STAINLESS GROUP

High performance Alloys - Medical - Aerospace - Microtechnics - Motorsport - Industry

MP35N®

UNS R30035
ASTM F562
ISO 5832-6

GENERALITIES

The cobalt-based alloy MP35N has excellent corrosion resistance and very high mechanical properties with a maximum strength of over 2000 MPa while remaining ductile. The grade has excellent corrosion resistance, is biocompatible and has very good high temperature properties.

STAINLESS has qualified European and American sources in stock and a range of diameters to suit your processing requirements. This product can be customised or cut into slugs by our service centres.

Each material is delivered with its producer's certificate of origin in order to guarantee you total transparency and complete traceability.

APPLICATIONS

Due to its recognised biocompatibility in the medical field, the grade is used in the manufacture of implants (prostheses, stents, etc.) obtained by machining. Other fields of application include aeronautics, chemistry, oil, etc.
The material is available annealed, cold worked for small diameters or aged.

STANDARDS AND DESIGNATIONS

Numerical designations:
W.Nr 2.4782 – UNS R330035

Standards :
ISO 5832-6 - ASTM F 562
AMS 5758- AMS 5845 – AMS 5844
CoNi35Cr20Mo10

Brands:
MP35N®

Contact our Technical Support

TYPICAL CHEMICAL ANALYSIS (weight %)

	Carbon	Manganese	Silicium	Phosphorus	Sulfur	Chrom	Nickel	Molybdenum	Titanium	Iron	Cobalt
min	---	---	---	---	---	19.0	33.0	9.0	---	---	BALANCE
max	0.025	0.15	0.15	0.015	0.010	21.0	37.0	10.50	1.0	1.0	

METALLURGY

The melting processes combined with the transformation processes produce a homogeneous microstructure of the face-centred cubic type with a fine grain of at least index 4. The grade is generally produced by vacuum melting followed by vacuum remelting (VIM/VAR), which makes it very clean and homogeneous.

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PHYSICAL PROPERTIES AT 20°C

Density.....8,55 g.cm^{-3}.
Coefficient of thermal expansion (between 20 and 200°C).....12,8 x 10^{-6} m/m.°C
Young's modulus.....230 x 10^{3} MPa
Thermal conductivity.....12 W.m.m^{2}.°C
Relative magnetic permeability..... ≤ 1.01

MECHANICAL PROPERTIES OF THE BARS

The grade is offered as standard in the annealed, cold-worked or aged condition with the following properties for bars:

Delivery status	UTS (Mpa)	YS0.2% (MPa)	E5d%	RA%
Annealing	793-1069	241-586	>50	>65
Medium-hard strain-hardened	>1000	>655	>20	>60
Hard-hardened	>1207	>1000	>10	>50
Hardened and aged	>1793	>1586	>8	>35

For fine wire with a diameter of less than 1.6mm and for strip, the mechanical properties differ.

PROCESSES

Forgeability/Usability
The grade can be hot forged in the 1100/1200°C temperature range. Machining of this grade requires suitable equipment and tools. TIG welding is also possible on this grade.

Polishability
The high level of inclusionary cleanliness and the homogeneity of the microstructure of this grade allows optimum polishing.

Typical heat treatments
Annealing can be carried out in the 1040-1090°C temperature range to soften the grade. However, this treatment must be kept under control so as not to degrade the quality of the microstructure and the grain size. Aging on previously work-hardened states is done at 540-590°C for 4 hours.

CORROSION RESISTANCE

The grade is highly resistant to general corrosion and also to pitting due to its high chromium and molybdenum content combined with its low inclusion rate. The grade also has very low susceptibility to hydrogen embrittlement and stress corrosion.

STANDARD SHAPE

3m round bars in annealed, cold worked or aged condition – Peeled or ground surface
Wires – Strips