

Coating construction and composition (2-layer coating system)

Bond/intermediate coating	HP-HVOF	Inconel/Hastelloy	>= 150µm (max. 3000µm)
Topcoat	HP-HVOF	WC Ni Cr (8007)	>= 150µm (max. 250µm)

Key coating information

Description	International standard	Minimum value	Griekspoor Standard
Tensile Adhesive Strength	EN 582 or ISO 41916	>= 50 N/mm ²	>= 70 N/mm ²
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%	<1%
Chem. Resistance			
1. NaCl (acid)		1. Excellent	
2. H ₂ SO ₄ (acid)		2. Good	
3. HCL (acid)		3. Fair	
4. NaOH (base)		4. Good	
Impact toughness test	DNV-M1 (0.3kpm)	No cracks after a minimum of 500 bending cycles	
Rockwell indication test	DNV-M2	No or negligible break-out or cracking	No break-out or cracking
Dynamic bending test 500 x / σ 300 N/mm ²	DNV-M3	No cracks after bending of minimum of 500 cycles	
Micro hardness	HV0,3	950HV (DNV>500)	1500-1600HV
Macro hardness	HR15N	>75	>92
Max. operating temp.	---	-40°C ≤ T ≤ 120 °C	-40°C ≤ T ≤ 500°C
Wear testing	ASTM G065B		<8mm ³
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"> Excellent sealing properties Surface roughness and structure/texture can (on customers request) be adjusted for optimum seal live time. Free choice of sealing constructions 	
Possibility of integrated Linear Positioning Measuring (LPM-system)		Yes, over full capacity Length 23 meters, Diameter approx. 1 meter, Weight 20 tons.	
Elasticity			Fair

General information

The bond/intermediate coating is a Griekspoor development based on a superior stainless steel, especially developed to withstand the most severe environments.

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

This coating is specially designed to withstand severe, maritime environments and can be used in submerged seawater environments.

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.