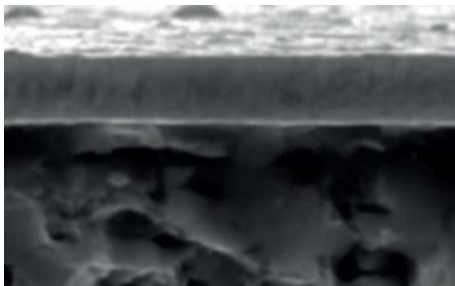


Medthin™ 60 ZrN



The high oxidation resistance coating

Medthin™ 60 coating is particularly suitable for improving articulating joints such as those of "Coating on UHMWPE" where polyethylene wear and ion release from substrates (CoCr, SS, TAV, etc) is strongly reduced. The coating is applied with thickness of about 5 μm and it has adhesion strength to metal substrates in the GigaPascal range. The ZrN layer improves UHMWPE abrasion resistance >65% measured on knee simulator tests compliant with ISO 14243. Zirconium Nitride (ZrN) is deposited with latest generation technologies showing a polycrystalline cubic structure with a fine and very dense structure, roughness (Ra) values below 0.05μm, ideal for articulating zones. The coating coverage is rather uniform on external surfaces while internal surfaces are difficult to coat.

ionbond can currently deliver coating service of "Medthin™ 60 ZrN on Implants" from multiple coating centers.

Technical Data

Material	Zirconium Nitride
Applicable on following implant material	Titanium, TAV, CoCrMo, 316 LVM, all SS
Technologies	PVD arc or sputtering
Color	Light gold
Thickness, μm	5 ¹
Hardness, GPa	25 to 32
Phase composition	Cubic, Polycrystalline
Surface texture, R _a	<0.05
Coating coverage	Mainly external surfaces
Masking partial zones or over porous coat	Possible
Dissolvability	Not reported in serum
Adhesion strength, MPa	>1000
Wear (abrasion) resistance, coating against UHMWPE	>65%
Porosity density, n/mm ² & pore size, μm	PVD Arc (<400, 1) ⁴ and PVD sputter (<50, 0.5)
Reduction of allergic potential (CoCrMo, FeCrNi)	>98%
Surface wettability of ZrN	Similar to mirror polished CoCrMo
Thermal oxidation resistance (in air)	500°C
Chemical oxidation resistance	Resistant to PH>7 forming oxide passivation layer (not oxidizing)
Resistance to sterilization	All common methods allowed
Implant applications	Orthopaedic, spine & trauma

¹higher coating thickness is possible under request

²pores are not through coating thickness. Few pores through coating thickness may occur.

³values from paper "xxxx"

⁴values from paper "xxxx"