

# TIVAR® HPV Food Grade UHMW-PE

Bearing Grade for Outstanding Performance in Conveying and Processing Systems

For wear components subject to challenging production environments such as high speeds, high temperatures, high loads, and aggressive cleaning agents, look to TIVAR® HPV Food Grade UHMW-PE as the game-changing solution.



## Key Benefits

- Very low wear of belt and slide plates
- COF reduced by 80% vs POM-C\*
- LPV value approximately 18-35% higher than competitive dry lubricant material
- Food contact safe: FDA and EU 10/2011 compliant
- Significant noise reduction
- Built in dry lubricant

## Competitive Advantage

- Longer productive cycles between maintenance
- Shorter downtimes
- Less interruptions, leading to significant energy cost savings
- Eliminates lubrication, cleaner operation

## Availability

### Shapes

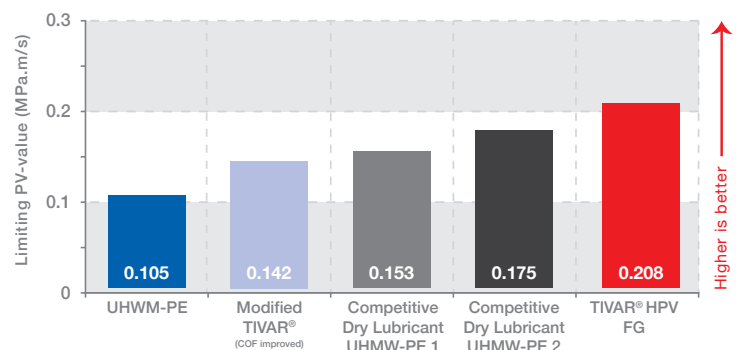
- Stock Plate
  - .25" to 2"
  - 48 x 120 - Available upon request
- Round Rod

### Profiles

- Extruded
- Machined
- Finished parts according to customer's specifications

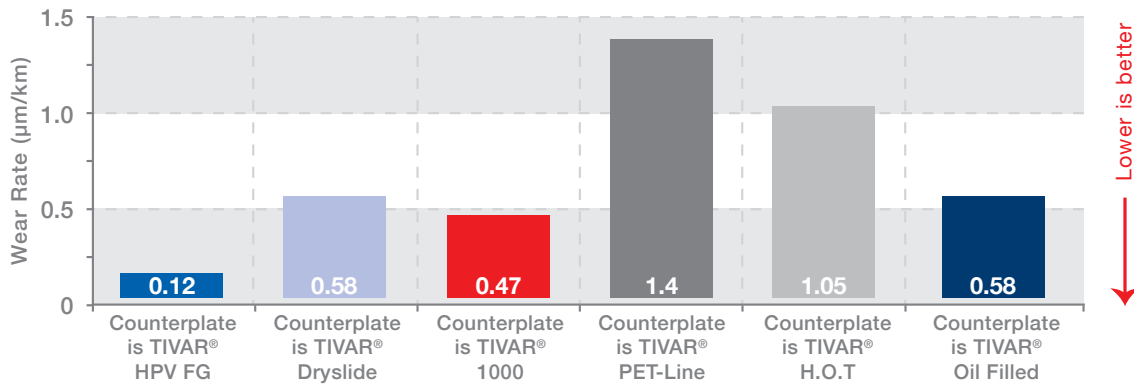
## Limiting PV-Values

• Tribological test procedure: Thrust Washer testing  
 • LPV-limits measured on a Thrust Washer rotating against a metal system, speed 0.5 m/s (wear as limit)  
 • Data Source: Mitsubishi Chemical Advanced Material Lab Tests



## Lab Testing: WEAR RATE of the POM C Pin

(measured on a "plastics pin on rotating disk" - tribo system, 3MPa pressure, 0.33m/s speed @23°C)



• Tribological test procedure: similar to Test method A "pin-on-disk", as described in ISO 7148-2: 1999  
 • Test conditions: 3 MPa pressure / POM-C pin / sliding velocity 0.33 m/s / normal environment: air, 23°C, 50% RH / unlubricated operation / test time: 24 hrs  
 • Data Source: Mitsubishi Chemical Advanced Material Lab Tests

## Data Sheet

	Metric	Imperial			
		Test Method ISO	Average Value	Test Method ASTM	Average Value
<b>Mechanical Properties</b>	Density (Specific Gravity @ 73°F)	ISO 1183-1	0.95 g/cm <sup>3</sup>	ASTM D792	0.93
	Tensile Strength @ 23°C (73°F)	ISO 527-1/-2	20 MPa	ASTM D638	5,900 psi
	Tensile Modulus of Elasticity @ 23°C (73°F)	ISO 527-1/-2	800 MPa	ASTM D638	56,000 psi
	Tensile Elongation (at break) @ 23°C (73°F)	ISO 527-1/-2	>50%	ASTM D638	390%
	Flexural Strength @ 23°C (73°F)	ISO 178	-	ASTM D790	3,000 psi
	Flexural Modulus of Elasticity @ 23°C (73°F)	ISO 178	-	ASTM D790	77,000 psi
	Compressive Stress @ 10% Deformation @ 23°C (73°F)	ISO 604	22 MPa	ASTM D695	3,000 psi
	Compressive Modulus of Elasticity @ 23°C (73°F)	ISO 604	-	ASTM D695	77,000 psi
	Hardness, Durometer, Shore "D" Scale @ 23°C (73°F)	ISO 868	D61	ASTM D2240	D65
	Notched Charpy Impact @ 23°C (73°F)	ISO 179-1/1eA	106P kJ/m <sup>2</sup>	ASTM D25 6 Type "A"	55 ft. lb./in. <sup>2</sup>
	Sand Slurry	ISO 15527	-	MCAM TM D4020	165 (TIVAR® 1000=100)
	Sand Wheel Wear	-	-	ASTM G65	101 (TIVAR® 1000=100)
<b>Thermal Prop.</b>	Coefficient of Linear Thermal Expansion 23-6 °C (-40-300°F)	ASTM E831 (TMA)	-	ASTM E831 (TMA)	8 x 10 <sup>-5</sup> in./in./°F
	Heat Deflection Temperature @ 1.8 MPa (264 psi)	ISO 75 -1/-2	-	ASTM D648	116°F
	Melting Point (crystalline) peak	ISO 11357-1/-3	135°C	ASTM D3418	275°F
	Continuous Service Temp in Air (Max.) <sup>(1)</sup>	-	80°C	-	180°F
	Thermal Conductivity	-	-	F433	-
<b>Elect. Prop.</b>	Surface Resistivity	EOS/ESD S11.11	-	EOS/ESD S11.11	>10 <sup>14</sup> ohms/square
	Flammability @ 3.1mm (1/8 in.) <sup>(2)</sup>	UL 94	HB	UL-94	HB
<b>Other</b>	Water Absorption Immersion, 24 Hours	ISO 62	<0.1% by wt.	ASTM D570 <sup>(3)</sup>	<0.1% by wt.
	Water Absorption Immersion, Saturation	-	<0.1% by wt.	ASTM D570 <sup>(3)</sup>	<0.1% by wt.

(1) Data represents our estimated maximum long-term service temperature based on practical field experience. (2) Estimated rating based on available data. The UL-94 Test is a laboratory test and does not relate to actual fire hazard. Contact us for specific UL "Yellow Card" recognition number. (3) Specimens: 1/8" thick x 2" diameter or square.

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 MCM-FP-03B | 8.18.20

