TECHNICAL DATA

STELLITE™ 4 ALLOY

STELLITE™ COBALT-BASED ALLOYS consists of complex carbides in an alloy matrix. They are resistant to wear, galling, and corrosion and retain these properties at high temperatures. Their exceptional wear resistance is due mainly to the unique inherent characteristics of the hard carbide phase dispersed in a CoCr alloy matrix.

STELLITE™ 4 has similar carbon content to Stellite™ 6 but with a higher tungsten content. This results in formation of tungsten carbides along with the chromium carbides for improves abrasion resistance. The higher tungsten content results in a stronger matrix with improved high temperature properties. These properties along with a high chromium to carbon ration leaves more chromium in the matrix for higher corrosion resistance in oxidizing environments. Stellite™ 4 has excellent galling resistance, but is more brittle compared to Stellite™ 6. This material is suitable for high temperature abrasion in corrosive environment. Stellite™ 4 has found use in applications involving corrosion and wear such pump sleeves and impellors. For high temperature wear the material has been used for dies in hot pressing or extrusion of copper and aluminium.

CORROSION RESISTANCE

Stellite™ 4 has higher corrosion resistance than Stellite™ 6 in oxidizing environments such as nitric and sulphuric acids due to their higher chromium content in the cobalt rich matrix. The alloy has excellent resistance to manganese dioxide, carbon particles and ammonium zinc chlorides, used in the manufacturing of dry batteries.

NOMINAL CHEMICAL COMPOSITION (MASS%)

ALLOY	Co	Cr	W	C	Others
Stellite™ 4	Bal.	30,0	14,0	1,0	Fe, Ni, Mn, Si

PHYSICAL PROPERTIES

ALLOY	Hardness	Density	Melting Range
Stellite™ 4	42 - 52 HRC	~ 8,80 g/cm^3	~ 1240 – 1360 ℃

NOMINAL HOT HARDNESS (HV resp. DPH) AS CAST

20 ℃	100 ℃	200 ℃	300 ℃	400 ℃	500 ℃	600 ℃	700 ℃	800 ℃	900 ℃
505	490	479	438	409	387	333	244	183	124

EXAMPLE FOR TENSILE PROPERTIES AT ROOM TEMPERATURE

PRODUCT FORM	Ultimate Tensile Strength Rm	Yield Stress Rp (0,2%)	Elongation A
Sand Casting, As cast	~ 775 MPa	~ 550 MPa	<< 1%

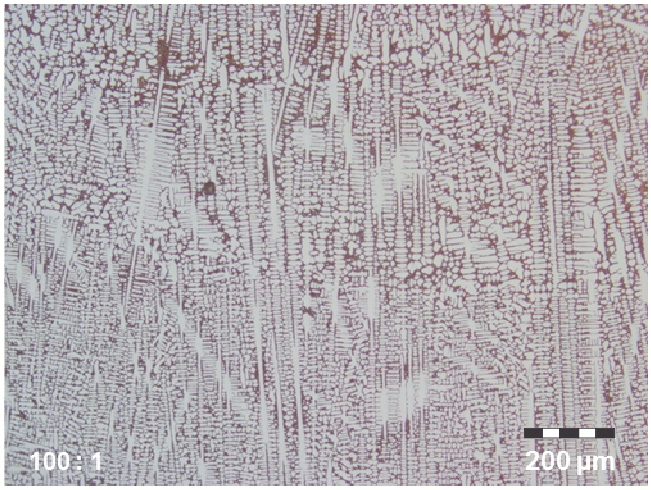
PRODUCT FORMS

Components			
Castings	Cladded / Hardfaced	PM / HIP parts*	ALM parts*

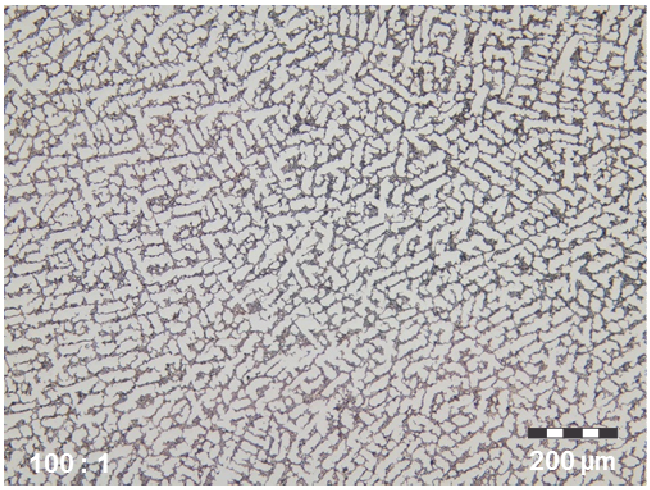
* On special request.

Consumables for Cladding / Hardfacing and Additive Layer Manufacturing (ALM)			
Powder	PTA Cladding	Laser Cladding	ALM

TYPICAL STRUCTURES



Welded Stellite™ 4 Alloy (Plasma Powder Cladding)



Casted Stellite™ 4 Alloy (Investment Casting)

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