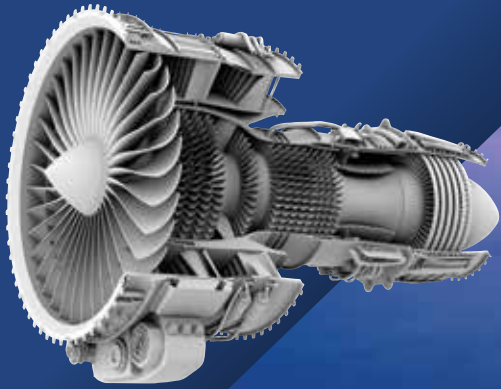


# AERO

**Aerospace**



# AEROSPACE

Kennametal Stellite™ is a global provider of solutions for wear, heat, and corrosion applications, and a world-class manufacturer of components and materials for the aerospace market. Decades of experience and knowledge with Cobalt and Nickel alloys have produced a comprehensive portfolio of materials that have become industry standard in many critical applications.

Kennametal Stellite offers its proven solutions for the aerospace market in a broad range of products.

- Cobalt & Nickel Alloys
- Stellite alloy 6B (AMS 5894)
- Cast & PM Components
- Hardfacing Consumables



## Why Kennametal Stellite™?



### Quality Systems & Certifications

We have been a **supplier to the aerospace industry for over 60 years** and maintain numerous certifications, including AS9100D, ISO 9001:2015, and NADCAP™ for NDT, along with many customer and industry-specific approvals.



### Full Service Provider

Materials are produced and fully processed at one facility with a singular focus on quality. Components are available from multiple casting, powder metallurgy, and wrought processes, according to the required specification. Additional in-house services ensure total product control:

- Comprehensive finishing capabilities
- Full inspection
- Certification

**We take responsibility for component production from end to end.**



### Alloys

Kennametal Stellite pioneered many industry standard alloy families, each with a full range of grades and available with AMS certification. **Stellite** and **Tribaloy™** alloys, in particular, are used in many key aerospace high temperature wear applications.

We are the exclusive supplier of **Stellite alloy 6B per AMS 5894**, and maintain the most comprehensive inventory available.



### Materials Expertise

Kennametal Stellite materials expertise can be traced back over a century when Stellite alloys were invented. Our expert team of metallurgists and engineers focus on delivering material solutions for challenging applications.

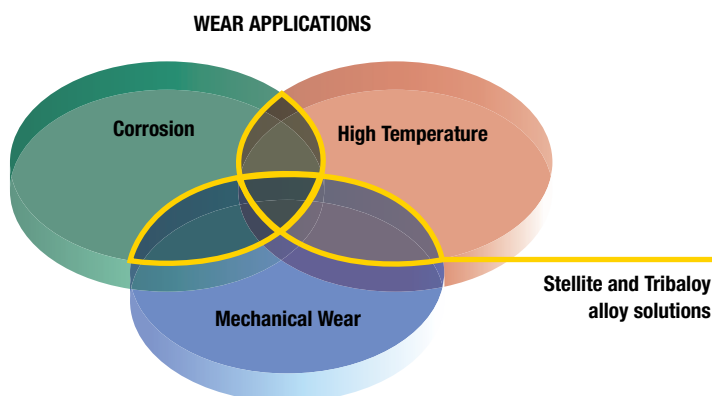
**Our experience with the development and processing of cobalt alloys is unique.**



## Alloys

Kennametal Stellite™ offers a comprehensive range of material options to meet specific application needs. Our portfolio of alloys continues to grow as our metallurgists develop grades targeting specific wear conditions.

Although dozens of material grades are available, a short list of alloys form the foundation for many wear applications in both aerospace and general industry. Most alloys have been developed to perform in environments where at least 2 modes of failure are present.



ALLOYS	SPECIFICATIONS
Stellite No. 3	AMS 7239, PWA 36133
Stellite No. 6	AMS 5387, AMS 5373, AMS 7239, B50A960
Stellite 6B	AMS 5894, PWA 1196, BMS7-338
Stellite No. 21	AMS 5385
Stellite No. 25	B19G3C1, AMS 5796, AMS 5797
Stellite No. 31	AMS 5382, PWA 744, MSRR 7049, AMS 5791
Stellite 694	B50TF55, B50TF273
Tribaloy™ T-800	B50TF193, B50TF190
Tribaloy T-900	Aviation Use
INCONEL® 713	AMS 5391, AMS 5377, PWA 655
INCONEL 718	AMS 5383
INCONEL 625	AMS 5401, AMS 5402
Nistelle™ X	AMS 5390
17-4 PH	AMS 5342, AMS 5355

### Stellite Alloy 6B (AMS 5894)

When it comes to tough, wear-resistant materials with certified mechanical properties, Stellite alloy 6B is in a class by itself. Unlike many other materials that sacrifice toughness for wear resistance, Stellite alloy 6B offers both. With its excellent wear characteristics, hot hardness, corrosion resistance, and superior mechanical properties, Stellite alloy 6B is the material of choice for many demanding aerospace wear applications.

We maintain an extensive inventory of Stellite alloy 6B bar and sheet.

**Our service, product availability, size range, and bar lengths are unparalleled.**

Kennametal Stellite can also provide finished components made to your exact specifications.



- DFARS compliant
- PWA 1196 certified
- Boeing BMS7-338 certified
- Ultrasonically inspected
- Certified mechanical properties

STELLITE ALLOY 6B SIZE RANGE		
<b>Round Bar</b>	Diameter	.312–6.000" (22 standard sizes)
	Length	Up to 160"
<b>Flat Stock</b>	Thickness	.031–1.000" (10 standard sizes)
	Sheet Size	Up to 36"x 96"

\*Custom sizes upon request





## Processing Methods

As a full-service provider, we offer components manufactured from a range of processes to suit part geometry, size, specification, and quantity. All aspects of production are controlled within our facility; from raw materials to fully finished, inspected, and certified components.

### Investment & Vacuum Casting

Investment and vacuum castings offer clean as-cast surface finishes and near net-shape geometries of complex components. A full range of Cobalt, Nickel, and stainless steel alloys can be poured.



### Rapid Prototyping

With a 3D model file, stereolithography (SLA) patterns can be quickly produced to create the patterns needed as the starting point for investment or vacuum castings. This removes the need for hard tooling, resulting in faster lead times and lower prototyping costs.



### Centrifugal Casting

Tubular products, such as bushings and sleeves, can be efficiently manufactured as centrifugal castings. This process produces a high quality and dense component with a fine uniform grain structure.



### Powder Metallurgy

A comprehensive range of Stellite grades can be produced as fully dense P/M components. This is often the process of choice for smaller, high volume parts such as balls, spacers, or bearing components.



### Additive Manufacturing

Kennametal has developed multiple processing techniques for producing Stellite™ alloy components through additive manufacturing. Our technical experts work closely with you to maximize the benefit of this technology, ultimately providing finished components.



### Precision Machining

We finish castings, Stellite alloy 6B, and P/M components to your specifications in our fully equipped machine shop. High volume programs can be accommodated with dedicated equipment and cellular manufacturing.



### Powder & Wire

Powder and wire are available in many grades and sizes for hardfacing and repair applications. Solid fine wires are also available for turbine repair applications.





## Quality Systems & Certifications

Extensive quality systems and process controls ensure Stellite components continue to meet the highest expectations. Our facilities maintain ISO 9001:2015 and AS9100D certifications, as well as numerous aerospace qualifications, both industry and customer specific.

- ISO Certified since 1995.
- NADCAP™ for NDT since 2006.
- Aerospace experience at OEM and sub-tier levels since 1956.

QUALITY CERTIFICATIONS
AS9100D
ISO 9001:2015
NADCAP Approval for NDT – Penetrant & Radiography GE Aviation S-1000
Pratt & Whitney Canada & USA – ASQR-01 PWA LCS Certified for Pratt & Whitney Canada & USA
DQR (3 in-house) ASQR-01
ASME Section III NCA 3800 – Nuclear 10 CFR Part 21 – Nuclear Safety
10 CFR 50 Appendix B – Nuclear Controlled Goods Program Registered
<i>Numerous Customer Specific Approvals</i>



# Inspection Capability

In accordance with customer requirements, we verify and document a wide variety of features through measurement, chemical analysis, radiography, and fluorescent penetrant crack detection. We perform destructive tests as required, and also work with independent testing firms capable of performing third-party inspections and over-checks.

Our certification, qualification, and testing capabilities are continuously expanding. Feel free to discuss your requirements with our staff.

- Large team of dedicated inspection employees.
- Decades of combined inspector experience.
- Extensive in-house inspection equipment.

ON-SITE CAPABILITIES		
<b>Full Dimensional Metrology</b> <ul style="list-style-type: none"> <li>• CMM (In-Process &amp; Final Inspection)</li> <li>• Vision System</li> <li>• Traditional Measuring Methods</li> </ul>	<b>Fluorescent Penetrant Testing</b> <ul style="list-style-type: none"> <li>• Level III in-house</li> <li>• Level II (5 in-house)</li> </ul>	<b>Radiographic Testing</b> <ul style="list-style-type: none"> <li>• Level III in-house</li> <li>• Level II (3 in-house)</li> </ul>

# AEROSPACE

**For customer service or to place an order contact:**

**AMERICAS COMPONENTS**

North America: +1 800 267 2886  
 Phone: +1 613 968 3481  
 Fax: +1 613 966 8269  
 E-mail: k-blvl.service@kennametal.com

**AMERICAS MATERIALS**

North America: +1 800 235 9353  
 Phone: +1 574 534 2585  
 Fax: +1 574 534 3417  
 E-mail: k-gshn.service@kennametal.com



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**WORLD HEADQUARTERS**

**Kennametal Inc.**

1600 Technology Way  
Latrobe, PA 15650 USA  
Tel: 1 800 446 7738  
ftmill.service@kennametal.com

**EUROPEAN HEADQUARTERS**

**Kennametal Europe GmbH**

Rheingoldstrasse 50  
CH 8212 Neuhausen am Rheinfall  
Switzerland  
Tel: +41 52 6750 100  
neuhausen.info@kennametal.com

**ASIA-PACIFIC HEADQUARTERS**

**Kennametal Singapore Pte. Ltd.**

3A International Business Park  
Unit #01-02/03/05, ICON@IBP  
Singapore 609935  
Tel: +65 6265 9222  
k-sg.sales@kennametal.com

**INDIA HEADQUARTERS**

**Kennametal India Limited**

CIN: L27109KA1964PLC001546  
8/9th Mile, Tumkur Road  
Bangalore - 560 073  
Tel: +91 080 22198444 or +91 080 43281444  
bangalore.information@kennametal.com

**kennametal.com**