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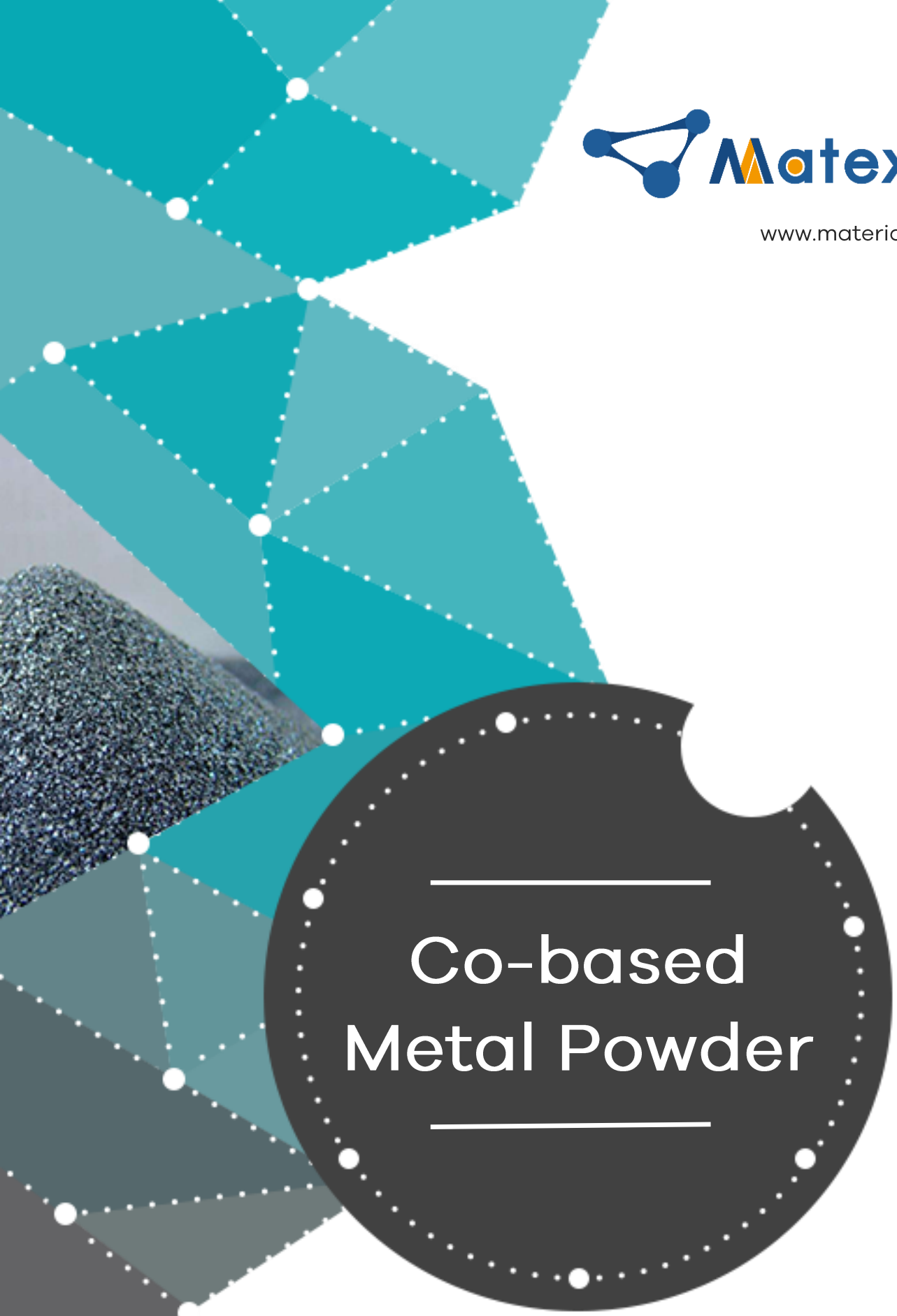

# Co-based Metal Powder


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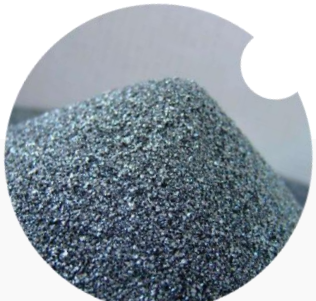
## Co-based Metal Powder

Cobalt (Co) alloys have been in use since 1907 when Elwood Haynes obtained the first patents on cobalt–chromium compositions. Historically, many of the commercial cobalt-base alloys are derived from the cobalt–chromium–tungsten and cobalt–chromium–molybdenum ternaries. Cobalt alloys have good magnetic properties, corrosion resistance, wear resistance, and high temperature strength. These properties arise from the crystallographic nature of cobalt, the solid-solution-strengthening effects of Cr, W, and Mo, the formation of metal carbides, and the corrosion resistance imparted by Cr. Relatively harder Co-alloys is used for resistance to wear. On the other hand the tougher Cobalt compositions are used for high-temperature applications such as gas-turbine vanes and buckets. Co-based alloys are also used to produce artificial joints thanks to their excellent biocompatibility.

For their high wear resistance, Co alloys are led to use for in orthopedic implants. Cobalt-based alloys have some similarities with stainless steels. In most cases they have a FCC crystalline structure and also have similar alloying elements, such as Cr, Ni, Mo and N. As in stainless steels, corrosion resistance occurs through the formation of a passive layer of chromium oxide. Unlike implantable stainless steels, cobalt alloys tend to have a high carbon content, which results in the formation of carbides distributed by the material and promotes an increase in adhesive wear resistance. Combined with this high wear resistance, cobalt-based alloys have excellent corrosion resistance compared to stainless steel. Regarding the mechanical properties, cobalt-based alloys have the highest values.

Nowadays, metal additive manufacturing is strongly employed in aerospace and biomedical applications, whose high degree of customization and low production volumes are the main characteristics. Cobalt-based alloys have been widely used for dental prosthesis and can be produced via metal additive manufacturing, or rather powder bed fusion, in a more convenient way compared to traditional manufacturing techniques.



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**Matexcel** provides multi-functional cobalt-based alloys, from fine powders to nanostructured forms. Cobalt-based alloys are commonly known as high wear-resistant material. Currently, it is commonly used for dental restoration, e.g. dental bridge, dental crown, denture and etc. Welcome to contact us for more information.

## Products List

| Cat. NO. | Product Name | Components |
|---|---|---|
| MET-0023 | Cobalt-based CoCrW Powder | Cr 26.5-29.5; W 7.0-9.0; Si 1.2-1.9; Fe <0.6; Mn <0.4; Co Bal. |
| MET-0024 | Cobalt-based CoCrMo Powder | Cr 26.0-30.0; Mo 5.0-7.0; Si ≤1.0; Mn ≤1.0; Fe ≤0.75; Ni ≤0.50; Co Bal; W ≤0.20; C ≤0.16; Al ≤0.10; Ti ≤0.10; P ≤0.02; S ≤0.01; B ≤0.01; O ≤0.01 |
| MET-0025 | Cobalt-based CoCrMoW Powder | Cr 23.7–25.7; Mo 4.6 – 5.6; W 4.90 –5.9 0; Si 0.80– 1.20; Fe ≤0.50; O ≤0.010.10; Co Bal; O ≤0.01 |
| MET-0026 | Cobalt-based GH5188 Powder | Cr 20.0-24.0; Ni 20.0-24.0; W 13.0-16.0; Fe ≤3.0; Co Bal; C 0.05-0.15; N 0.13-0.25; Ta <0.05; O ≤0.01 |
| MET-0027 | Cobalt-based GH5605 Powder | Cr 19.0-21.0; Ni 9.0-11.0; W 14.0-16.0; Fe ≤3.0; Co Bal; C 0.05-0.15; N 0.13-0.25; Ta <0.05; O ≤0.01 |
| MET-0028 | Cobalt-based GH5941 Powder | Cr 19.0-23.0; Ni 19.0-23.0; W 17.0-19.0; Fe ≤1.5; Co Bal; C 0.05-0.15; N 0.13-0.25; Ta <0.05; O ≤0.01 |

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