

WR[®] 600 Reference List

February 2025



WR[®]600 Introduction

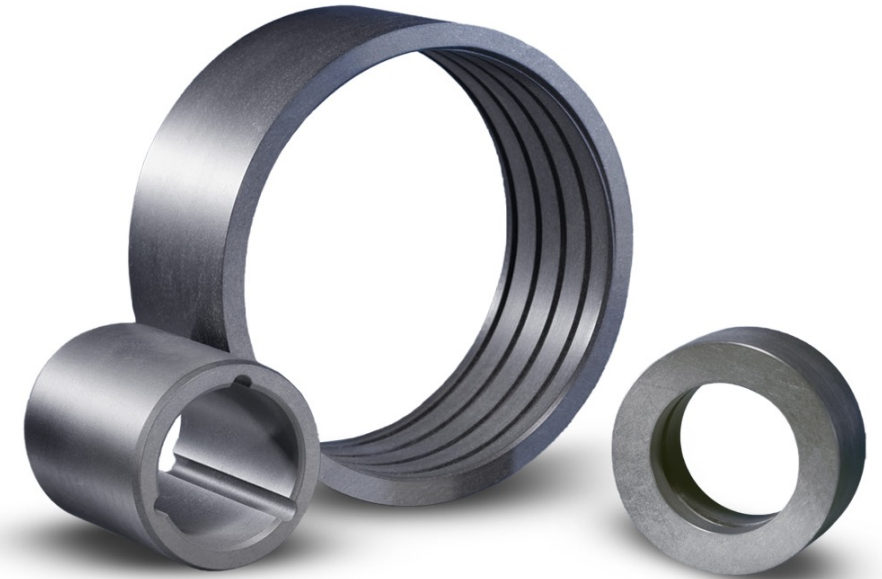
WR[®]600 is a carbon fiber-reinforced, Perfluoroalkoxy (PFA) based composite with a maximum continuous service temperature of 500°F (260°C).

Its outstanding chemical resistance comes from its constituents. These material elements can withstand practically all environments, including the strongest acids, bases, halogens, and solvents.

In addition, WR[®]600 non-galling properties allow for extended periods of dry running during upset conditions.

Greene Tweed offers finished WR[®]600 parts as well as stock shapes.

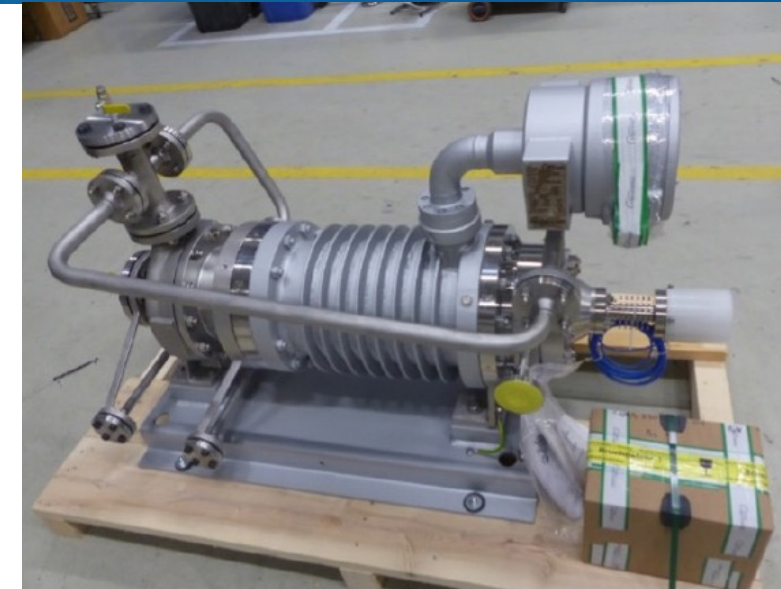
WR[®]600 conforms to API 610 requirements for non-metallic wear applications.



WR[®]600 Components

WEAR COMPONENTS

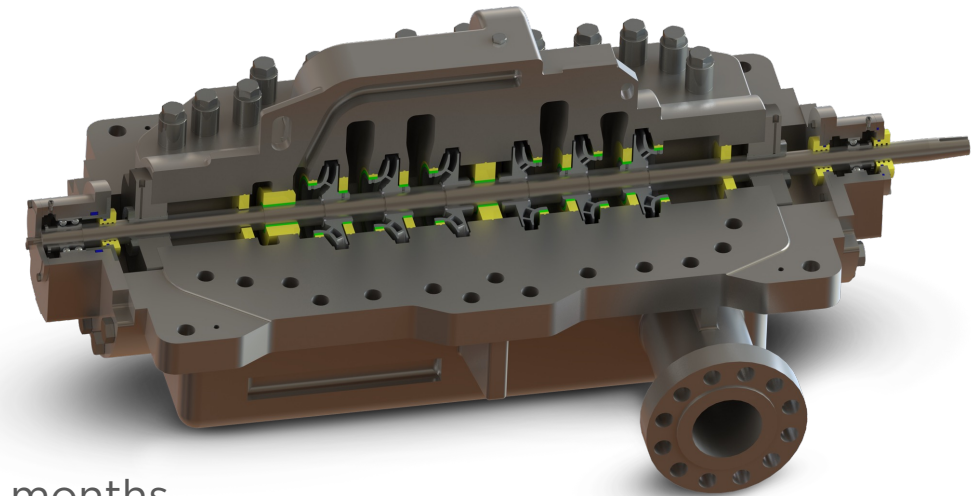
Part:	Wear Rings for Hermetic Pump
Company:	Clariant. Burgkichen, Germany
Industry:	Chemical Processing
Temp Range:	-120°C (-184°F) / 120°C (248°F)
Pressure:	21 bar (300PSI)
Media:	Ethylene Oxide
Previous Material:	Carbon Filled PEEK
Problem Statement:	Excessive material swelling led to unreliable pump operation & frequent unplanned maintenance. Mean Time Between Failure (MTBF) was weeks.
WR[®]600 Results:	Extended MTBF from weeks to years of service


CONCLUSION:

The Clariant site at Burgkichen has specified WR[®]600 for other Hermetic pumps in Ethylene Oxide service.

WEAR COMPONENTS

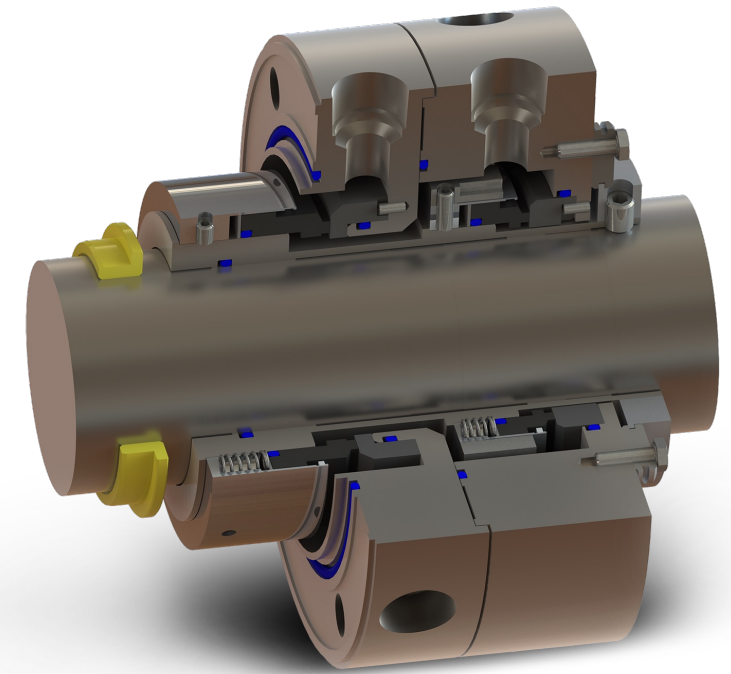
Part:	Metal Carrier & Insert Assembly for Multi-Stage Pump
Company:	Refinery, East-Germany.
Industry:	Chemical Processing
Temp Range:	20°C (68°F) / 60°C (140°F)
Pressure:	71.2 bar (1,000 PSI)
Media:	25wt% Diethylamine (C ₄ H ₁₁ N) with H ₂ S
Previous Material:	Metal
Problem Statement:	Metal-to-Metal contact led to rotor scoring, pump trips & unplanned downtime. MTBF <2 months
WR®600 Results:	As of publication, pump has 10 months of reliable operation.


CONCLUSION:

Increased uptime & profitability. Further adoption of WR®600 is planned.

WEAR COMPONENTS

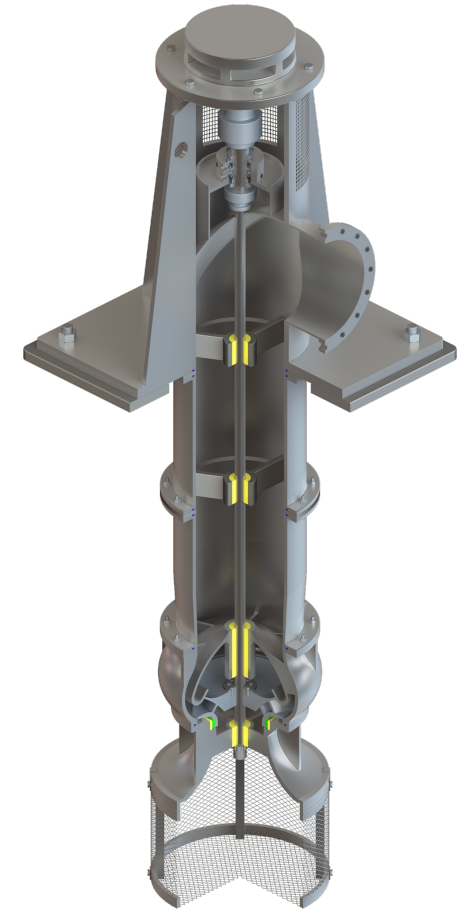
Part:	Pump Bushing
Company:	End User, South Korea
Industry:	Oil Refinery
Temp Range:	Ambient / 49°C (120°F)
Pressure:	7 bar (102 PSI)
Media:	Waste Water
Previous Material:	Filled PEEK
Problem Statement:	Excessive bushing wear resulted in increased shaft instability, adversely impacting mechanical seal life.
WR®600 Results:	Increased shaft stability, lower vibration, resulting in the mechanical seal life increasing to 4 years.


CONCLUSION:

Improved pump uptime and increased production & profitability.

WEAR COMPONENTS

Part:	Vertical pump sleeve bearing
Company:	End User in South Korea
Industry:	Fertilizer Production
Temp Range:	54°C (129°F) / 80°C (176°F)
Pressure:	5 bar (72 PSI)
Media:	Sulfuric Acid (H ₂ SO ₄)
Previous Material:	Filled PEEK
Problem Statement:	Chemical attack of the material resulted in bearing swell & shaft seizure in minutes of operation
WR®600 Results:	The chemical capability of WR®600 extended the life of the bearing to 3 years.


CONCLUSION:

WR®600 enabled reliable pump operation and is now being proliferated across the site.

WEAR COMPONENTS

Part:	Wear Rings, Bearings & Throat Bushings
Company:	End User in North America
Industry:	Fertilizer Production
Temp Range:	-37°C (-34.6°F) / 220°C (428°F)
Pressure:	65 bar (943 PSI)
Media:	Ammonia, Urea, Carbamate, Nitric Acid, MDEA, Steam
Previous Material:	N/A, new build pumps
Problem Statement:	Require a material suitable for aggressive media with Dry-run capability
WR®600 Results:	Successful installation on over 50 new build pumps and reliable operation for over 10 years


CONCLUSION:

The End User is updating their documentation to specify WR®600 in severe application.

WEAR COMPONENTS

Part:	Vertical Pump line shaft bearings
Company:	Polymer Manufacturer
Industry:	Chemical Processing
Temp Range:	16°C (60°F) / 60°C (140°F)
Pressure:	4 bar (60 PSI)
Media:	Sulfur Trioxide (SO ₃) & abrasives.
Previous Material:	Zirconium
Problem Statement:	Vertical pumps fail in <12 hours due to abrasives Significant Unplanned Production Loss (~30% Capacity)
WR[®]600 Results:	Based on the success of “Pump #1”, the end-user upgraded two additional identical pumps, and is in the process of identifying other candidates for upgraded wear components.


CONCLUSION:

Campaign to upgrade other targeted pumps with WR[®]600.



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