

**Coating construction and composition (1-layer coating system)**

Topcoat	HP-HVOF	85WC 10Ni 5Cr (8007)	>= 150µm (max. 300µm)
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**Key coating information**

Description	International standard	Minimum value	Griekspoor Standard
Tensile Adhesive Strength	EN 582 or ISO 41916	>= 50 N/mm <sup>2</sup>	>= 70 N/mm <sup>2</sup>
Corrosion test	DNV-C2	No corrosion visible after 500h	>1000h
	Endurance test acc. NBD10300	No permeability after 1000h (ECP-test >-350mV)	>1000h (ECP-test >-150mV)
Corrosion resistance	DIN 50021-ESS ASTM G85	No corrosion (10) after 1000h	>1000h
Porosity		<1%	<0,7%
Chem. Resistance			
1. NaCl (acid)		1. Excellent	
2. H2SO4 (acid)		2. Good	
3. HCL (acid)		3. Fair	
4. NaOH (base)		4. Good	
Impact toughness test	DNV-M1 (0.3kpm)	No cracking outside the impact area, min. energy 0,3kpm (3J)	
Rockwell indication test	DNV-M2	No or negligible break-out or cracking	No break-out or cracking
Dynamic bending test 500 x / σ 200 N/mm <sup>2</sup>	DNV-M3	No cracks after bending of minimum of 500 cycles (150µm)	
Micro hardness	HV0,3	950HV (DNV>500)	1300-1600HV
Macro hardness	HR15N	>75	>92
Max. operating temp.	---	-40°C ≤ T ≤ 120 °C	-40°C ≤ T ≤ 500°C
Wear testing	ASTM G065B		<4mm <sup>3</sup>
Surface finish	NEN-EN ISO4287	Ra <0.2µm Rz < 4.0µm Rpk < 0.1µm	Ra < 0.2µm Rz < 2.5µm Rpk < 0.1µm
Seal advice		<ol style="list-style-type: none"> <li>Excellent sealing properties</li> <li>Surface roughness and structure/texture can (on customers request) be adjusted for optimum seal live time.</li> <li>Free choice of sealing constructions</li> </ol>	
Possibility of integrated Linear Positioning Measuring (LPM-system)		Yes, over full capacity <b>Length 23 meters, Diameter approx. 1 meter, Weight 20 tons.</b>	
Elasticity			Fair

**General information**

The TOPCOAT® WCR is a tungsten carbide coating in a nickel/chromium/XX matrix as a binder for the carbides. TOPCOAT® WCR has a very good corrosion resistance. Coatings are dense and show good bond strength.

This coating is specially designed to maritime environments in where also a very high wear resistance is required. Using in submerged (seawater) environments should first be tested for each situation.

Because of the high density (porosity <0.7%) finishing can be very smooth. Average roughness (Ra) can go as low as 0.03µm. Griekspoor can "adjust" the roughness between 0,05 and 0,6µm. This means that the roughness can be set on the optimum roughness for the chosen seals (translation as well as rotation), which gives maximum lifetime for the seals with optimum sealing properties; no leakage, no stick-slip, low friction etc.

Typical uses and applications are (sluice gate) hydraulic rods, downhole mandrels for oil drilling, ball valves, couplings in offshore applications, components used in submerged seawater environments, hydraulic rods for transport containers.