

Wilfley's WCD4™ is a specially processed duplex stainless steel that is chemically similar to ASTM A890 (cast material) or UNS S32550 (wrought material) but with **significantly** improved mechanical properties and corrosion resistance.

WCD4™ is ideal for erosion-corrosion applications in extremely corrosive environments. Pump wear parts made from WCD4™ are expected to have **exceptional** wear life due to its increased hardness and improved corrosion resistance.

### Mechanical Properties

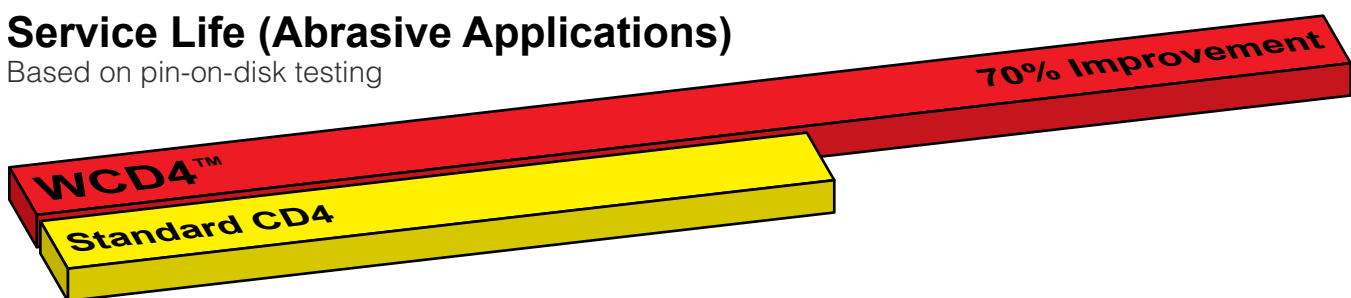
Material	Average Hardness	Minimum Tensile Strength	Minimum Yield Strength	Minimum Elongation
Wilfley WCD4™	345 HBN	164,000 psi (1,131 MPa)	113,000 psi (779 MPa)	20%
Standard CD4	250 HBN	100,000 psi (689 MPa)	70,000 psi (483 MPa)	16%
<b>Improvement</b>	<b>38%</b>	<b>64%</b>	<b>61%</b>	<b>25%</b>

### Chemical Composition

C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N	Fe
Carbon	Manganese	Silicon	Phosphorus	Sulfur	Chromium	Nickel	Molybdenum	Copper	Nitrogen	Iron
0.04 max.	1.2 max.	1.0 max.	0.04 max.	0.04 max.	24.5 - 26.5	4.7 - 6.5	1.75 - 3.8	1.5 - 3.25	0.1 - 0.25	Balance

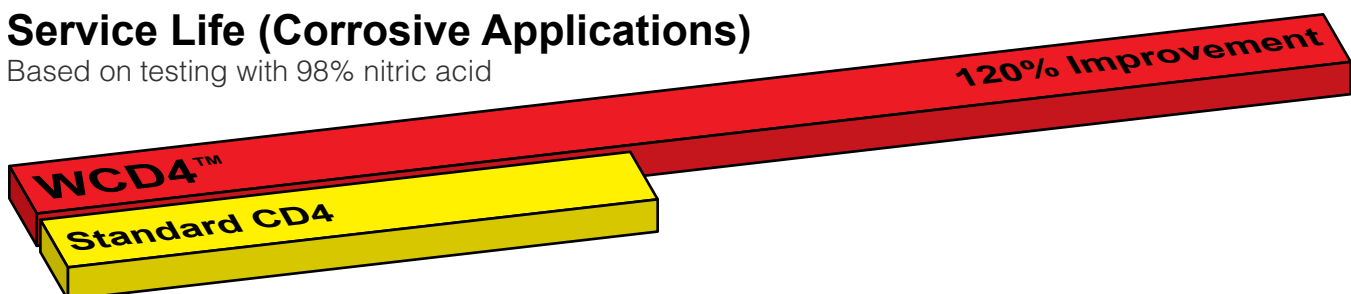
### Service Life (Abrasive Applications)

Based on pin-on-disk testing



### Service Life (Corrosive Applications)

Based on testing with 98% nitric acid



# WCD4™

## Anodic Slurry in Copper Refinery Application

The abrasive and corrosive solution was wearing through Alloy 20 (ASTM A743 Grade CN7M) pump parts at a much higher rate than desired. The customer upgraded one of the pumps to WCD4™ as a trial and was enthralled by the results. The wear life of the pump increased from 6-8 months to over 3 years. The customer has since upgraded all of the pumps to WCD4™.



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## Phosphoric Acid Application

A customer who had been purchasing Wilfley chemical pumps in Illium® P (duplex stainless steel similar to CD4MCu) recently carried out a study and determined that the increased hardness of WCD4™ significantly improved the parts longevity in their pumps. The WCD4™ parts don't just last longer, they're also less expensive and have shorter lead times than Illium® P.



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## Phosphate Application

After an emergency shutdown at a customer's plant, Wilfley provided a WCD4™ expeller to replace an existing Alloy G (ASTM A494 Grade CX2MW Mod.) expeller as a temporary solution until more inventory was available. Even with the high temperature and high percentage of fluoride contaminates, the WCD4™ expeller outlasted the other Alloy G pump parts.

