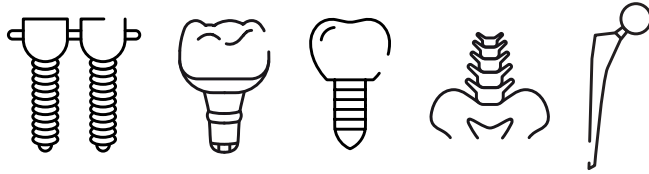


Zapp is Certified to ISO 9001



Zapp® 9.9135HN

Zapp® 9.9135HN is a cobalt-chromium-molybdenum alloy. It is characterized by high biocompatibility and high corrosion resistance. Due to its low nickel content, the Zapp® 9.9135HN is particularly suitable for allergy sufferers.

The material has the highest wear resistance and hardness. The vacuum melting results in an outstanding degree of slag purity.

Typical Applications

- Osteosynthesis
- Spinal uses
- Dental applications

Polishability

Zapp® 9.9135HN is high gloss polishable.

Magnetism

Zapp® 9.9135HN is not magnetizable.

Corrosion Resistance

The high molybdenum content leads to a fast regeneration of the passive layer on the steel surface. Therefore, the material has a high corrosion resistance, e.g. against seawater.

Cold Working

Cold working of Zapp® 9.9135HN is not recommended.

Wear Resistance

Zapp® 9.9135HN has a high wear resistance. This property mostly remains at high temperatures.

Machining

Due to the high chromium content, the machining of the Zapp® 9.9135HN is demanding. Therefore, the tools and the production parameters must be adapted accordingly.

Corresponding Standards

- According to DIN EN ISO 5832-12
- According to ASTM F1537

Typical Chemical Composition [Mass-%]

	C	Si	Mn	Cr	Mo	Fe
Min.	-	-	-	26.0	5.0	-
Max.	0.14	1.0	1.0	30.0	7.0	0.75

	Co	N	Ni	P
Min.	-	-	-	-
Max.	bal.	0.25	0.1	0.015

Mechanical Properties

Condition	Tensile strength Rm [ksi]	Yield strength Rp _{0.2} [ksi]	Elongation A [%]	Hardness [HRC]
Annealed	> 130	> 75	> 20	~ 25
Hot-worked	> 145	> 100	> 12	~ 28
Warm worked	> 170	> 120	> 12	~ 35
Warm worked premium	> 170	> 120	> 25	~ 35

Physical Properties

Modulus of Elasticity E at 68 °F	[ksi]	34,954
Specific gravity ρ	[lb/ in³]	0.3
Thermal Conductivity λ at 68 °F	[Btu in/hr ft² °F]	90.0
Coefficient of Thermal Expansion α 68 – 212 °C 68 – 392 °C 68 – 572 °C 68 – 752 °C 68 – 932 °C	[μ in/in °F]	7.3 7.4 7.5 7.7 7.8
Specific Heat c at 68 °F	[Btu/lb °F]	107

Heat Treatment

Solution Annealing:

Temperature: 1,967 – 2,102 °F

Holding Time: 30 Min.

Cooling: Air

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Further information regarding our products and locations are available in our image brochure and under www.zapp.com

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