

TIVAR® HPV FG UHMW-PE

Customer 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

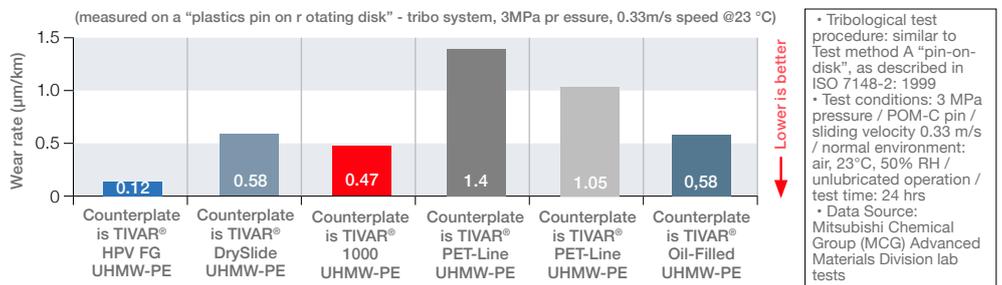
- Extruded
- Machined
- Finished parts according to customer's specifications



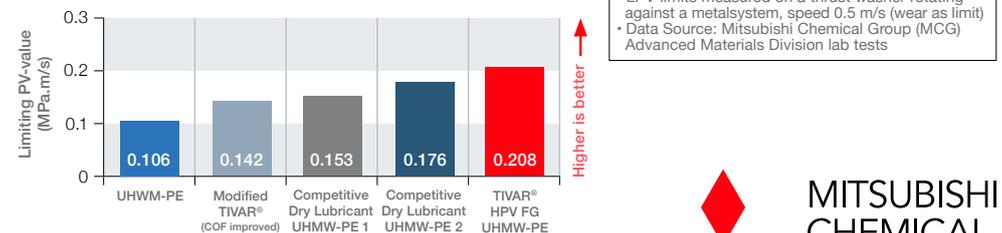
Bearing grade for outstanding performance in conveying & processing systems

TIVAR® HPV FG UHMW-PE 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 FG UHMW-PE exhibit improved sliding behavior, and abrasion resistance due to its low COF, and high LPV.

Lab testing: Wear rate of the POM C Pin



Limiting PV-values



TIVAR® HPV FG UHMW-PE

	ISO*			ASTM*			
	Test methods	Units	Indicative Values	Test methods	Units	Indicative Values	
Thermal Properties (1)	Melting temperature (DSC, 10°C (50°F) / min)	ISO 11357-1/-3	°C	135	ASTM D3418	°F	275
	Glass transition temperature (DMA, tan delta)	DMA	°C	-	DMA	°F	-
	Thermal conductivity at 23°C (73°F)	-	W/(K.m)		-	BTU in./(hr.ft².°F)	
	Coefficient of linear thermal expansion (-40 to 150 °C) (-40 to 300°F)	-			ASTM E-831 (TMA)	µin./in./°F	80
	Coefficient of linear thermal expansion (23 to 100°C) (73°F to 210°F)	-	µm/(m.K)				
	Heat Deflection Temperature: method A: 1.8 MPa (264 PSI)	ISO 75-1/-2	°C	-	ASTM D648	°F	116
	Continuous allowable service temperature in air (20.000 hrs) (3)	-	°C	80	-	°F	180
	Min. service temperature (4)	-	°C	-200	-	°F	-
	Flammability: UL 94 (3 mm (1/8 in.)) (5)	-	-	HB	-	-	HB
	Flammability: Oxygen Index	ISO 4589-1/-2	%	<20			
Mechanical Properties (6)	Tensile strength	ISO 527-1/-2 (7)	MPa	20	ASTM D638 (8)	PSI	5,900
	Tensile strain (elongation) at yield	ISO 527-1/-2 (7)	%	16.00	ASTM D638 (8)	%	-
	Tensile strain (elongation) at break	ISO 527-1/-2 (7)	%	>50	ASTM D638 (8)	%	390
	Tensile modulus of elasticity	ISO 527-1/-2 (9)	MPa	800	ASTM D638 (8)	KSI	56
	Shear Strength	ASTM D732	MPa	-	ASTM D732	PSI	-
	Compressive stress at 1 / 2 / 5 % nominal strain	ISO 604 (10)	MPa	6.8/10.7/17.2			
	Compressive strength				ASTM D695 (11)	PSI	3,000
	Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m²	no break			
	Charpy impact strength - notched	ISO 179-1/1eA	kJ/m²	106P			
	Charpy impact strength - double 14° notched	ISO 21304-2	kJ/m²				
	Izod Impact notched				ASTM D256	ft.lb./in	No Break
	Flexural strength	ISO 178 (12)	MPa	0	ASTM D790 (13)	PSI	3,000
	Flexural modulus of elasticity	ISO 178 (12)	MPa	-	ASTM D790	KSI	77
	Relative volume loss during wear test "sand-slurry" : TIVAR® 1000=100	ISO 15527	-	-			
	Shore hardness D (14)	ISO 868	-	61	ASTM D2240	-	65
Electrical Properties	Electric strength	IEC 60243-1 (15)	kV/mm	-	ASTM D149	Volts/mil	-
	Volume resistivity	IEC 62631-3-1	Ohm.cm		IEC 60093	Ohm.cm	
	Surface resistivity	ANSI/ESD STM 11.11	Ohm/sq.	10E13	ANSI/ESD STM 11.11	Ohm/sq.	10E13
	Dielectric constant at 1 MHz	IEC 62631-2-1	-	-	ASTM D150	-	-
	Dissipation factor at 1 MHz	IEC 62631-2-1	-	-	ASTM D150	-	-
Miscellaneous	Colour	-	-	Blue	-	-	Blue
	Density	ISO 1183-1	g/cm³	0.95			
	Specific Gravity				ASTM D792	-	0.93
	Water absorption after 24h immersion in water of 23°C (73°F)	ISO 62 (16)	%	<0.1	ASTM D570 (17)	%	
	Water absorption at saturation in water of 23 °C (73°F)	-	%	<0.1	ASTM D570 (17)	%	
	Wear rate	ISO 7148-2 (18)	µm/km	-	QTM 55010 (19)	in².min/ft.lbs.hrx10 ⁻¹⁰	20.00
	Dynamic Coefficient of Friction (-)	ISO 7148-2 (18)	-	-	QTM 55007 (20)	-	0.09
	Limiting PV at 100 FPM				QTM 55007 (21)	ft.lbs/in².min	6,000
	Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings	-	Mpa.m/s	- / -			
	Chemical Resistance	https://www.mcam.com/en/support/chemical-resistance-information/			https://www.mcam.com/en/support/chemical-resistance-information/		

Note: 1 g/cm³ = 1,000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 kV/mm = 1 MV/m

NYP: there is no yield point

*This table, mainly to be used for comparison purposes, is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design. This product data sheet and any data and specifications presented on our website shall provide promotional and general information about the Engineering Plastic Products (the "Products") manufactured and offered by Mitsubishi Chemical Advanced Materials and shall serve as a preliminary guide. All data and descriptions relating to the Products are of an indicative nature only. Neither this data sheet nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation.

All statements, technical information, recommendations, and advice are for informational purposes only and are not intended and should not be construed as a warranty of any type or term of sale. The reader, however, is cautioned that Mitsubishi Chemical Advanced Materials does not guarantee the accuracy or completeness of this information and it is the customer's responsibility to test and assess the suitability of the products of Mitsubishi Chemical Advanced Materials in any given application or for use in a finished device.

TIVAR® is a registered trademark of Mitsubishi Chemical Advanced Materials.

Design and content created by Mitsubishi Chemical Advanced Materials and protected by copyright law. Copyright © 2022 Mitsubishi Chemical Advanced Materials. All rights reserved.

Mitsubishi Chemical Advanced Materials NV
Galgenveldstraat 12
8700 Tiel, Belgium
T +32[0] 51 42 35 11

contact@mcam.com
mcam.com

