

MECHANICAL SEALS

APPLICABLE ON CENTRIFUGAL NORMALIZED PUMPS (EN 733 PUMPS)

Ceramic - Carbon graphite - Nitrile rubber (NBR®) Series (*)



| Shaft diam. [mm] | Seal face | Stationary seat | O-Ring | Spring | Collar |
|------------------|-----------|------------------------------------|--------|---------------------------|---------------------------|
| 18 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |
| 20 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |
| 24 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |
| 28 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |
| 30 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |
| 40 | Steatite | Carbon graphite, resin impregnated | NBR® | Stainless steel AISI 304L | Stainless steel AISI 304L |

(*) default seal

Ceramic - Carbon graphite - Fluorocarbon rubber (Viton[®]) Series



| Shaft diam. [mm] | Seal face | Stationary seat | O-Ring | Spring | Collar |
|------------------|-----------|------------------------------------|--------------------|---------------------------|---------------------------|
| 18 | Steatite | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 20 | Steatite | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 24 | Steatite | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 28 | Steatite | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 30 | Steatite | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 40 | Ceramic | Carbon graphite, resin impregnated | Viton [®] | Stainless steel AISI 316L | Stainless steel AISI 304L |

Tungsten carbide (Widia) – Tungsten carbide (Widia) - Fluorocarbon rubber (Viton®) Series



| Shaft diam. [mm] | Seal face | Stationary seat | O-Ring | Spring | Collar |
|------------------|---------------|-----------------|--------|------------------------------|------------------------------|
| 18 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 20 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 24 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 28 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 30 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |
| 40 | Widia, brazed | Widia, brazed | Viton® | Stainless steel AISI 316L | Stainless steel AISI 304L |

FEATURES OF AVAILABLE MATERIALS

| MATERIAL TYPE | ADVANTAGES | DISADVANTAGES |
|---|---|---|
| Carbon graphite, resin impregnated | <ul style="list-style-type: none"> • Good lubricant quality in dry or extreme conditions; • Good chemical resistance; • Good compression resistance; • Resistant from cryogenic temperatures can reach up to 250°C. | <ul style="list-style-type: none"> • Not suitable with abrasive liquids or liquids crystallized; • Possibility of chemical attacks both to coal itself and to impregnating; • Less rigidity compared to metals and ceramics and, consequently, has a greater tendency to distort at high temperatures; • Low resistance to tensile stress; • Low thermal conductivity; |



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ISO 9001 certified Company



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| <p>Tungsten carbide (Widia), brazed</p> | <ul style="list-style-type: none"> • Good qualities of wear resistance in harsh conditions; • High thermal conductivity; • High elastic modulus and consequently less prone to distort under pressure compared to metals; • Better resistance to mechanical shock than other non-metallic hard materials. | <ul style="list-style-type: none"> • Limited chemical resistance especially if in contact with acids; • Limited ability to resist in dry conditions or at the limit when the two sliding faces are both in the carbide; in the event of dry running (running dry) the temperature may rise up to several hundreds of degrees in a few seconds damaging the sealing surfaces and elastomers immediately on contact. |
| <p>Steatite</p> | <ul style="list-style-type: none"> • Excellent dielectric strength properties; • Good performance both in water and in aqueous solutions using a counterface coal. | <ul style="list-style-type: none"> • Low chemical resistance; • Low thermal conductivity; • Low resistance to thermal shock which can cause problems under transient conditions; • brittle material and, under certain conditions, subject to mechanical damage. |
| <p>Ceramic</p> | <ul style="list-style-type: none"> • Good resistance properties; • Excellent chemical resistance which depends on the purity level; • Excellent performance both in water and in aqueous solutions using a counterface in the coal; It can withstand slightly abrasive solutions. | <ul style="list-style-type: none"> • Low thermal conductivity that prevents the heat loss in critical applications. • Low resistance to thermal shock which can cause problems in transient conditions. • Dry operation only for few seconds; • Brittle material. |
| <p>Viton®</p> | <ul style="list-style-type: none"> • The fluorocarbon FKM is known especially for its non-flammability, low gas permeability and excellent resistance to ozone, weathering and aging. • The operating temperatures of fluorocarbon rubber are between -20 ° C and +200 ° C (for a short period of time up to +220 ° C). • FKM is often used with oils and other non-polar chemicals at high temperature, for against its water resistance is limited to temperatures up to +120° C | |
| <p>NBR®</p> | <ul style="list-style-type: none"> • The properties of the nitrile rubber depend mainly on the content of Acrylonitrile (ACN) that generally varies between 18% and 50%. • The operating temperature is between -30° C and +100° C, but in the specific case of the mechanical seals is recommended to use a temperature between -20° C and +80° C (for a short period of time up to +90° C). | |