

# CELCON® M270 ECO-C 872

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Celcon® acetal copolymer grade M270 ECO-C 872 is a lower molecular weight, high - flow grade designed for superior moldability in multi-cavity, intricate or hard to fill molds applications. Chemical abbreviation according to ISO 1043-1: POM Please also see Hostaform® C 27021.

ECO-C: Celcon® M270 ECO-C 872 incorporates circular content derived from captured carbon dioxide emissions in the finished product through mass balance allocation. The product is a drop-in replacement to the standard grade with the same performance and processing properties and contributes to the displacement of virgin fossil fuel resources. The feedstock utilizing captured carbon dioxide emissions is ISCC CFC certified as low carbon intensity methanol.

### Product information

Resin Identification	POM	ISO 1043
Part Marking Code	>POM<	ISO 11469

### Rheological properties

Melt volume-flow rate	23 cm <sup>3</sup> /10min	ISO 1133
Temperature	190 °C	
Load	2.16 kg	
Moulding shrinkage, parallel	1.7 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.6 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile modulus	2800 MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	67 MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	8 %	ISO 527-1/-2
Flexural modulus	2750 MPa	ISO 178
Flexural stress at 3.5%	76 MPa	ISO 178
Compressive stress at 1% strain	31 MPa	ISO 604
Tensile creep modulus, 1h	2300 MPa	ISO 899-1
Tensile creep modulus, 1000h	1300 MPa	ISO 899-1
Charpy impact strength, 23 °C	116 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30 °C	108 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23 °C	5.2 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23 °C	5.4 kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -30 °C	5.0 kJ/m <sup>2</sup>	ISO 180/1A
Poisson's ratio	0.37 <sup>[C]</sup>	

[C]: Calculated

### Thermal properties

Melting temperature, 10 °C/min	166 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	103 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	156 °C	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	110 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	120 E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.155 W/(m K)	ISO 22007-2
Specific heat capacity of melt	2210 J/(kg K)	ISO 22007-4

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## Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.75 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.22 %	Sim. to ISO 62
Density	1410 kg/m <sup>3</sup>	ISO 1183

## Injection

Drying Recommended	no
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	3 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	185 °C
Min. melt temperature	180 °C
Max. melt temperature	190 °C
Screw tangential speed	≤0.3 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	80 °C
Max. mould temperature	120 °C
Hold pressure range	60 - 120 MPa
Back pressure	4 MPa
Ejection temperature	130 °C

## Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	High Flow
Sustainability	Carbon Capture

## Additional information

Injection molding

## Preprocessing

Drying is generally not required because Celcon® and Hostaform® acetal copolymers are not hygroscopic nor are they degraded by moisture during processing. Excessive moisture can lead to splay (silver streaking) in molded parts. For better uniformity in molding especially when using regrind or material that has been stored in containers open to the atmosphere, recommended drying conditions are 80 C (180 F) for 3hours. Desiccant hopper dryers are not required. Maximum water content = 0.35%

## Processing

Standard reciprocating screw injection molding machines with a high compression screw (minimum 3:1 and preferably 4:1) and low back pressure (0.35 Mpa/50 PSI) are favored. Using a low compression screw (I.E. general purpose 2:1 compression ratio) can result in unmelted particles and poor melt

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homogeneity. Using a high back pressure to make up for a low compression ratio may lead to excessive shear heating and deterioration of the material.

Melt Temperature: Preferred range 182-199 C (360-390 F). Melt temperature should never exceed 230 C (450 F).

Mold Surface Temperature: Preferred range 82-93 C (180-200 F) especially with wall thickness less than 1.5 mm (0.060 in.). May require mold temperature as high as 120 C (250 F) to reproduce mold surface or to assure minimal molded in stress. Wall thickness greater than 3mm (1/8 in.) may use a cooler (65 C/150 F) mold surface temperature and wall thickness over 6mm (1/4 in.) may use a cold mold surface down to 25 C (80 F). In general, mold surface temperatures lower than 82 C (180 F) may hinder weld line formation and produce a hazy surface or a surface with flow lines, pits and other included defects that can hinder part performance.

## Postprocessing

Postprocessing conditioning and moisturizing are not required. It may be necessary to fixture large or complicated parts with varying wall thickness to prevent warpage while cooling to ambient temperature.

Processing Notes

## Pre-Drying

Drying is not normally required. If material has come in contact with moisture through improper storage or handling or through regrind use, drying may be necessary to prevent splay and odor problems.

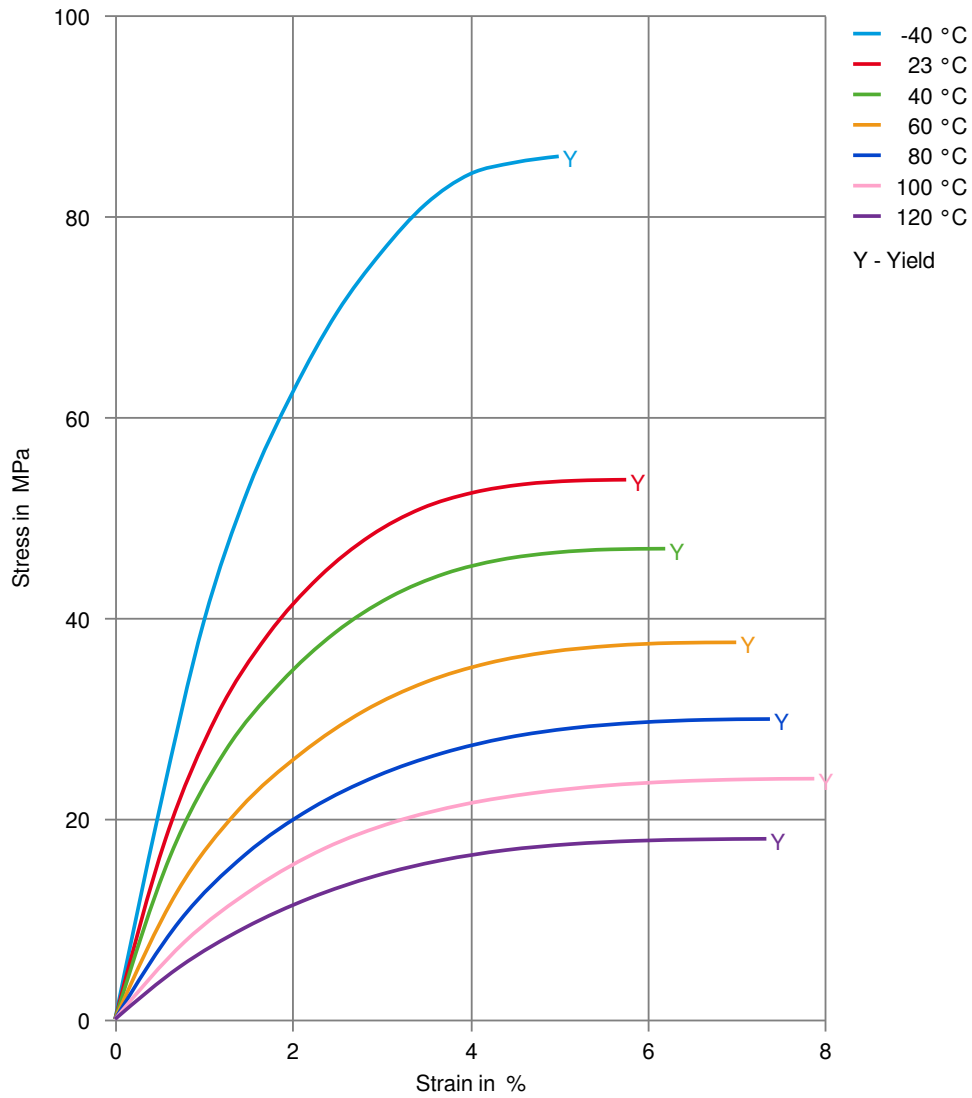
## Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Continental	TST N 055 54.12	
Ford	WSK-M4D635-A3	Natural & Black
Li Auto	Q/LiA5310020	2021 (V2)
Nissan	POM-IC3-1	

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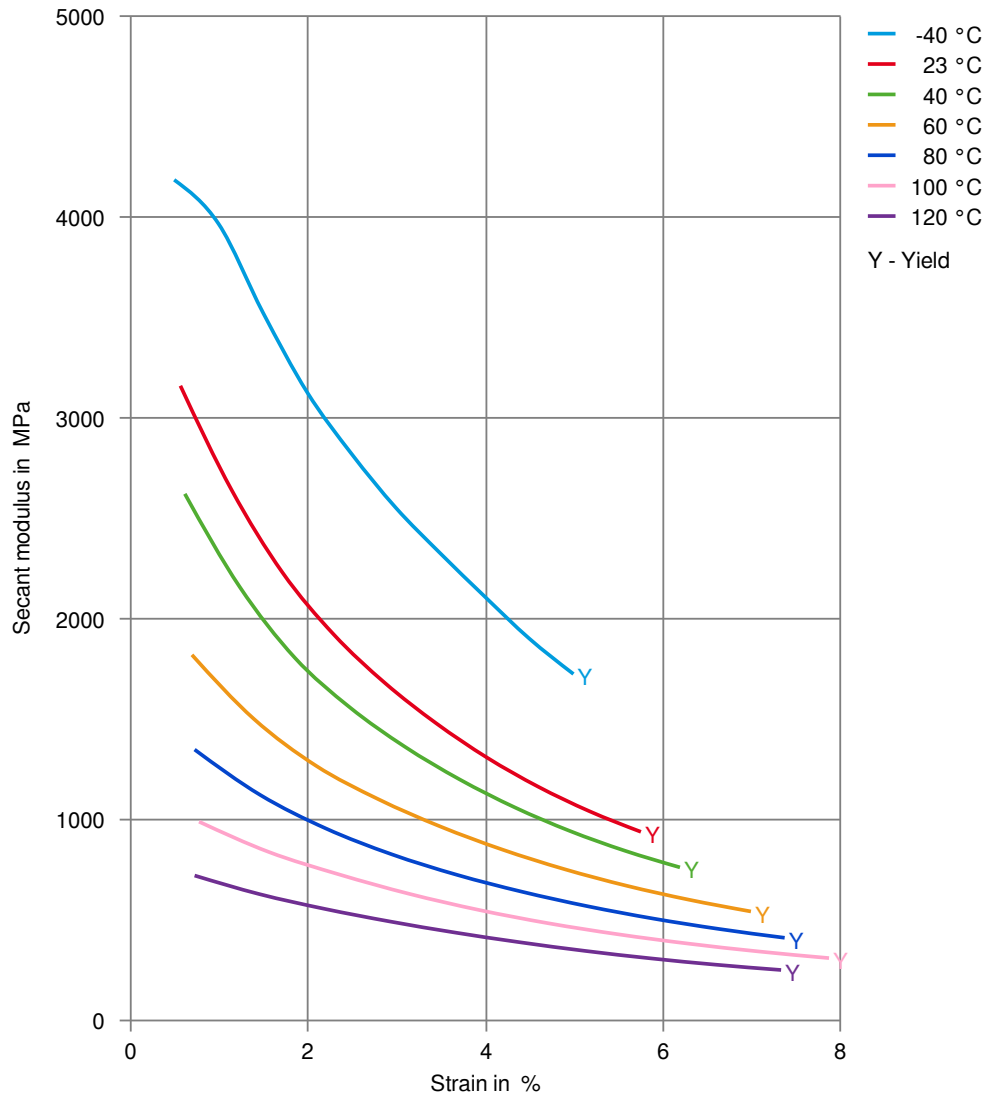
## Stress-strain



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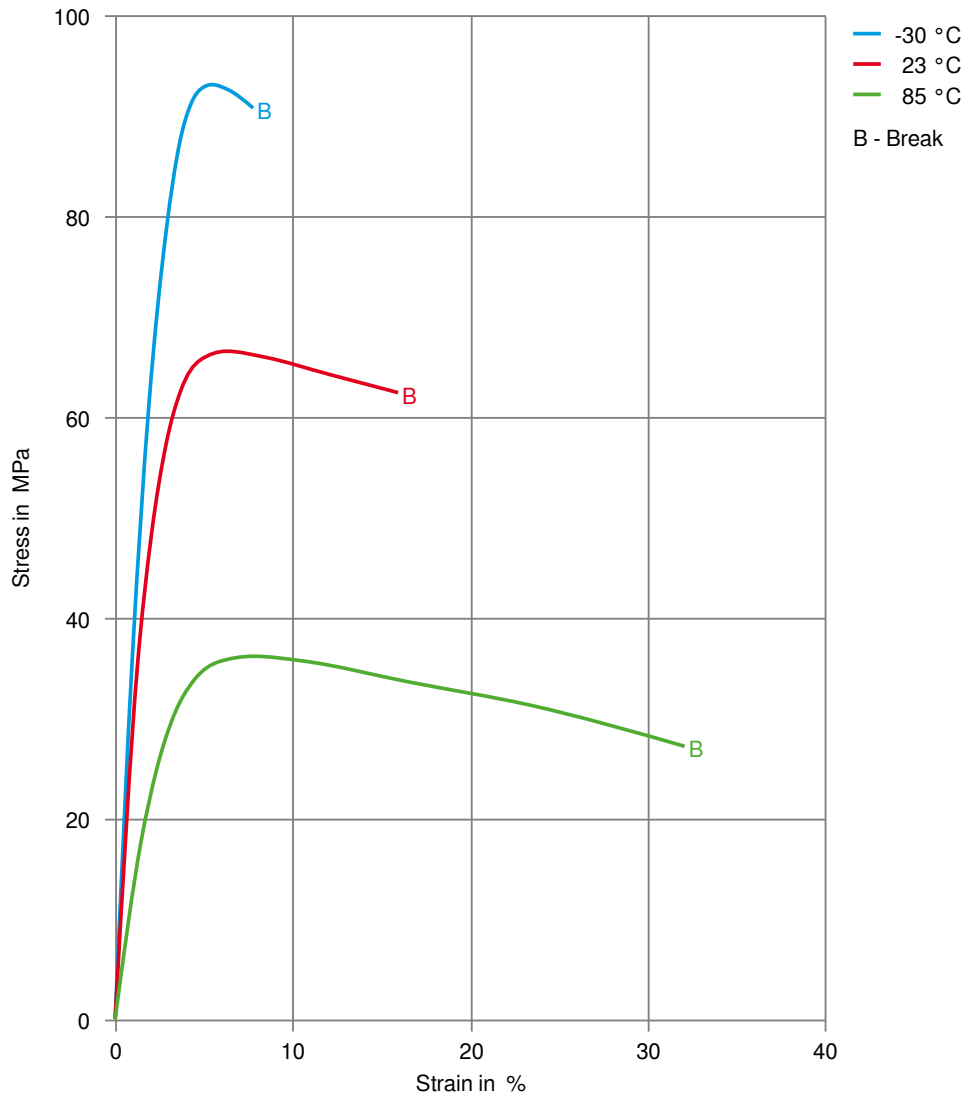
## Secant modulus-strain



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Stress-strain, 50mm/min



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Secant modulus-strain, 50mm/min

