Product Information

# VESTAMID® EX9200

## PLASTICIZER-FREE AND LIGHT-STABILIZED POLYAMIDE 12 ELASTOMER

The VESTAMID® E series represent thermoplastic elastomers generically characterized as polyether block copolyamides (PEBA) consisting of PA 12 and polyether segments.

Characteristic properties of **VESTAMID® EX9200** are:

- Excellent toughness and flexibility even at low temperatures
- Absence of plasticizers and therefore no plasticizer migration
- Low density
- Good chemical resistance
- High dimensional stability and constant physical properties at changing environmental humidity due to low moisture absorption

Compared with chemically cross-linked elastomers VESTAMID® EX9200 offers the more economically thermoplastic processing.
The process temperatures should be within a range of 200°C – 240°C.

VESTAMID® EX9200 is supplied in moisture-proof packaging ready for use.

Pigmentation may affect values.

Inside the original and undamaged packaging, the product has a shelf life of at least 2 years when stored in dry rooms at temperatures not exceeding 30°C.

### Key Features

**Industrial Sector**
Automotive and Mobility, Industry and Engineering, Sports and Lifestyle

**Processing**
Injection molding, Extrusion

**Delivery form**
Pellets, Granules

**Optics**
Translucent

**Resistance to**
Hydrolysis / hot water, UV / light / weathering, Wear / abrasion, Fatigue resistance

**Additives**
Unfilled

| Mechanical properties ISO | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Tensile modulus | **104000 / -** | psi | ISO 527 |
| Tensile strength | **4500 / -** | psi | ISO 527 |
| Yield stress | **4500 / -** | psi | ISO 527 |
| Yield strain | **20 / -** | % | ISO 527 |
| Stress at 50% strain | **3920 / -** | psi | ISO 527 |
| Stress at break | **6530 / -** | psi | ISO 527 |
| Nominal strain at break, tB | **250 / -** | % | ISO 527 |
| Typical for the mat. nom. strain at br., tB | **200** | % | ISO 527 |
| Charpy impact strength, +23°C | **N / -** | ftlb/in² | ISO 179/1eU |
| Charpy impact strength, 0°C | **2.85 / -** | ftlb/in² | ISO 179/1eU |
| Type of failure | **C / -** | - | - |
| Charpy notched impact strength, +23°C | **15.7 / -** | ftlb/in² | ISO 179/1eA |
| Type of failure | **P / -** | - | - |
| Charpy notched impact strength, -30°C | **2.85 / -** | ftlb/in² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Charpy notched impact strength, -40°C | **2.85 / -** | ftlb/in² | ISO 179/1eA |
| Type of failure | **C / -** | - | - |
| Flexural modulus, 23°C | **78200 / -** | psi | ISO 178 |
| Flexural strength, 23°C | **4350 / -** | psi | ISO 178 |
| Flexural strain at flexural strength, 23°C | **7 / -** | % | ISO 178 |

| Mechanical properties (TPE) | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Stress at 5% elongation | **3900 / -** | psi | ISO 527 |
| Stress at 10% elongation | **4540 / -** | psi | ISO 527 |
| Stress at 20% elongation | **4670 / -** | psi | ISO 527 |
| Stress at 50% elongation | **4350 / -** | psi | ISO 527 |
| Stress at 100% elongation | **4790 / -** | psi | - |

| | | | |
|---|---|---|---|
| Strain at break TPE | **227 / -** | % | ISO 527 |
| Stress at break TPE | **8110 / -** | psi | ISO 527 |

| Thermal properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Melting temperature | **351 / *** | °F | ISO 11357-1/-3 |
| Glass transition temperature, DSC | **69.8 / *** | °F | ISO 11357-1/-2 |
| Temp. of deflection under load A, 1.80 MPa | **113 / *** | °F | ISO 75-1/-2 |
| Temp. of deflection under load B, 0.45 MPa | **212 / *** | °F | ISO 75-1/-2 |
| Vicat softening temperature A, 10 N, 50 K/h | **338 / *** | °F | ISO 306 |
| Vicat softening temperature B, 50 N, 50 K/h | **266 / *** | °F | ISO 306 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, parallel | **8.89E-5 / *** | in/in/°F | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, normal | **8.89E-5 / *** | in/in/°F | ISO 11359-1/-2 |
| Melting Temperature | **351** | °F | ASTM D 3418 |

| Physical properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Density | **1.01 / -** | $g/cm^3$ | ISO 1183 |
| Water absorption | **1.5 / *** | % | Sim. to ISO 62 |
| Shore D hardness | **68[b] / -** | - | ISO 7619-1 |
| Density | **1.01** | $g/cm^3$ | ASTM D 792 |

b: 3 seconds

| Burning Behav. | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Burning behav. at 1.5 mm nom. thickn. | **HB / *** | class | IEC 60695-11-10 |
| Thickness tested | **0.0630 / *** | in | - |

| Electrical properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Volume resistivity, V | **1E9 / -** | Ohm*m | IEC 62631-3-1 |
| Surface resistance, RSD | **1E13 / -** | Ohm | IEC 62631-3-2 |
| Relative permittivity, 100Hz | **7.4 / -** | - | IEC 62631-2-1 |

| | | | |
|---|---|---|---|
| Relative permittivity, 1MHz | **4.6 / -** | - | IEC 62631-2-1 |
| Dissipation factor, 100Hz | **1500 / -** | E-4 | IEC 62631-2-1 |
| Dissipation factor, 1MHz | **760 / -** | E-4 | IEC 62631-2-1 |
| Dielectric strength, AC, S20/P50 | **762 / -** | V/mil | Sim. to IEC 60243-1 |
| CTI, test solution A, 50 drops value | **600 / -** | - | IEC 60112 |
| Assessment of the insulation group | **I** | - | DIN EN 60664-1 |

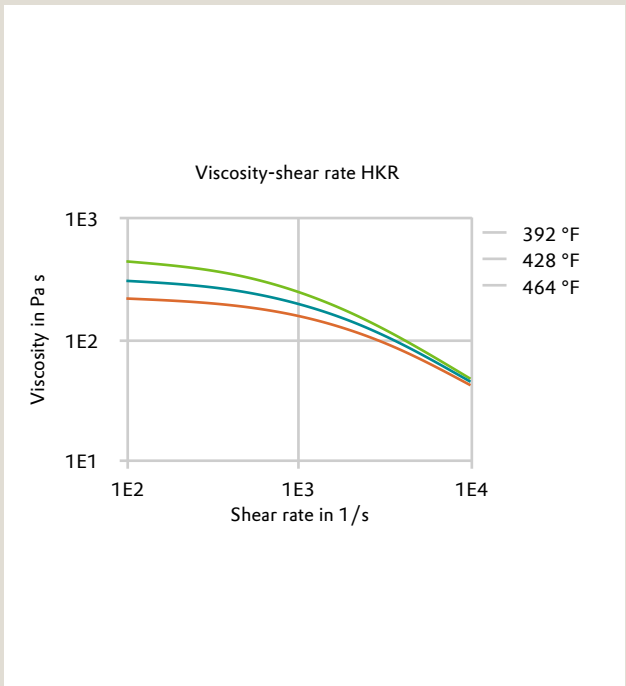
| **Rheological properties** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Melt volume-flow rate, MVR | **54 / *** | $cm^3$/10min | ISO 1133 |
| Temperature | **250 / *** | °C | - |
| Load | **5 / *** | kg | - |
| Molding shrinkage, parallel | **0.9 / *** | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | **1.3 / *** | % | ISO 294-4, 2577 |
| Mold temperature | **113 / *** | °F | - |
| Melt temperature | **446 / *** | °F | - |

| **Polymer analytics** | **dry / cond** | **Unit** | **Test Standard** |
|---|---|---|---|
| Viscosity number | **5260 / *** | $in^3$/lb | ISO 307, 1157, 1628 |

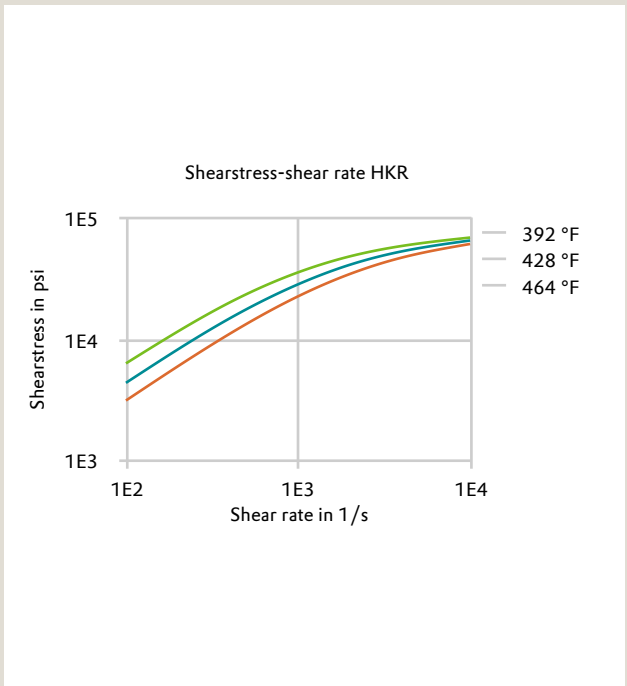
| **Test specimen production** | **dry** | **Unit** | **Test Standard** |
|---|---|---|---|
| Injection Molding, melt temperature | **428** | °F | ISO 294 |
| Injection Molding, mold temperature | **95** | °F | ISO 294 |
| Injection Molding, injection velocity | **7.87** | in/s | ISO 294 |

## Diagrams

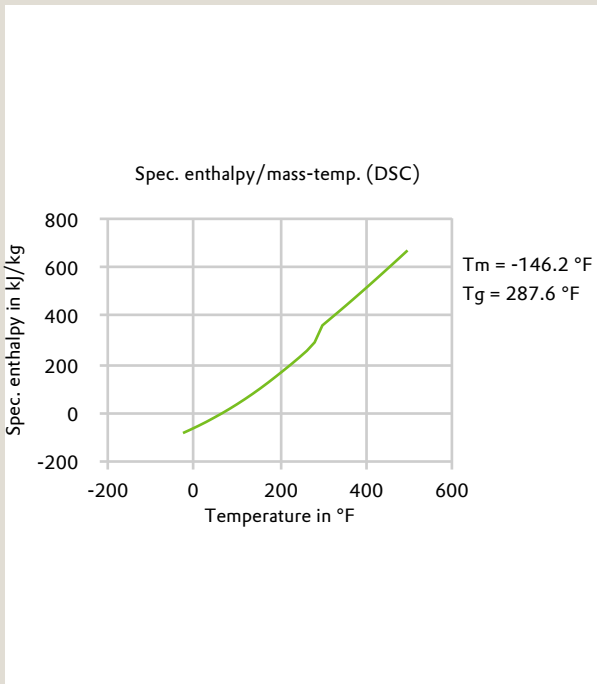
### Viscosity-shear rate HKR




### Shearstress-shear rate HKR




### Spec. enthalpy/mass-temp. (DSC)



VESTAMID®

## Characteristics

**Processing**
Film extrusion

**Special Characteristics**
Semi-crystalline, Light-stabilized

**Color**
Natural color

**Additives**
Light stabilizer

**Chemical Resistance**
General chemical resistance

## Chemical Media Resistance

### Acids

- ✔ Acetic Acid (5% by mass) (23°C)
- ✔ Citric Acid solution (10% by mass) (23°C)

### Bases

- ✔ Sodium Hydroxide solution (35% by mass) (23°C)
- ✔ Sodium Hydroxide solution (1% by mass) (23°C)
- ✔ Ammonium Hydroxide solution (10% by mass) (23°C)

### Alcohols

- ✔ Isopropyl alcohol (23°C)
- ✔ Methanol (23°C)
- ✔ Ethanol (23°C)

### Hydrocarbons

- ✔ n-Hexane (23°C)
- ✔ Toluene (23°C)
- ✔ iso-Octane (23°C)

### Ketones

- ✔ Acetone (23°C)

### Ethers

- ✔ Diethyl ether (23°C)

### Salt solutions

- ✔ Sodium Chloride solution (10% by mass) (23°C)
- ✔ Sodium Carbonate solution (20% by mass) (23°C)
- ✔ Sodium Carbonate solution (2% by mass) (23°C)

**Other**

- ✔ Ethyl Acetate (23°C)
- ✔ Hydrogen peroxide (23°C)
- ✔ Water (23°C)