

Ceramic-Lined Pipe

Dramatically extends the life of piping that is subject to severe erosion and corrosion.

Certified Welds

All welds are performed by certified weld operators, and conform to all applicable ASME specifications.

ASME Conformance

All flanged fittings meet or exceed ASME B16.5 requirements for pressure-temperature ratings, materials, dimensions, tolerances, marking, and testing.

Minimal Transition

The ceramic OD and flange ID are perfectly matched to minimize gaps and to keep epoxy exposure to an absolute minimum.

Perfect Matching

Our innovative manufacturing methods ensure a smooth, perfectly matched and level sealing surface without any length difference between the flange face and the ceramic lining.

Engineered Ceramics

Our engineers review every application and only recommend a ceramic material that is both cost-effective and will yield years of trouble-free service.

Full Pipe Diameter ID

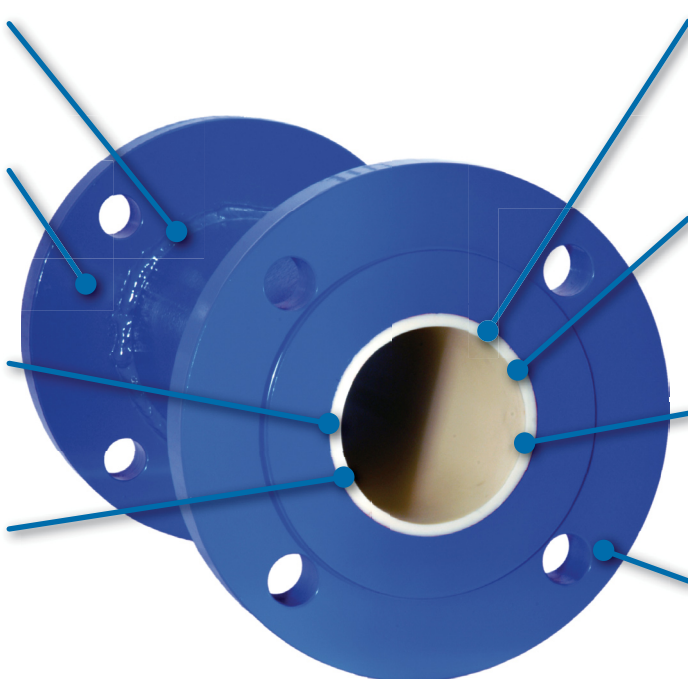
Ceramic linings are never smaller than the ID of the mating piping system. Ceresist fittings will never constrict or choke flow, and will not protrude into the flow path.

Seamless Interior

All straight pipe spools up to a maximum length of 48" are manufactured out of a single-piece ceramic tube.

Exterior Protection

Carbon steel fittings are sandblasted, degreased, and coated with a corrosion and abrasion resistant finish for added protection and longevity in harsh environments.



Designed to Endure

Ceresist ceramic lined pipe spools are designed to outlast linings such as glass, rubber, basalt, hardfacings, coatings, trowelable linings, cure-in-place linings, and plastics that are commonly used to extend the life of piping systems. These materials are only a fraction of the hardness and wear resistance of our ceramics, and with the introduction of a corrosive into the process or high temperatures, most linings become severely incompatible and their use is extremely limited. Ceresist pipe spools feature ceramics that approach diamond in hardness, are chemically inert to almost all corrosives, and may be installed in services where temperatures exceed 1,100°F.

Where to Use

Ceramic-lined pipe spools are ideal for use downstream of control valves, flow-diverting fittings, or any other flow element that creates turbulent flow or causes cavitation. Ceresist pipe spools resist solids impingement and wear and are not affected by cavitation. They are an ideal solution where piping fails within 12 months or less, or where the location makes maintenance difficult or hazardous.

Ceramic Materials

Reaction-Bonded Silicon Carbide (RB SiC)

The most cost-effective ceramic we offer. RB SiC is nine times harder than carbon steel, and exhibits superior chemical resistance to acids and alkalis. RB SiC may be fabricated in lengths up to 48", allowing for cost-effective, long runs of piping. It is slightly porous, which limits its use in cavitating environments, but is an excellent material for basic wear applications.

Alumina

99.5% and 99.8% alumina ceramics are also nine times harder than carbon steel but are non-porous. Alumina exhibits a very high level of corrosion resistance — even at high temperatures — and is the ideal material for high wear applications where corrosive fluids are present. It is also a very cost-effective material, and standard sizes up to 12" in length may be manufactured from stock.

Sintered Silicon Carbide

Whether submerged in corrosive environments, subjected to extreme wear and abrasive conditions, or exposed to temperatures in excess of 1,400°C (2,552°F), sintered silicon carbide will outperform other commercially available ceramics or metal alloys, including high-alumina, RB SiC, and superalloys.

Sintered silicon carbide is one of the hardest high-performance materials available, second only to diamond. Additionally, it weighs less than half as much as most metal alloys, 40 percent as much as steel and about the same as aluminum. Ceresist stocks the most common sizes up to 12" in length for a very speedy delivery.

Housing Materials

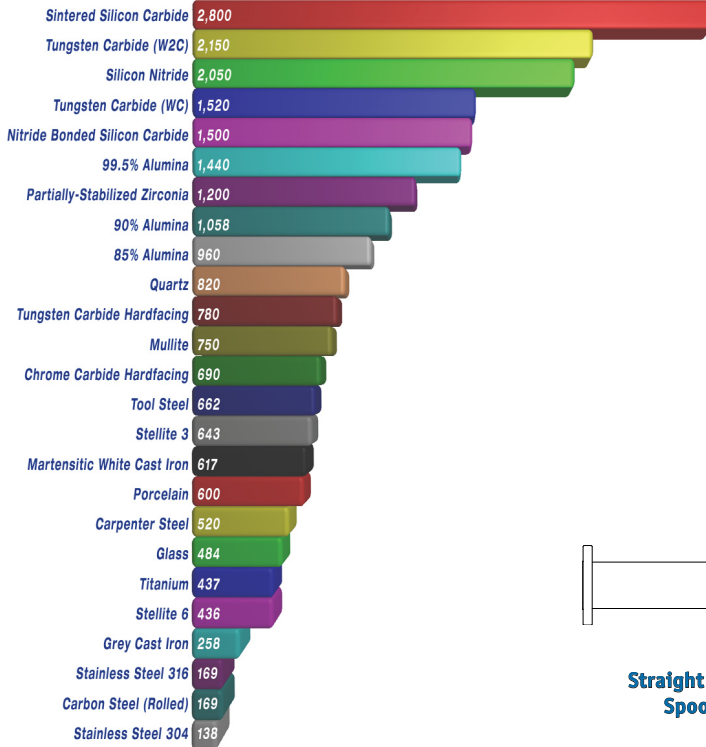
In addition to our standard carbon steel housing, stainless steel 316 or 304, FRP, vinyl ester wrapping, and other custom housing materials may be supplied.

Ceresist

CS071603

Technical Data and Options

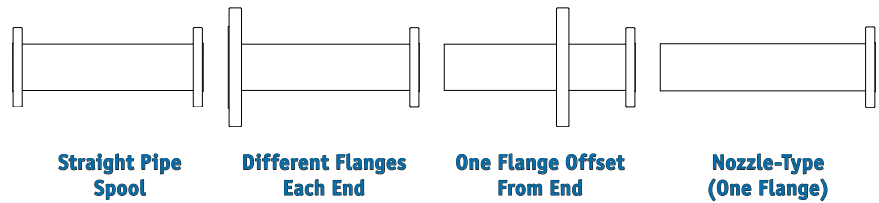
Knoop Hardness Comparison Chart



Ceramic Comparison

Property	Alumina	Sintered Silicon Carbide	Reaction Bonded Silicon Carbide
Maximum Length (Solid Ceramic)	36"	36"	48"
Maximum Length (Fitted Ceramics)	Unlimited	Unlimited	Unlimited
Maximum Ceramic OD	15.00"	15.00"	24.00"
Minimum Wall Thickness	0.10"	0.10"	0.30"
Maximum Wall Thickness	Unlimited	Unlimited	Unlimited
Wear Resistance	Very Good	Best	Very Good
Corrosion Resistance	Very Good	Best	Good
Cavitation Resistance	Best	Best	Very Good

Pipe Spool Variations



Part Number Designation

CS 150 300 FF – 150 400 FF – 12.00 – FRP

<p>Series CS Ceramic Spool</p> <p>Inlet Flange Rating 150 150 lb 900 900 lb 300 300 lb 1500 1500 lb 600 600 lb 2500 2500 lb</p> <p>Inlet Flange Size 050 ½" 350 3½" 075 ¾" 400 4" 100 1" 500 5" 125 1¼" 600 6" 150 1½" 800 8" 200 2" 1000 10" 250 2½" 1200 12" 300 3" 1400 14"</p> <p>Inlet Flange Type (Blank) Raised Face FF Flat-Face</p> <p>Outlet Flange Rating 150 150 lb 900 900 lb 300 300 lb 1500 1500 lb 600 600 lb 2500 2500 lb</p>	<p>Housing Material (Blank) Carbon Steel SS Stainless Steel 316 SS304 Stainless Steel 304 FRP FRP VE FRP Flanges, Vinyl Ester Wrap SP Special Material</p> <p>Length xx.xx Overall Length xx.xx / Overall Length / 2nd Flange xx.xx Offset From Face of 1st Flange</p> <p>Outlet Flange Type (Blank) Raised Face FF Flat-Face</p> <p>Outlet Flange Size 050 ½" 350 3½" 075 ¾" 400 4" 100 1" 500 5" 125 1¼" 600 6" 150 1½" 800 8" 200 2" 1000 10" 250 2½" 1200 12" 300 3" 1400 14"</p>
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