# CELCON® UV90Z ECO-C 872

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Celcon® UV90Z ECO-C 872 is an integrally colored medium flow acetal copolymer material stabilized for use where ultraviolet radiation exposure is expected. The material is formulated to prevent discoloration, fading, chalking and mechanical property changes in severe ultraviolet exposure. This product is available in many colors formulated for the interior automotive market and other applications.
ECO-C: Celcon® UV90Z 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 | 8 | $cm^3$/10min | ISO 1133 |
| Temperature | 374 | °F | |
| Load | 4.76 | lb | |
| Molding shrinkage, parallel | 1.9 | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | 1.7 | % | ISO 294-4, 2577 |

## Typical mechanical properties

| | | | |
|---|---|---|---|
| Tensile modulus | 392000 | psi | ISO 527-1/-2 |
| Tensile stress at yield, 50mm/min | 9300 | psi | ISO 527-1/-2 |
| Tensile strain at yield, 50mm/min | 9 | % | ISO 527-1/-2 |
| Flexural modulus | 358000 | psi | ISO 178 |
| Flexural stress at 3.5% | 9860 | psi | ISO 178 |
| Compressive stress at 1% strain | 3480 | psi | ISO 604 |
| Charpy impact strength, 23°C | 48.5 | $ftlb/in^2$ | ISO 179/1eU |
| Charpy notched impact strength, 23°C | 3.33 | $ftlb/in^2$ | ISO 179/1eA |
| Charpy notched impact strength, -30°C | 3.33 | $ftlb/in^2$ | ISO 179/1eA |
| Izod notched impact strength, 23°C | 2.71 | $ftlb/in^2$ | ISO 180/1A |
| Poisson's ratio | 0.42 | | |

## Thermal properties

| | | | |
|---|---|---|---|
| Melting temperature, 10°C/min | 329 | °F | ISO 11357-1/-3 |
| Temperature of deflection under load, 1.8 MPa | 196 | °F | ISO 75-1/-2 |
| Temperature of deflection under load, 0.45 MPa | 311 | °F | ISO 75-1/-2 |
| Coefficient of linear thermal expansion (CLTE), parallel | 0.61 | E-4/°F | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), normal | 0.667 | E-4/°F | ISO 11359-1/-2 |

## Flammability

| | | | |
|---|---|---|---|
| FMVSS Class | B | | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm | 1.98 | in/min | ISO 3795 (FMVSS 302) |



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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 |
| Density | 0.0509 | lb/in³ | ISO 1183 |

## Injection

| | | |
|---|---|---|
| Drying Recommended | no | |
| Drying Temperature | 212 | °F |
| Drying Time, Dehumidified Dryer | 3 - 4 | h |
| Processing Moisture Content | ≤0.2 | % |
| Melt Temperature Optimum | 374 | °F |
| Min. melt temperature | 356 | °F |
| Max. melt temperature | 392 | °F |
| Max. screw tangential speed | ≤0.3 | m/s |
| Mold Temperature Optimum | 212 | °F |
| Min. mold temperature | 176 | °F |
| Max. mold temperature | 248 | °F |
| Hold pressure range | 8700 - 17400 | psi |
| Hold Pressure Time<br>(h is the max. wall thickness of the part in mm) | 2h²-3 | s |
| Back pressure | 580 | psi |

## Automotive

| OEM | STANDARD | ADDITIONAL INFORMATION |
|---|---|---|
| Changan | MTS-F01-02-001-A3 | 2019 |
| Ford | WSK-M4D840-A1 | 100% color match |
| Ford | WSS-M4D840-A6 | Metallic |
| Ford | WSS-M4D840-B1 | |
| Hyundai | MS237-09 Type B | Nanjing |
| Li Auto | Q/LiA5310020 | 2021 (V2) |
| Tesla | TM-1005-40CU1 | Natural & Black, Bishop USA, Nanjing |

## Characteristics

| | |
|---|---|
| Processing | Injection Molding |
| Additives | Release agent |
| Special characteristics | Light stabilized or stable to light, U.V. stabilized or stable to weather, Specialty appearance |
| Sustainability | Carbon Capture |

## Additional information

Injection molding

### Preprocessing

Drying is generally not required because Celcon® and Hostaform® acetal copolymers are not hydroscopic 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 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

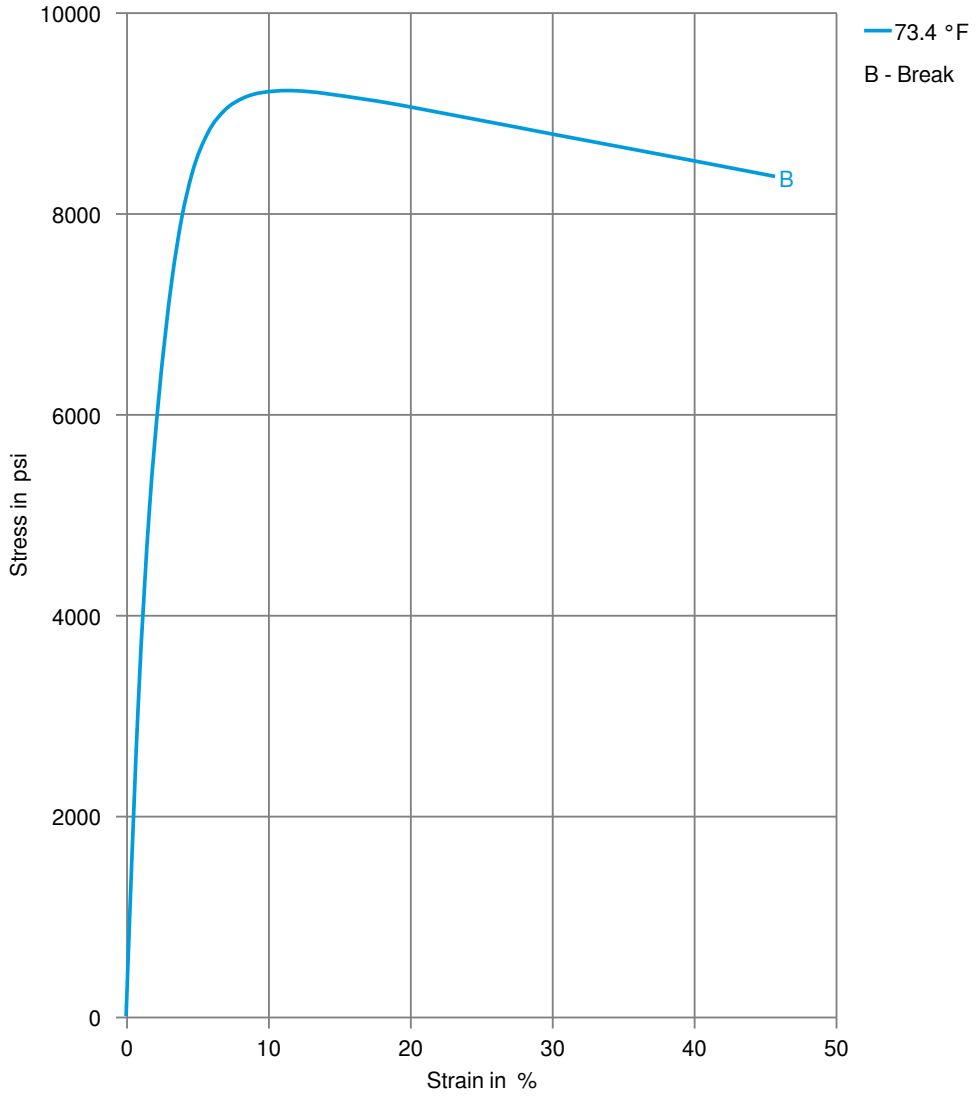
## Pre-Drying

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.

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## Stress-strain



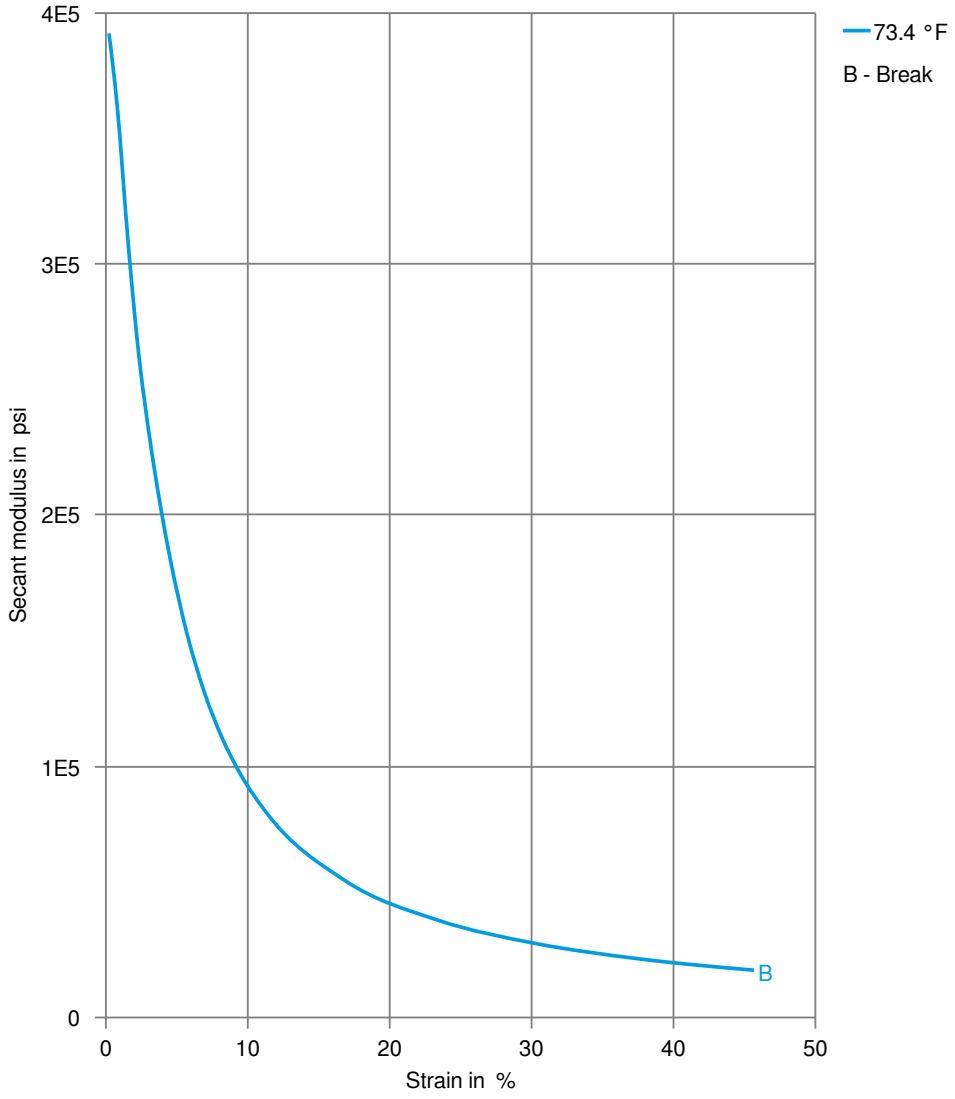



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## Secant modulus-strain






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