

# STELLITE 700

## STELLITE™ 700 Series Alloys

### TECHNICAL DATA

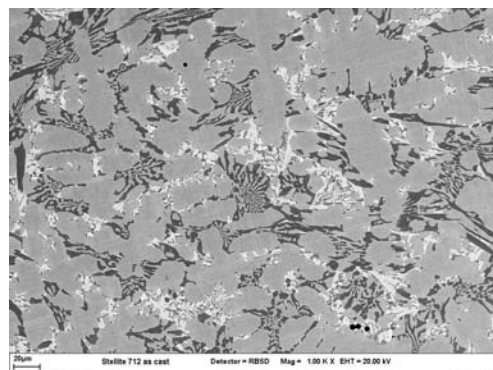
CASTINGS | TIG & OXY-ACETYLENE WELDING | MMA WELD DEPOSITION | MIG WELD DEPOSITION | PTA & LASER WELD DEPOSITION |  
ULTRAFLEX™ COATINGS | ADDITIVE MANUFACTURING | POWDER METALLURGY

**STELLITE™ 700 ALLOYS** raise the standards for wear and corrosion resistant alloys. They have the unusual combination of excellent wear resistance and exceptional corrosion resistance in environments that are either reducing or complex.

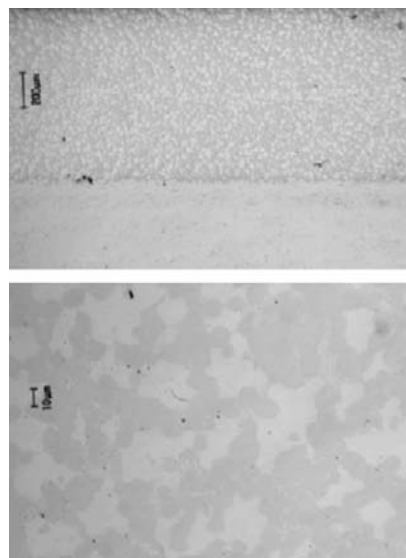
**STELLITE 700 ALLOYS** are cobalt based with chromium and molybdenum as major alloying elements. The unique combination of wear and corrosion properties result from the high-volume fraction of carbide particles and high degree of solid-solution strengthening from the addition of molybdenum. The **STELLITE 700** alloys have been particularly successful in petrochemical and refinery applications, such as delayed coker-fired heater return bends, catalyst withdraw lines and conveyance, as well as FCC feed and regenerator air and grid nozzles. Valve seats, slides, and general flow-control applications where corrosion and wear are key considerations are also good candidates. The 700 series alloys have broad application wherever there is a combination of high wear with corrosion.

**STELLITE 720** coatings are available with the proprietary UltraFlex™ process, which is able to deliver this extremely wear- and corrosion-resistant alloy to the surfaces of complex and non-line-of-sight components. **STELLITE 720** is also available as additively manufactured components.

**STELLITE 700 ALLOYS** are based on the traditional Stellite grades 6, 12, 3, and 20, but tungsten has been replaced with molybdenum. This allows them to retain their hardness and wear properties while substantially improving corrosion resistance in reducing environments. The 700 series alloys are more brittle compared to the equivalent traditional Stellite alloys.



Cast Stellite 712 microstructure



UltraFlex™ Stellite 720 coating on INCONEL® 625. Coating thickness of 0.035".

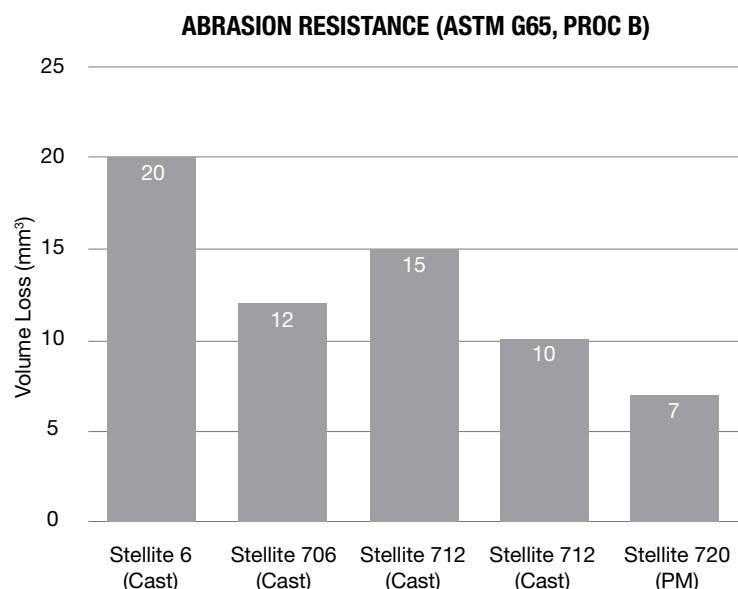
### NOMINAL HARDNESS

700 Series Alloy	Hardness (HRC)	Traditional Alloy	Hardness (HRC)
Stellite 706 (5.5% Mo)	~41	Stellite 6 (5.5% W)	~40
Stellite 712 (8.5% Mo)	~51	Stellite 12 (8.5% W)	~48
Stellite 703 (13% Mo)	~53	Stellite 3 (13% W)	~52
Stellite 720 (17.5% Mo)	~60	Stellite 20 (17.5% W)	~58



[www.stellite.com](http://www.stellite.com)

### WEAR PERFORMANCE DATA



### CORROSION RESISTANCE\*

Lower values indicate less volume loss and better relative corrosion resistance for acids shown.

Acid	Stellite 6	Stellite 706	Stellite 12	Stellite 712
5% HCl, RT	96	40	88	17
5% HCl, 40°C	660	54	540	120
10% H <sub>2</sub> SO <sub>4</sub> , 66°C	1700	380	2200	420
10% HNO <sub>3</sub> , Boiling (oxidizing)	37	110	16	590

\*MILS PER YEAR, MPY

### AVAILABLE PRODUCT FORMS:

**STELLITE 700** series alloys are available as powder metallurgy components, welding rod, wire, and powder.

**STELLITE 706, 712, and 703** are available as castings.

**STELLITE 720** is available as an UltraFlex™ coating and additively manufactured components.

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#### 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

#### SALES OFFICE - ULTRAFLEX COATINGS

**Kennametal Conforma Clad**  
501 Park East Blvd.  
New Albany, Indiana  
47150  
USA  
T: 1 888 289 4590  
E-mail: k-nalb.cs@kennametal.com

