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# GUR® 4120 ECO-B

## GUR®

UHMW-PE powder grade

GUR® 4120 ECO-B incorporates >99% of bio-circular ethylene by weight 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 biobased source and allocated content in the product are certified according to ISCC PLUS mass balance approach.

## Product information

| | | | |
|---|---|---|---|
| Resin Identification | (PE-UHMW) | | ISO 1043 |
| Part Marking Code | >(PE-UHMW)< | | ISO 11469 |
| Average molecular weight | 5E6 | g/mol | Margolies' equation |
| Average particle size, d50 | 120 | µm | laser scattering |

## Rheological properties

| | | | |
|---|---|---|---|
| Viscosity number | 2400 | $cm^3/g$ | ISO 307, 1628 |
| Intrinsic viscosity | 2100 | | ISO 307, 1628 |

## Typical mechanical properties

| | | | |
|---|---|---|---|
| Tensile modulus | 660 | MPa | ISO 527-1/-2 |
| Tensile stress at yield, 50mm/min | 20 | MPa | ISO 527-1/-2 |
| Tensile strain at yield, 50mm/min | 14 | % | ISO 527-1/-2 |
| Tensile stress at 50% strain | 19 | MPa | ISO 527-1/-2 |
| Tensile stress at break, 50mm/min | 43 | MPa | ISO 527-1/-2 |
| Nominal strain at break | 470 | % | ISO 527-1/-2 |
| Elongational stress F, 150/10 | 0.26 | MPa | ISO 21304-2 |
| Charpy double notched impact strength, 23°C | 240 | $kJ/m^2$ | ISO 21304-2 |
| Poisson's ratio | 0.46[C] | | |
| Shore D hardness, 15s | 60 | | ISO 48-4 / ISO 868 |

[C]: Calculated

## Tribological properties

| | | | |
|---|---|---|---|
| Wear by sandslurry method (based on GUR 4120=100) | 100 | | |

## Thermal properties

| | | | |
|---|---|---|---|
| Temperature of deflection under load, 1.8 MPa | 38 | °C | ISO 75-1/-2 |
| Vicat softening temperature, 50°C/h 50N | 80 | °C | ISO 306 |

## Electrical properties

| | | | |
|---|---|---|---|
| Volume resistivity | 1E12 | Ohm.m | IEC 62631-3-1 |
| Surface resistivity | 1E12 | Ohm | IEC 62631-3-2 |

## Physical/Other properties

| | | | |
|---|---|---|---|
| Density | 930 | $kg/m^3$ | ISO 1183 |
| Bulk density | 450 | $kg/m^3$ | ISO 60 |

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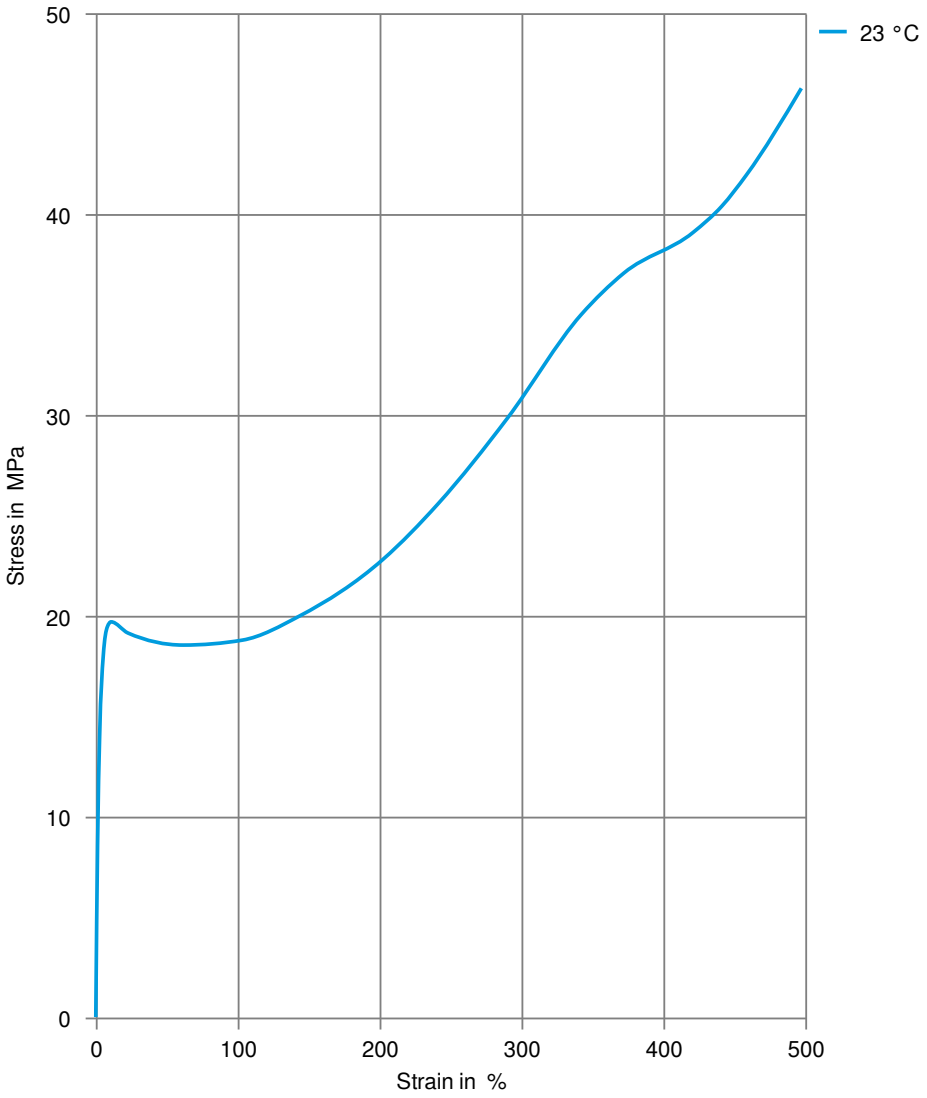
## Characteristics

| | |
|---|---|
| Processing | Ram Extrusion, Compression moulding, Porous Sintering |
| Delivery form | Powder |
| Special characteristics | High impact or impact modified, Hydrolysis resistant, Low wear / Low friction, Chemical resistant |
| Sustainability | Bio-Content |

## Stress-strain



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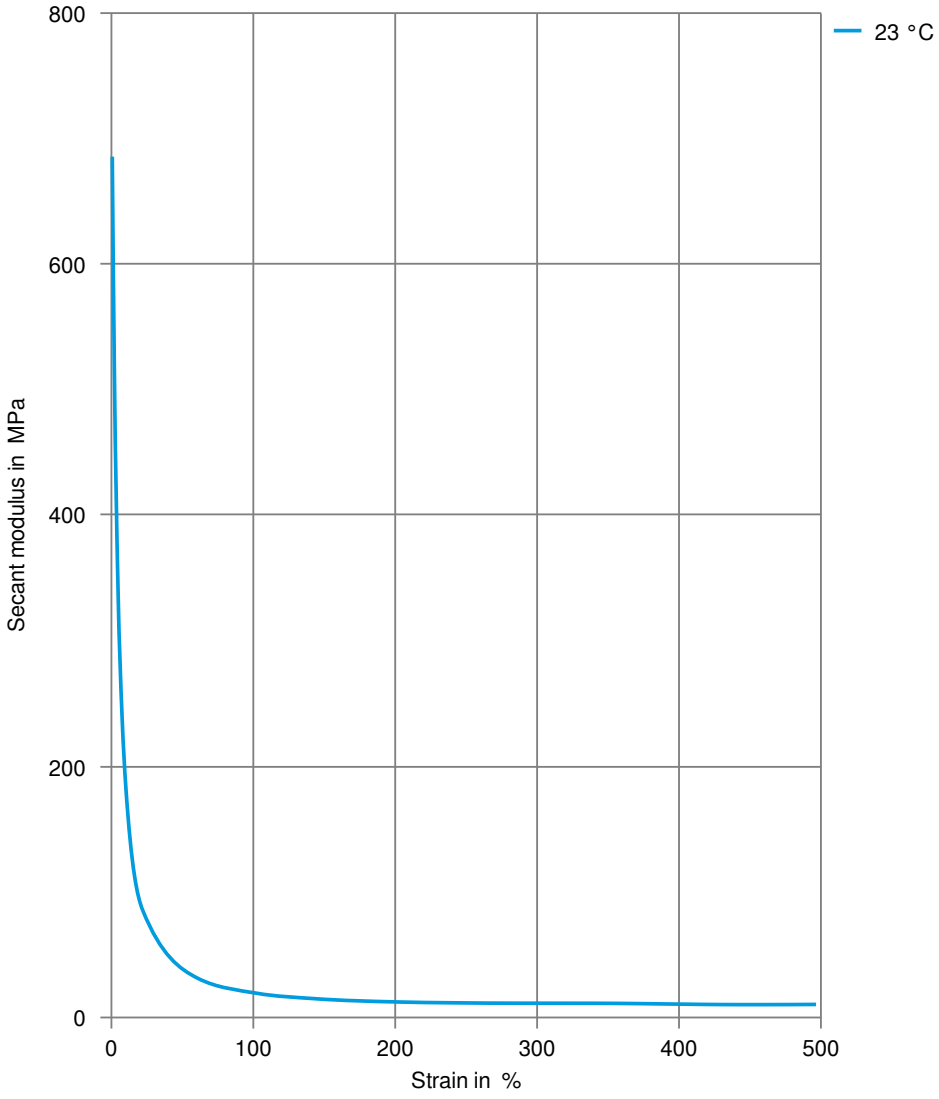
## Secant modulus-strain



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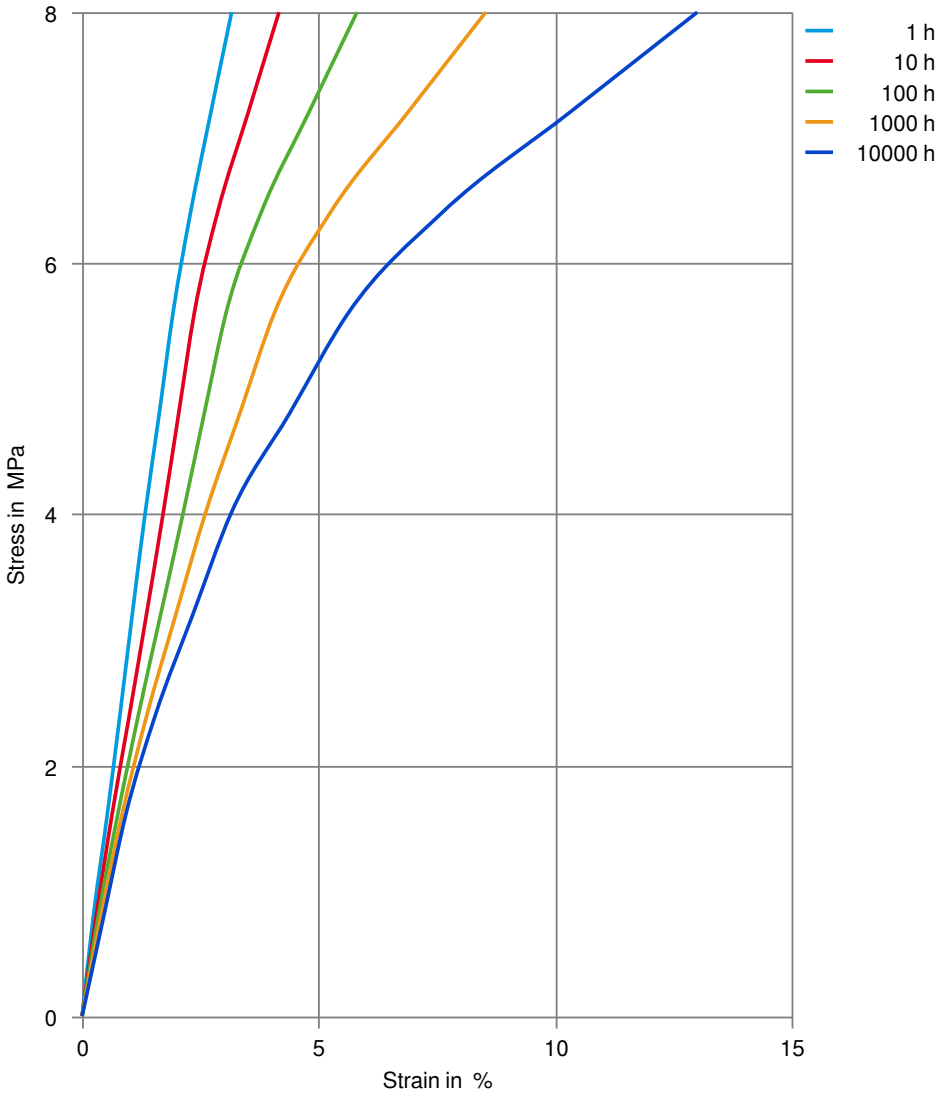
## Stress-strain (isochronous) 23 °C



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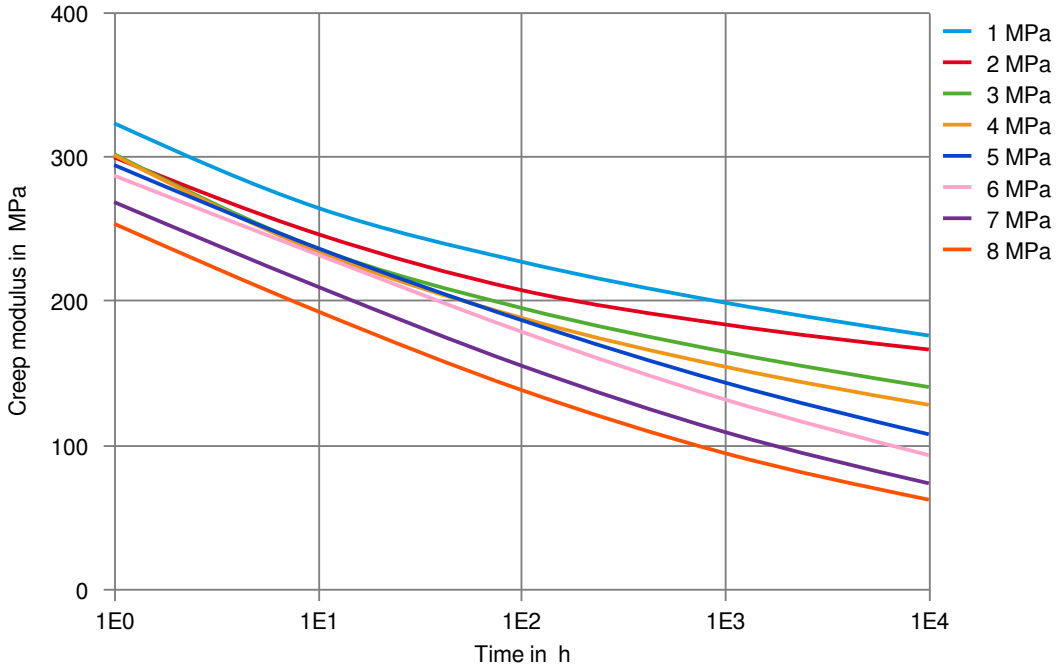
## Creep modulus-time 23 °C



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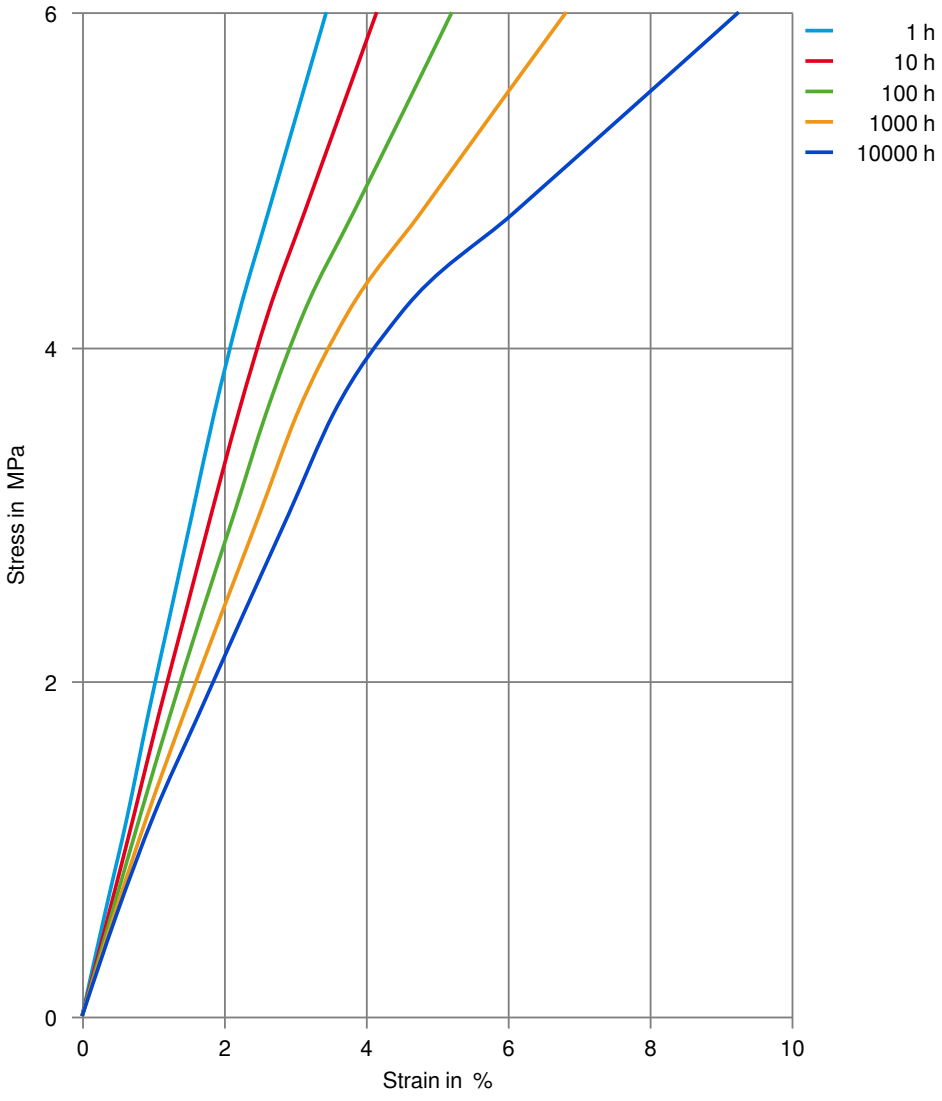
## Stress-strain (isochronous) 40 °C



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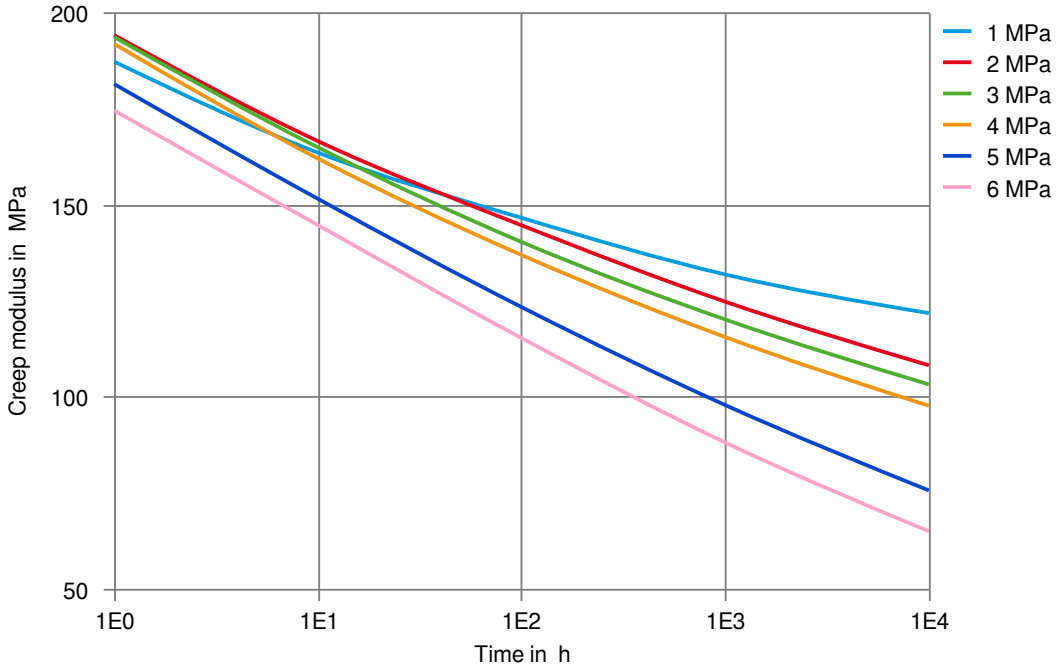
## Creep modulus-time 40 °C






Revised: 2024-09-12 Source: Celanese Materials Database