COBALT BASE ALLOY

XSH® – L605®
Haynes25®
UNS R30605
ASTM F90
ISO 5832-5

STAINLESS

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

GENERALITIES

*The **cobalt-based super alloy XSH®** has excellent corrosion resistance and high mechanical properties. The grade has excellent corrosion resistance, is biocompatible and has very good high temperature resistance (up to 950°C).*

Stainless has qualified European and American sources in stock and a range of diameters to suit your processing needs. This product can also be made to measure 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 mainly used in the manufacture of implants (prostheses, spine rods, etc.) obtained by forging and/or machining. The material is available in the warm worked state for all diameters.
diameters.

STANDARDS AND DESIGNATIONS

Numerical designations:
W. Nr 2.4964 - UNS R30605

Standards:
ISO 5832-5 - ASTM F 90 AMS 5537- AMS 5759 CoCr20W15Ni10

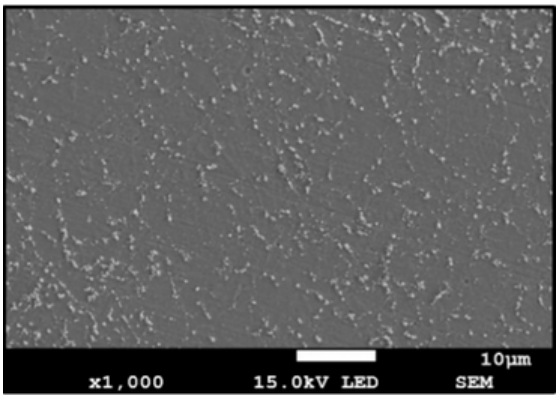
Brands:
XSH®, L605®, Haynes25®

TYPICAL CHEMICAL ANALYSIS (mass %)

	Carbon	Manganese	Silicium	Phosphorus	Sulfur	Chrome	Nickel	Tungsten	Iron	Cobalt
MIN	0.05	1.0	---	---	---	19.0	9.0	14.0	---	BALANCE
MAX	0.15	2.0	0.40	0.040	0.030	21.0	11.0	16.0	3.0	

METALLURGY

The development processes associated with the transformation processes make it possible to obtain a homogeneous microstructure of the cubic type with a centered face with a fine grain of index 6 at least. The shade is generally elaborated by a vacuum elaboration followed by a remelting which makes it very clean and homogeneous. The microstructure in the annealed state is illustrated by the following figure:



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PHYSICAL PROPERTIES AT 20°C

Density.....9.1 g.cm-3.
Coefficient of thermal expansion (between 20 et 200°C).....12.1 x 10^{-6} m/m.°C
Young's modulus.....225 x 10^{3} MPa
Thermal conductivity.....13 W.m/m^{2}.°C
Relative magnetic permeability..... ≤ 1.01

MECHANICAL PROPERTIES OF THE BARS

The grade is offered as standard in the annealed or work-hardened condition with the following properties for bars and wires:

Delivery statut	Rm (Mpa)	Rp0.2% (Mpa)	E5d%
Annealed	> 860	> 310	> 30
Hardened	> 1250	> 760	> 15

For sheets and strips, the mechanical properties differ (contact us).

PROCESSIES

Forgeability/Machinability
The grade can be hot forged in the 1100/1200°C temperature range. Machining this grade requires suitable equipment and tools. TIG, MIG, electron beam or resistance welding is also possible on this grade.

Polishability
The high level of inclusion cleanliness and the homogeneity of the microstructure of this grade allow optimum polishing.

Heat treatments
Annealing can be carried out in the temperature range 1170-1230°C to soften the grade and dissolve the carbides. This treatment must however remain under control so as not to degrade the quality of the microstructure and the grain size. In the work-hardened state, the grade can also be aged between 370°C and 600°C.

CORROSION RESISTANCE

The grade is very resistant to generalized corrosion and also to pitting thanks to its high chromium and molybdenum content associated with its low rate of inclusions. The grade is also very insensitive to hydrogen embrittlement and hot oxidation.

STANDARD SHAPE

- 3m round bars in annealed condition – Peeled or ground surface
- Sheets - Wires - Strips

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