



UHMW (ULTRA HIGH MOLECULAR WEIGHT)

Also Known As (common industry trade names):

Duragard . Linite . Polystone . Tivar . Tivar . Tivar 88 . Tivar 88-2 . Tivar 88 Antistatic
Tivar 88-2 Antistatic . Tivar 1000 . Tivar 1000 Antistatic . Tivar 1000 UV Resistant
Tivar Dryslide . Tivar Extended Wear . Tivar HOT . Tivar Oilfield . Tivar Polysteel
Tivar Urethane . UHMW-PE . Ultra-Poly . Xylethon

Material Information:

UHMW (Ultra High Molecular Weight Polyethylene) is the answer to many of today's applications that require a strong hard working material at a reasonable cost. In terms of wear resistance, frictional coefficients, impact strength and corrosion resistance few if any materials can bring as unique of a combination as UHMW. UHMW's low coefficient of friction and toughness make it an ideal replacement for stainless steel in transporting difficult materials. UHMW also withstands even the harshest chemicals, making it the material of choice for applications including caustic compounds as well as rigorous cleaning solvents.

Applications:

- Wear Strips
- Bearings
- Chute
- Liners
- Chain Guides
- Spreaders
- Freezer
- Tunnels
- Flights
- Augers
- Plow Blades
- Chain Tensioners
- Guide Rails
- Idler Sprockets

Characteristics /

Enhancements / Varieties:

Fillers/Applications:

- *Anti-Static:
 - Flights, Trough, Liners, Robotics,
 - Table Surfaces, Chute Liners,
 - Conveyor Components, Slider Bars
- *UV Stabilizers:
 - Dock Fenders, Rub Rails, Wear Strips
 - Ice Rinks, Spreaders, Sprockets
- *Oil Filled:
 - Roll End Bearings, Chain Guides, Star Wheels
 - Chain Tensioners's, Chain Wear Strips,
 - Timing Screws, Sprockets, Spur Gears,
 - Guide Rails
- Special Products:**
 - *Standard Wear Components:
 - Oversized Sheets, Custom Colors, Annealing
 - U-channels, C-channels, Wear Strips

Standard Shapes and Sizes (please call for custom sizes not listed):

- Sheet: 48" x 96", 48" x 120", 48" x 144", 60" x 120", 96" x 240"
- Rod: 1/4" thru 10" OD (USA) - Larger available via import
- Tube: Limited sizes available - Please call for more details
- Film: Many sizes available - Please call for more details
- Other: Many extruded and machined profiles are available - Please call for more details

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QUADRANT

TIVAR® 88 Family of Lining Products

Engineering Innovative Solutions for Bulk Material Handling

Product Profile:

- Promotes reliable, steady bulk material flow
- Abrasion-, chemical- and corrosion-resistant
- Low coefficient of friction
- No moisture absorption
- Reduces or eliminates arching, ratholing and erratic flow

Recognized worldwide as the premium lining material for bulk material handling, **TIVAR® 88** is noted for its performance in promoting bulk solids flow of cohesive or non-free flowing materials due to its low surface friction. **TIVAR® 88** liners are the perfect solution when you need to reduce or eliminate arching, ratholing and erratic material flow challenges in bins, bunkers, hoppers and chutes, railcars, etc.

TIVAR® 88-2 can be fabricated - and welded - to provide a solution for nearly any application, whether it's a seamless, drop-in liner; a framed-in liner or even a replacement liner. Quadrant's SystemTIVAR® Engineering continually works on new solutions for current and future application challenges.

Although every application is unique, some have specific environmental challenges. Quadrant has developed several proprietary formulation packages for **TIVAR® 88** that enhance certain properties without negatively impacting **TIVAR® 88's** key properties.

UV Resistant - For applications in outdoor environments that receive high exposure to ultra violet rays, **TIVAR® 88** UV Resistant prevents premature degradation of material.

BurnGuard™ - For applications in which the **TIVAR® 88** liner might be exposed to combustion, **TIVAR 88** with BurnGuard™ has flame retardant properties. When the source of the combustion is removed, **TIVAR 88** with BurnGuard™ self extinguishes and experiences no further impact. **TIVAR® 88** with BurnGuard™ meets MSHA 1C-112/1 for underground mining and has a UL94 V-0 Flammability Rating.

Electro Static Dissipative - In dusty or volatile environments, **TIVAR® 88** ESD protects against the build-up of electrical charges.



Industries	Applications		
<p>Click the links below to view photos and additional Industry information</p> <ul style="list-style-type: none"> • Power • Railcars • Steel • Cement • Chemical • Grain • Minerals & Metals 	<ul style="list-style-type: none"> Belt scrapers Bunker liners Chain conveyor flights Chute liners Conveyor skirting Cyclones Drag chain conveyor liners Dragline buckets Dust collection hopper liners Front end loader bucket liners Hopper liners 	<ul style="list-style-type: none"> Offroad truck beds Pugmill Paddles Railcar liners Reclaimer buckets Screw conveyor liners Self-unloading ships Silo liners Slider beds Storage bin liners 	<ul style="list-style-type: none"> Surge bin liners Transfer chute liners Under chain guides Wearstrips Vibrating bin dischargers Vibratory feeder liners

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Data Sheet No: 10516
Revision: 01
Effective Date: 7/10/08
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DATA SHEET			
TIVAR® 88-2 Blue – Premium Lubricant Filled, Lower COF UHMW-PE Lining Material			
Property	Units	Test Method	Typical Average Values
Mechanical			
Specific Gravity, 73° F	-	ASTM D792	.933
Tensile Strength, 73° F	psi	ASTM D638	5500
Tensile Modulus of Elasticity, 73° F	psi	ASTM D638	97000
Tensile Elongation (at break), 73° F	%	ASTM D638	200
Flexural Strength, 73° F	psi	ASTM D790	3000
Flexural Modulus of Elasticity, 73° F	psi	ASTM D790	105000
Shear Strength, 73° F	psi	ASTM D732	
Compressive Strength, 10% Deformation, 73° F	psi	ASTM D695	2900
Compressive Modulus of Elasticity, 73° F	psi	ASTM D695	80000
Hardness, Rockwell, Scale as noted, 73° F	-	ASTM D785	N/A
Hardness, Durometer, Shore "D" Scale, 73° F	-	ASTM D2240	64
Izod Impact (notched), 73° F	ft.lb./in.	ASTM D256 Type "A"	No Break
Coefficient of Friction (Dry vs. Steel) Dynamic	-	QTM 55007	.08
Limiting PV (with 4:1 safety factor applied)	ft.lbs.in. ² min.	QTM 55007	2000
Sand Slurry Abrasion	1018 Steel = 100.	ASTM D4020	11
Thermal			
Coefficient of Linear Thermal Expansion (-40°F to 300°F)	in./in./°F	ASTM E-831 (TMA)	1.1 X 10 ⁻⁴
Heat Deflection Temperature 264 psi	°F	ASTM D648	116
Tg-Glass Transition (amorphous)	°F	ASTM D3418	N/A
Melting Point (crystalline) peak	°F	ASTM D3418	275
Continuous Service Temperature in Air (Max.)(1)	°F	-	180
Thermal Conductivity	BTU in./(hr.ft. ² °F)	-	2.84

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TIVAR® 88-2 Blue – Premium Lubricant Filled, Lower COF UHMW-PE Lining Material			
Property	Units	Test Method	Typical Average Values
Electrical			
Dielectric Strength, Short Term	KV/CM	ASTM D149	900
Surface Resistivity	ohms/square	ASTM D257	> 10 ¹⁵
Dielectric Constant, 10 ⁶ Hz	-	ASTM D150	2.3
Dissipation Factor, 10 ⁶ Hz	-	ASTM D150	< 0.5 X 10 ³
Flammability @ 3.1 mm (1/8 in.) (3)	-	UL94	HB
Miscellaneous			
Water Absorption Immersion, 24 Hours	% by wt.	ASTM D570(2)	< 0.01
Water Absorption Immersion, Saturation	% by wt.	ASTM D570(2)	< 0.01

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

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