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Ceracote®

Ceramic coated Hydraulic Cylinder

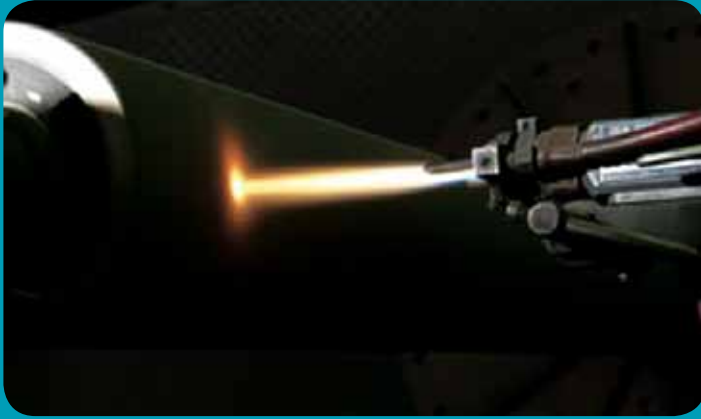
**Hydraulic cylinder built to withstand
high corrosion resistant suitable for
offshore and marine application**



Using advance surface coating technology to coat ceramic on piston rod, we are able to produce a cylinder with extremely high resistant to corrosion attack as well as a hard surface to prevent wear by abrasion

Our test has shown that we can achieve a corrosion resistance of minimum 1000 hours base on ASTM B117 salt spray test standard.

Ceracote® Ceramic coating at supersonic speed



Outstanding features of Ceramic coating

- Excellent corrosion protection of base metal.
- Good surface texture for long seal life.
- Excellent wear resistant to abrasion.

Corrosion Resistant Chart

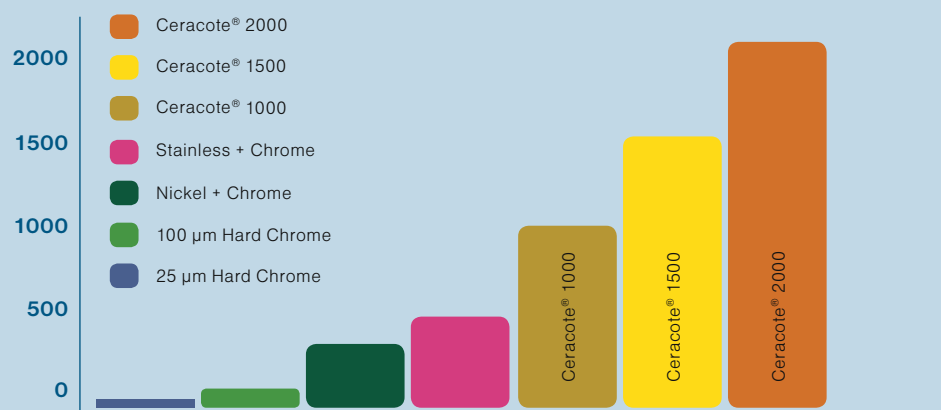
No of hour of salt spray test as per ASTM B117

Coating of ceramic material on our piston rod at supersonic speed, we are able to produce a coating with high bonding strength and very low porosity to protect the base material against corrosion attack and a hard surface that able to withstand abrasion.

Extensive research on the suitable ceramic material resulted in a specially formulated and optimized grade of ceramic that able to withstand shock without cracking. To further enhance on corrosion protection property, a layer of nickel is added. Our test has shown that it is able to withstand a salt spray test of up to 2000 hours.

Type of piston rod coating	Min No of hour of salt spray test
25 µm Hard Chrome	40
100 µm Hard Chrome	100
Nickel + Chrome	350
Stainless Steel + Chrome	500
Ceracote® 1000	1000
Ceracote® 1500	1500
Ceracote® 2000	2000

Comparison of corrosion resistant on various piston rod material



Withstand No of hour of salt spray test according to ASTM B117



Microscopic section of the ceramic coating layer showing dense and non porous layer

Built to endure harsh environment with outstanding corrosion protection and scratch resistant

Applications

- Cylinder frequent exposed to seawater environment
- Cylinder come into contact with corrosive media
- Irrigation flood gate
- Sludge control gate
- Offshore rig equipment
- Subsea application

The product achievement

Cylinders that built to withstand corrosion attack by corrosive environment and possess high abrasion strength to withstand wear.

Our effort

Our extensive research into this field of ceramic technology has resulted in OE offering an outstanding product that will bring beneficial values to all our customers.

Mechanical properties of the ceramic coating

Coat Hardness	800-900 Hv
Bond Strength	Min 40 MPa
Corrosion resistant test according to ASTM B117	Min 1000 hour on rating 9
Impact resistant	7-15 Nm
Fracture force	Min 280 MPa
Coat thickness	0.25mm to 0.30mm
Surface roughness	Ra 0.10µm to 0.3µm
Modulus elasticity	350 to 400 GPa

Ceramic material come in various form, its raw form is too brittle for practical use, it subject to cracking under shock and load. We have successfully formulated a grade that is ductile enough to withstand shock and also offer the required hardness to withstand wear under abrasion.

The old technology of coating ceramic using thermal arc spray have its limitation. The most damaging weakness is cracking and peeling due to thick layer coating (2-3mm thick)

inherent with the process. OE is able to overcome the weakness by using a high tech process to coat ceramic with a thickness of 0.3mm and high bonding strength. The end result is far more superior.





Marine Class

With our extensive experience with marine and offshore applications, we often work with regulatory certification agencies to supplied good hydraulic cylinders. Our ISO 9001:2000 certified manufacturing facilities have met the stringent requirements for many companies and achieved recognition by prestigious surveyor like ABS, GL and DNV.



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