

STELLITE 25

STELLITE™ 25 ALLOY

TECHNICAL DATA

CASTINGS | TIG & OXY-ACETYLENE WELDING | MMA WELD DEPOSITION | MIG WELD DEPOSITION | PTA & LASER WELD DEPOSITION | HVOF & PLASMA SPRAY DEPOSITION

NOMINAL COMPOSITION (MASS %) AND PHYSICAL PROPERTIES

| Co | Cr | W | C | Others | Hardness | Density | Melting Range |
|------|----|----|-----|--------------------|------------|--|----------------------------|
| Base | 20 | 15 | 0.1 | Ni, Fe, Si, Mo, Mn | 20-45 HRC* | 8.31 g/cm ³ 0.300 lb/in ³ | 1329-1410°C 2425-2573°F |

*Hardness dependent on amount of work hardening.

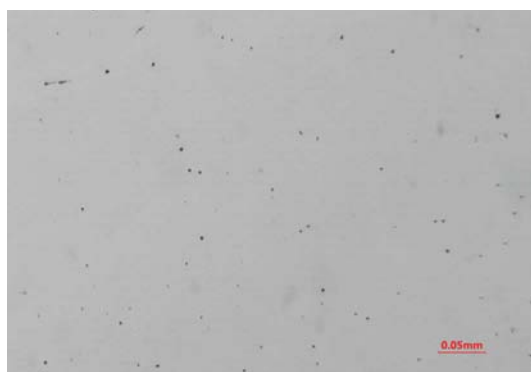
STELLITE™ COBALT-BASED ALLOYS consist of complex carbides in an alloy matrix. They are resistant to wear, galling, and corrosion and retain these properties at high temperatures. Their exceptional wear resistance is due mainly to the unique inherent characteristics of the hard carbide phase dispersed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

STELLITE 25 is a tungsten-strengthened cobalt-chromium alloy and is the cast version of the wrought alloy L605, and is also available in hardfacing wire, rod, and powder. This special low-carbon alloy has been found to have exceptional thermal fatigue resistance and is useful for tools to work hot steel. The alloy also resists hot metal-on-metal wear.

STELLITE 25 is often used for metal-working tools where a combination of metal-on-metal wear, thermal fatigue, and hot corrosion resistance are required, such as piercing points, forming tools, extrusion dies, and furnace hardware.

CORROSION RESISTANCE

STELLITE 25 is resistant to oxidation and carburization up to 1900°F. The alloy resists wet chlorine at ambient temperatures and is resistant to nitric and hydrochloric acids under certain conditions. Exposure testing is recommended to verify performance.



Stellite 25 cast microstructure at 200x magnification

WEAR

STELLITE 25 forms a protective oxide film during hot metal-on-metal wear, which prevents metal transfer and damage due to adhesion. The alloy is resistant to thermal cracking and surface fatigue. Since the microstructure is relatively free of carbide reinforcement, it is not recommended for low-stress or low-angle particle erosion service.

FINISHING

Carbide tools allow a variety of conventional machining operations. Use positive rake angle to avoid burnishing since the alloy work hardens readily. Sharp tools and coolant are recommended for drilling.



www.stellite.com

NOMINAL THERMAL EXPANSION COEFFICIENT (FROM 20°C/68°F TO STATED TEMPERATURE)

| | 93°C (200°F) | 204°C (400°F) | 316°C (600°F) | 427°C (800°F) | 538°C (1000°F) | 649°C (1200°F) | 760°C (1400°F) | 871°C (1600°F) | 982°C (1800°F) |
|---------------|-----------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| µm/m.K | 12.24 | 12.96 | 13.68 | 14.04 | 14.4 | 14.76 | 15.48 | 16.38 | 16.92 |
| µ-inch/inch.F | 6.80 | 7.20 | 7.60 | 7.80 | 8.00 | 8.20 | 8.60 | 9.10 | 9.40 |

NOMINAL TENSILE PROPERTIES AT ROOM TEMPERATURE

| | Ultimate Tensile Strength Rm | | Yield Stress Rp (0.2%) | | Elongation | Elastic Modulus | |
|---------|------------------------------|-----|------------------------|-----|------------|-----------------|-----|
| | ksi | MPa | ksi | MPa | A(%) | ksi | GPa |
| Casting | 134 | 925 | 130 | 895 | 5 | 30,000 | 207 |

NOMINAL HOT HARDNESS (BRINELL HARDNESS NUMBER)

| | 20°C (68°F) | 100°C (212°F) | 200°C (392°F) | 300°C (572°F) | 400°C (752°F) | 500°C (932°F) | 600°C (1112°F) | 700°C (1292°F) | 800°C (1472°F) | 900°C (1652°F) |
|---------|----------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| Casting | 350 | – | – | – | – | 280 | – | – | – | 130 |

THERMAL AND ELECTRICAL PROPERTIES

| | Approximate Value at Room Temperature |
|------------------------|---------------------------------------|
| Thermal conductivity | 65 BTU-in/hr/ft²/°F |
| Electrical resistivity | 34.9 µ-ohm.in |

AVAILABLE FORMS

STELLITE 25 is available as welding wire, rod, powder, and electrodes as well as finished castings.

| DESIGNATION | PRODUCT FORM |
|-------------|--------------|
| UNS R30605 | Casting |

Kennametal Stellite manufactures sophisticated alloys in the form of castings, powders, coatings, consumables, and machined parts that resist wear, corrosion, and abrasion. Information provided in this document is intended only for general guidance about Kennametal Stellite products and is the best information in our possession at the time. Product users may request information about their individual use of our products, but Kennametal Stellite does not warrant or guarantee this information in any way. Selection and purchase of Kennametal Stellite products is the sole responsibility of the product user based on the suitability of each use. Individual applications must be fully evaluated by the user, including compliance with applicable laws, regulations, and non-infringement. Kennametal Stellite cannot know or anticipate the many variables that affect individual product use, and individual performance results may vary. For these reasons, Kennametal Stellite does not warrant or guarantee advice or information in this document, assumes no liability regarding the same, and expressly disclaims any warranty of any kind, including any warranty of fitness for a particular purpose, regarding the same.

SALES OFFICE - COMPONENTS

Kennametal Stellite
 471 Dundas St. East
 Belleville, Ontario
 K8N 1G2
 Canada
 T: 1 613 968 3481
 F: 1 613 966 8269
 E-mail: k-blvl.service@Kennametal.com

SALES OFFICE - WELDING CONSUMABLES

Kennametal Stellite
 1201 Eisenhower Drive N
 Goshen, Indiana
 46526
 USA
 T: 1 574 534 2585
 F: 1 574 534 3417
 E-mail: k-gshn.service@Kennametal.com

