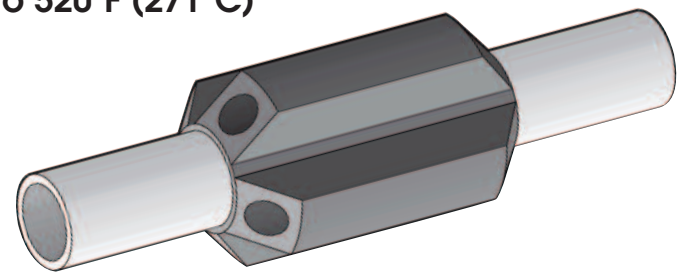
ROD GUIDE MATERIALS FOR ALL LEVELS OF PERFORMANCE

Your Global Compounder Of Custom Engineered Thermoplastics

- PPA and PPS compounds for down hole sucker rod guides and stabilizer bars
- Continuous use temperature range of 350˚F (177˚C) to 425˚F (218˚C)
- Heat deflection temperature (HDT) up to 520˚F (271˚C)
- Engineered for use in aqueous H_2S sour gas environments



ADDITIONAL BENEFITS

- Engineered for performance and optimized for value
- Technical support to improve performance through injection molding process optimization
- Short lead times
- Compounds can be custom engineered to meet additional requirements
- Computer Aided Engineering (CAE) and Mold Flow Analysis (MFA) is available for tool and part design assistance
- A 30 year history of supporting the oil services industry with engineered thermoplastic compounds

Imagine compounds designed specifically for rod guide applications which provide performance options for oil fields around the globe and at all depths. At RTP Company, we not only imagined them, we've made them a reality.

In addition to an extensive portfolio of high temperature compounds, RTP Company has created six new injection moldable compounds based on Polyphthalamide (PPA) and Polyphenylene Sulfide (PPS) specifically for rod guides and stabilizer bars. These compounds are cost optimized for performance and provide a good-better-best option as the extreme operating environment changes according to oil field, geography, well type and depths in which these tools must successfully operate.

	Good down to 6,000 ft.	Better below 6,000 ft.	Best below 6,000 ft. + wear
PPA	RTP 4099 X 135792	RTP 4099 X 132829	RTP 4099 X 135766
PPS	RTP 1399 X 135761	RTP 1399 X 135851	RTP 1399 X 135767

Good ▶ Compounds designed to operate down to 6,000 feet in challenging environments where a good cost to performance ratio is required. Continuous use temperatures up to 350˚F (177˚C) and HDT up to 520˚F (271˚C).

Better ▶ Compounds designed to operate below 6,000 feet in harsh environments. Continuous use temperatures up to 425˚F (218˚C) and HDT up to 510˚F (266˚C).

Best ▶ Compounds designed to operate below 6,000 feet in extremely harsh environments that require improved wear and abrasion resistance. Continuous use temperatures up to 425˚F (218˚C) and HDT up to 510˚F (266˚C).

RTP Company Corporate Headquarters • 580 East Front Street • Winona, Minnesota 55987 USA
website: www.rtpcompany.com • **email:** rtp@rtpcompany.com • **Wiman Corporation** • +1 320-259-2554
TELEPHONE:

U.S.A.	SOUTH AMERICA	MEXICO	EUROPE	SINGAPORE	CHINA
+1 507-454-6900	+55 11 4193-8772	+52 81 8134-0403	+33 380-253-000	+65 6863-6580	+86 512-6283-8383

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Product Portfolio: Rod Guide Materials

Mechanical Property	Units	PPA BASED COMPOUNDS			PPS BASED COMPOUNDS		
		RTP 4099 X 135792	RTP 4099 X 132829	RTP 4099 X 135766	RTP 1399 X 135761	RTP 1399 X 135851	RTP 1399 X 135767
Wear and Abrasion	NA	GOOD	BETTER	BEST	GOOD	BETTER	BEST
Tensile Strength	psi	21000	29000	28000	15500	19000	19000
Tensile Elong @ Break	%	2.10	2.50	2.30	1.20	1.25	1.25
Flexural Modulus	E6 psi	1.65	1.55	1.55	1.70	1.80	1.85
Notched Izod Impact	ft-lb/in	1.25	2.00	1.80	1.10	1.50	1.00
Unnotched Izod Impact	ft-lb/in	11.50	20.00	14.00	6.00	7.00	6.00
Specific Gravity	NA	1.62	1.45	1.52	1.58	1.65	1.73
Thermal Property							
HDT @ 264 psi	°F	520° F (271° C)	520° F (271° C)	520° F (271° C)	510° F (266° C)	510° F (266° C)	510° F (266° C)
Continuous Use Temp.	°F	350° F (177° C)	350° F (177° C)	350° F (177° C)	425° F (218° C)	425° F (218° C)	425° F (218° C)
Chemical Resistance							
Wet H_2S @ RT	Rating	GOOD	GOOD	GOOD	EXCELLENT	EXCELLENT	EXCELLENT
5% H_2SO_4 @ RT	Rating	GOOD	GOOD	GOOD	EXCELLENT	EXCELLENT	EXCELLENT
10% H_2SO_4 @ RT	Rating	GOOD	GOOD	GOOD	EXCELLENT	EXCELLENT	EXCELLENT
Wet H_2S @ Elevated Temp.	Rating	GOOD	GOOD	GOOD	EXCELLENT	EXCELLENT	EXCELLENT
5% H_2SO_4 @ Elevated Temp.	Rating	FAIR	FAIR	FAIR	EXCELLENT	EXCELLENT	EXCELLENT
10% H_2SO_4 @ Elevated Temp.	Rating	FAIR	FAIR	FAIR	GOOD	GOOD	GOOD

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