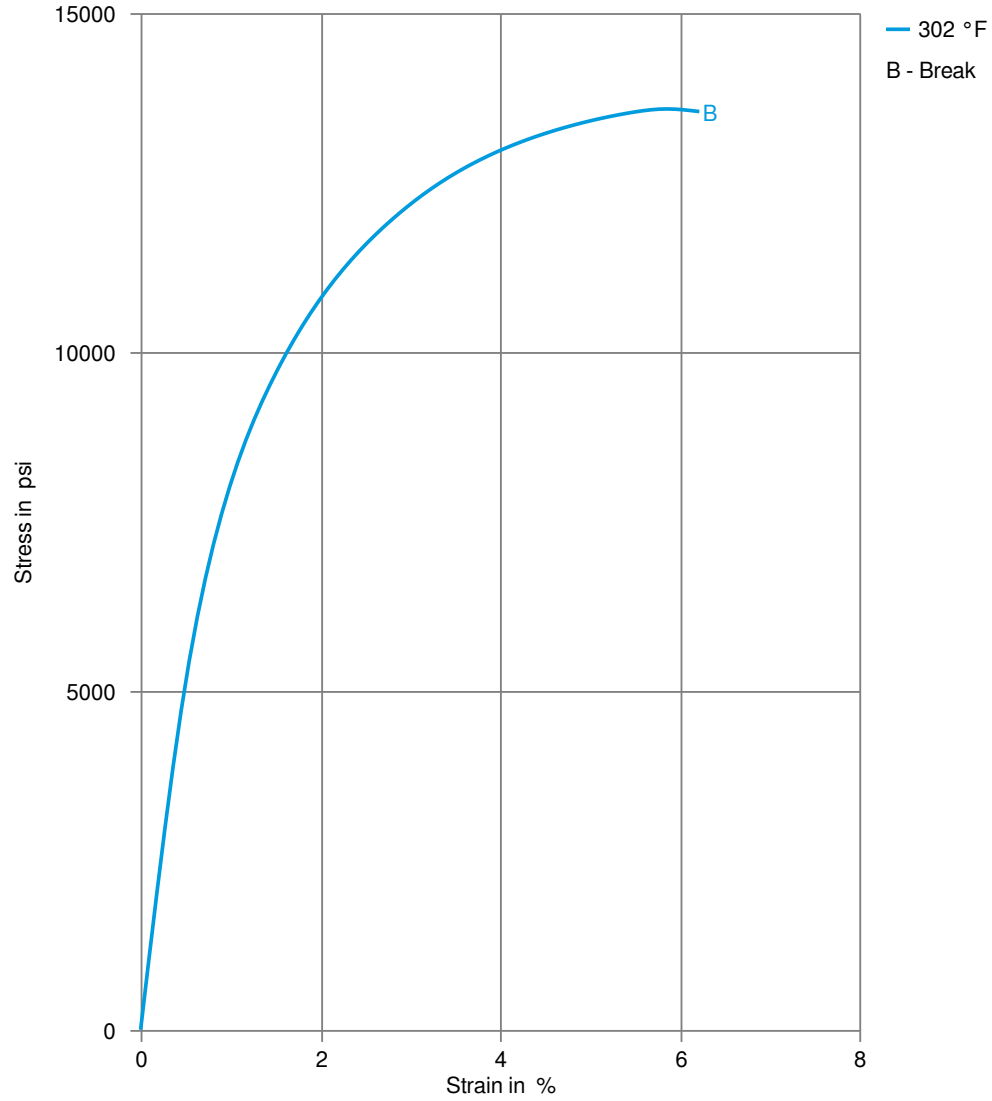
Additional information

Injection molding

The following conditions apply to the normal injection molding process of XT1 compounds. Machine temperatures: barrel 310-325°C, nozzle and hot runners 325-340°C. Mold temperatures: > 135°C. Back pressure: typically 5 bar (hydraulic pressure). Temperatures exceeding 340°C and long residence time could lead to 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 contact our technical support team.

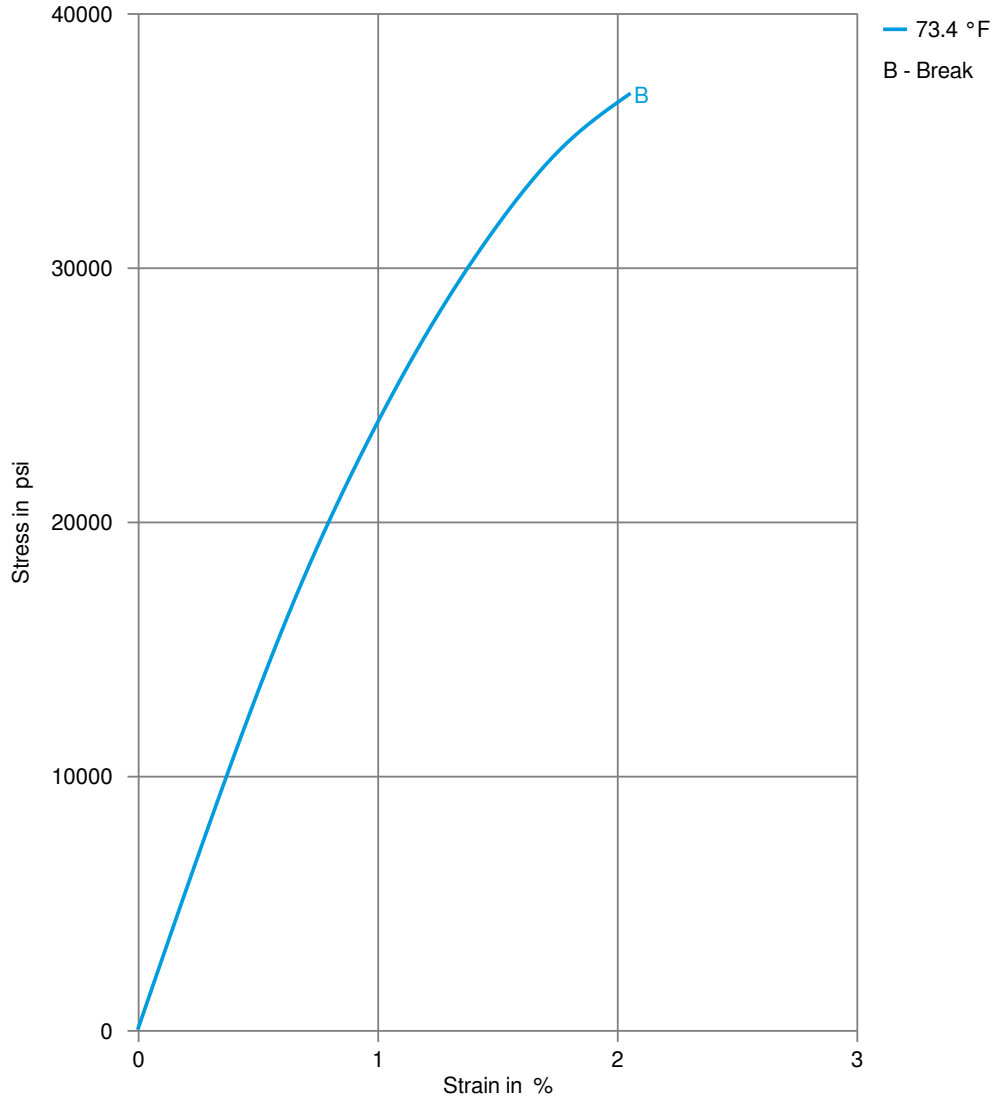
CELANYL® XT1 GF50 BK 9005/W/FA

Stress-strain (dry)



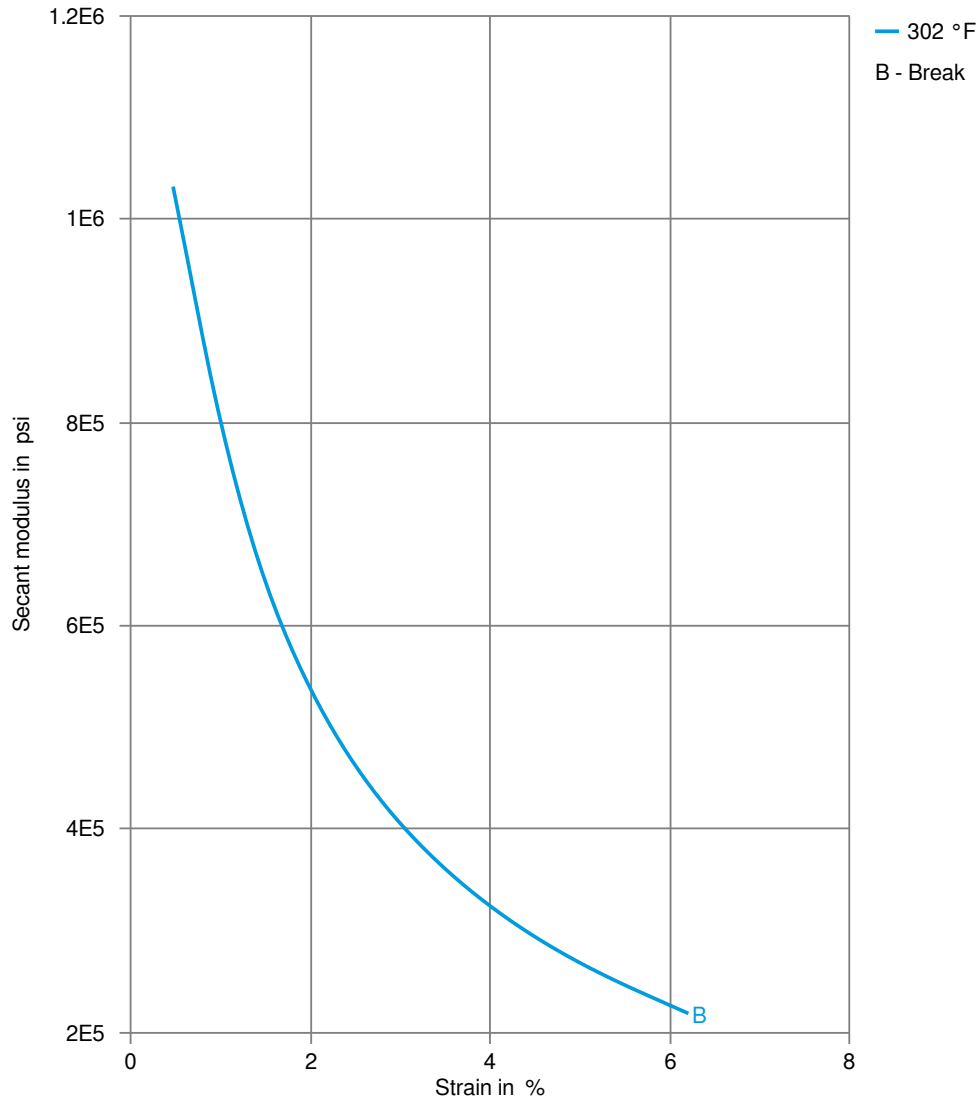
CELANYL® XT1 GF50 BK 9005/W/FA

Stress-strain (cond.)



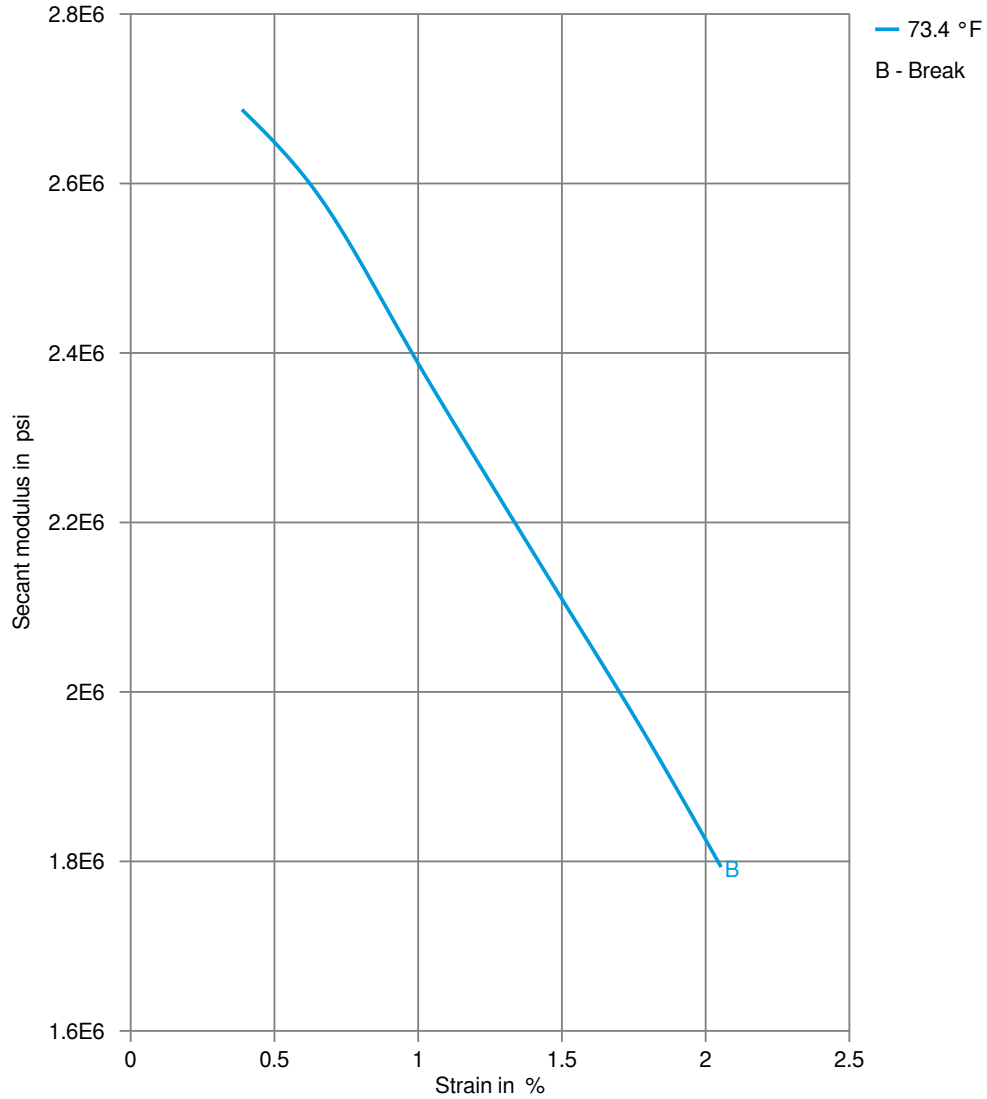
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Secant modulus-strain (dry)



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Secant modulus-strain (cond.)



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Processing Texts

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Injection molding Preprocessing

The XT1 compound is supplied in a moisture-proof package. The maximum humidity content allowed for the injection molding process is 0.10%, but in order to obtain the best performance and avoid possible degradation phenomena we recommend molding with a moisture content < 0.08%. The drying time depends on the initial moisture content and the drying conditions used. Generally 4-6 hours at 120°C with dry air (dew point of about -30°C) are sufficient to prepare a granule stored in unopened packages or with a moisture content of < 0.20-0.25%.

Injection molding Postprocessing

Parts made by XT1, do not change significantly their performance depending on the moisture uptake. Normally, a conditioning cycle is not necessary. After molding, with favorable environmental conditions, a piece can absorb moisture up to 0,2% in 24h and reach the equilibrium during its lifetime. The post-treatment of the parts may include annealing at 150-160°C in the oven, for two to four hours depending on the temperature. This treatment is useful to relax any internal stress and maximize thermomechanical performance.
