MITSUBISHI CHEMICAL ADVANCED MATERIALS

TIVAR® HPV FG UHMW-PE

Bearing Grade for Outstanding Performance in Conveying & Processing Systems

TIVAR® HPV FG was developed specifically for wear components subject to challenging production environments, such as high speeds, high temperatures, high loads, and aggressive cleaning agents. Components made with TIVAR® HPV exhibit improved sliding behavior, and abrasion resistance due to its low COF, and high LPV.

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

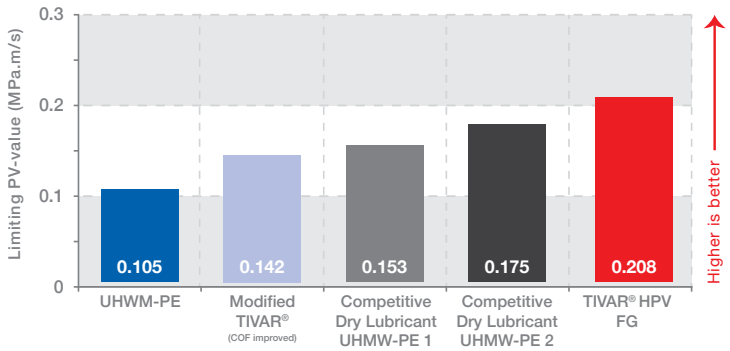
- Stock Plate
  - .25” to 2”
  - 48 x 120 - Available upon request
- Round Rod

Profiles

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

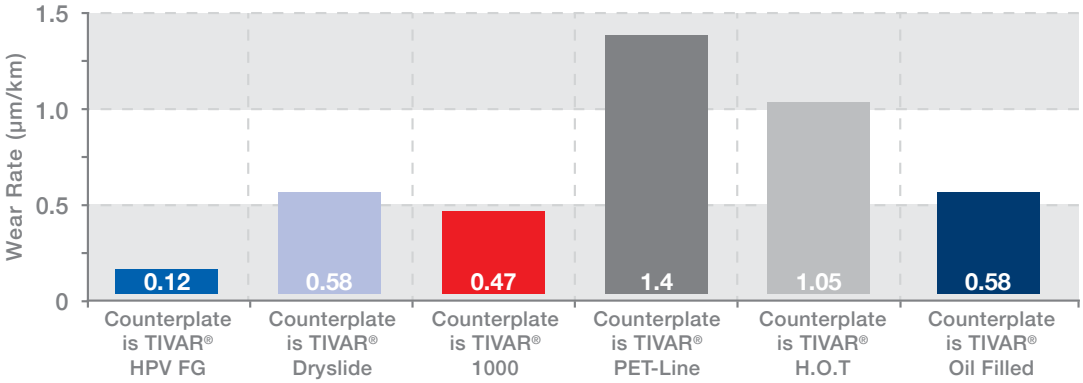
Limiting PV-Values

- 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
Mechanical Properties	Density (Specific Gravity @ 73˚F)	ISO 1183-1	0.95 g/cm³	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/m²	ASTM D25 6 Type "A"	55 ft. lb./in.²
	Sand Slurry	ISO 15527	-	MCAM TM D4020	165 (TIVAR® 1000=100)
	Sand Wheel Wear	-	-	ASTM G65	101 (TIVAR® 1000=100)
Thermal Prop.	Coefficient of Linear Thermal Expansion 23-6 °C (-40-300˚F)	ASTM E831 (TMA)	-	ASTM E831 (TMA)	8 x 10^{-5} 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.) (1)	-	80°C	-	180°F
	Thermal Conductivity	-	-	F433	-
Elect. Prop.	Surface Resistivity	EOS/ESD S11.11	-	EOS/ESD S11.11	>10^{14} ohms/square
	Flammability @ 3.1mm (1/8 in.)(2)	UL 94	HB	UL-94	HB
Other	Water Absorption Immersion, 24 Hours	ISO 62	<0.1% by wt.	ASTM D570(3)	<0.1% by wt.
	Water Absorption Immersion, Saturation	-	<0.1% by wt.	ASTM D570 (3)	<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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