# TOPAS® 9903D-10

Extrusion grade

Grade with high rigidity and low glass transition temperature. For thermoforming, shrink film and seal layer formulations.

Cyclic Olefin Copolymer (COC)

| Property | Value | Unit | Test Standard |
|---|---|---|---|
| **Physical Properties** | | | |
| Density | **980** | kg/m³ | ISO 1183 |
| Melt volume rate (MVR) (260°C, 2.16kg) | **8.0** | cm³/10min | ISO 1133 |
| Melt volume rate (MVR) (230°C, 2.16kg) | **4.0** | cm³/10min | ISO 1133 |
| Melt volume rate (MVR) (190°C, 2.16kg) | **1.0** | cm³/10min | ISO 1133 |
| **Thermal Properties** | | | |
| Glass transition temperature (10°C/min) | **33** | °C | ISO 11357 |
| **Mechanical Properties (Tensile bars)** | | | |
| Tensile modulus | **1260** | MPa | ISO 527-3 |
| **Mechanical Properties (Film)** | | | |
| Tensile strength @ break (machine direction) | **25** | MPa | ISO 527-3 |
| Tensile strength @ break (transverse direction) | **22** | MPa | ISO 527-3 |
| Elongation at break (machine direction) | **>150** | % | ISO 527-3 |
| Elongation at break (transverse direction) | **>100** | % | ISO 527-3 |
| **Optical Properties (Film)** | | | |
| Gloss, 60° | **>100** | % | ISO 2813 |
| Haze | **<1** | % | ISO 14782 |
| **Barrier Properties (Film)** | | | |
| Water vapor permeability @ 38°C, 90% RH | **1.9** | g·100µm/(m²·day) | ISO 15106-3 |
| Oxygen Permeability @23°C, 50%RH | **400** | cm³·100µm/(m²·day·bar) | ASTM D3985 |
| **Test Specimen Production (Film)** | | | |
| Type of extrusion | **cast** | | |
| Thickness of specimen | **0.1** | mm | |

## Storage

This grade tends to stick due to its low glass transition temperature. This is also true for parts made thereof. Chilled warehousing is recommended.



TOPAS Advanced Polymers
Tel: +49 (0) 1805-1-86727 (Europe)
Tel: +1 (859) 746-6447 (North America)
email: info@topas.com
Internet: www.topas.com