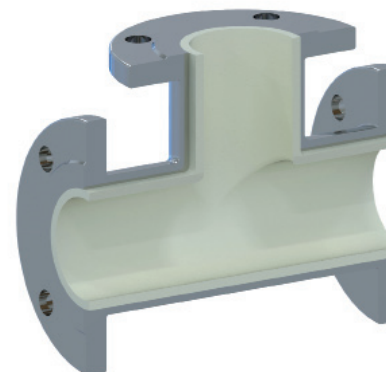


CERAMIC LINED PIPE

KOWOV ceramic wear-resistant pipes are composed of structural ceramic tubes and seamless steel pipes, firmly bonded together using hot fitting techniques or specialized structural ceramic adhesives.

KOWOV ceramic wear-resistant pipes are integrally molded, offering high strength and toughness. They exhibit excellent temperature resistance and aging resistance, capable of long-term operation in conditions ranging from -50°C to 500°C.

The wear-resistant ceramics used in KOWOV ceramic wear-resistant pipes can be selected based on actual operational conditions, including materials such as alumina ceramics, silicon carbide ceramics, and composite ceramics.



Structural characteristics

Low Operating Resistance

Smooth internal surface, no corrosion, unlike seamless steel pipes with potential spiral protrusions.

Superior smoothness, clean resistance coefficient of 0.0193, lower than seamless pipes.

Low operating resistance reduces operational costs.

Excellent Wear Resistance

Structural ceramics provide wear resistance 266 times that of manganese steel and 171.5 times that of high-chromium cast iron.

Significantly reduces equipment wear in powder processing systems.

Over 20 years of field operation, ensuring at least 10 years of service life, reducing maintenance frequency and costs.

Corrosion Resistance

High-performance structural ceramics resist acids, alkalis, seawater corrosion, and scale formation.

Extends pipeline lifespan.

Good Temperature Resistance

Operates normally from -50°C to 500°C due to stable crystalline structure.

Linear expansion coefficient of $6-8 \times 10^{-6} / ^\circ\text{C}$, approximately half that of steel pipes, indicating good thermal stability.

Main technical parameters

1. **Power Plants:** Transporting limestone slurry.
2. **Steel Plants:** Conveying coal powder and fly ash.
3. **Mining Industry:** Transporting mineral slurry and tailings.
4. **Silicon Chemical Industry:** Transporting silica powder.
5. **Chemical Plants:** Transporting acid and alkali slurries.
6. **Coal Chemical Industry:** Transporting ash water, black water, coal slag, and dry coal powder.
7. **Fertilizer Industry:** Transporting granular fertilizers and crystalline materials.
8. **Coal Washing Plants:** Transporting coal slurry and coal mud.
9. **Metallurgical Industry:** Slag removal and boiler ash removal.
10. **New Energy:** Transporting lithium carbonate and lithium iron phosphate.
11. **Energy and Environmental Protection:** Zero discharge of wastewater and solid waste treatment.



Method for Pipeline Model Code

KWCP-W-Z-WT-DN*L-S-PN

① ② ③ ④ ⑤ ⑥ ⑦

- ① KWCP- Ceramic Pipe
- ② W-WCB; P-304; R-316
- ③ Z-ZrO₂; A-Al₂O₃; C-SiC; N-SiN
- ④ ZG-Straight pipe; WT-Bend head; ET-Equal-diameter tee; RT-Reducing tee; EC-Equal diameter four-way; RC-Reducing four-way; diameter four-way; RC-Reducing four-way;
- ⑤ DN-Nominal size; L-Length or angle;
- ⑥ Flanged executive standard
- ⑦ PN-Pressure Rating

Note: Special fittings refer to non-standard fittings whose shapes can be designed according to specific requirements.

Example: Inner lining silicon carbide ceramic, outer shell carbon steel, 90° elbow with nominal diameter DN80 and pressure rating PN16, using HG/T20592-2009 flanges.

KWCP-W-C-WT-DN80*90°- HG/T20592-16

Note: All ceramic pipes, elbows, and special-shaped fittings can be customized according to customer requirements and tailored to specific operating conditions.



Product Types and Codes

Product Types	Code	Coding Method
Two-end fixed flanges	ZG	KWCP-WZ-ZG-nominal size DN L length-flange standard number-pressure class
45° elbow	WT	KWCP-WZ-WT-nominal size DN45-flange standard number-pressure class
90° elbow	WT	KWCP-WZ-W-nominal size DN90-flange standard number-pressure class
Equal-diameter tee	ET	KWCP-WZ-ET-nominal size DN-flange standard number-pressure class
Reducing tee	RT	KWCP-WZ-RT-nominal size DN _{small} end nominal size DN ₁ -flange standard number-pressure class
Equal-diameter cross	EC	KWCP-WZ-EC-nominal size DN-flange standard number-pressure class
Reducing cross	RC	KWCP-WZ-RC-nominal size DN _{small} end nominal size DN ₁ -flange standard number-pressure class
Concentric reducer	CR	KWCP-WZ-CR-nominal size DN _{small} end nominal size DN ₁ -flange standard number-pressure class
Eccentric reducer	ER	KWCP-WZ-ER-nominal size DN*small end nominal size DN ₁ -flange standard number-pressure class