

Global 3D Printing Metals Market Research Report 2021-2025

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Abstracts

According to the types of materials, 3D printing metal materials can be divided into ironbased alloys, titanium and titanium-based alloys, nickel-based alloys, cobalt-chromium alloys, aluminum alloys, copper alloys, and precious metals.

Iron-based alloys are an earlier and more in-depth study of 3D printing metal materials. The more commonly used iron-based alloys include tool steel, 316L stainless steel, M2 high-speed steel, H13 die steel and 15-5PH maraging steel, etc. . The iron-based alloy has low cost, high hardness, good toughness, and good machinability, which is especially suitable for mold manufacturing. 3D printing conformal channel molds are a major application of iron-based alloys. Traditionally shaped channels are difficult to process. 3D printing can control the arrangement of cooling channels to be basically consistent with the geometry of the cavity, which can improve the temperature field Uniformity can effectively reduce product defects and increase mold life.

Titanium and titanium alloys have become ideal materials for medical equipment, chemical equipment, aerospace and sports equipment due to their remarkable high specific strength, good heat resistance, corrosion resistance, and good biocompatibility. However, titanium alloy is a typical difficult-to-machine material, with high stress and high temperature during processing, and severe tool wear, which limits the wide application of titanium alloy. The 3D printing technology is particularly suitable for the manufacture of titanium and titanium alloys. First, when 3D printing is in a protective atmosphere, titanium is not easy to react with elements such as oxygen and nitrogen. The rapid heating and cooling of the micro-zones also limits the volatilization of alloy elements; The second is that complex shapes can be manufactured without cutting processing, and based on the high utilization of powder or wire materials, it will not cause waste of raw materials and greatly reduce manufacturing costs.



At present, the types of 3D printing titanium and titanium alloys include pure Ti, Ti6A14V (TC4) and Ti6A17Nb, which can be widely used in aerospace parts and artificial implants (such as bones, teeth, etc.).

Nickel-based alloys are the fastest growing and most widely used superalloys. They have high strength and certain oxidation and corrosion resistance at 650-1000°C. They are widely used in aerospace, petrochemical, shipbuilding, Energy and other fields. For example, nickel-based superalloys can be used in aero-engine turbine blades and turbine disks. Commonly used 3D printing nickel-based alloy grades include Inconel 625, Inconel 718 and Inconel 939.

Cobalt-based alloys can also be used as high-temperature alloys, but due to lack of resources, development is limited. Because cobalt-based alloys have better biocompatibility than titanium alloys, they are currently mostly used as medical materials for the manufacture of dental implants and orthopedic implants. Currently commonly used 3D printing cobalt-based alloy grades are Co 212, Co 452, Co 502 and CoCr28Mo6.

Aluminum alloy has low density, good corrosion resistance, high fatigue resistance, and high specific strength and specific rigidity. It is an ideal lightweight material. The aluminum alloy used in 3D printing is cast aluminum alloy, and commonly used grades are AlSi10Mg, AlSi7Mg, AlSi9Cu3, etc. South Korean communication satellites Koreasat-5A and Koreasat-7 use AlSi7Mg lightweight components manufactured by SLM, which are not only made of multiple original parts as a whole, but the weight of the parts is reduced by 22% compared with the original design and the manufacturing cost is reduced by 30%. , The production cycle is shortened by 1-2 months.

The demand for other metal materials such as copper alloys, magnesium alloys, and precious metals is not as high as the above-mentioned metal materials, but they also have corresponding application prospects.

Metal 3D printing is most suitable for complex, bespoke parts that are difficult or very costly to manufacture with traditional methods. In the context of China-US trade war and COVID-19 epidemic, it will have a big influence on this market. 3D Printing Metals Report by Material, Application, and Geography – Global Forecast to 2025 is a professional and comprehensive research report on the world's major regional market conditions, focusing on the main regions (North America, Europe and Asia-Pacific) and the main countries (United States, Germany, United Kingdom, Japan, South Korea and



China).

In this report, the global 3D Printing Metals market is valued at USD XX million in 2021 and is projected to reach USD XX million by the end of 2025, growing at a CAGR of XX% during the period 2021 to 2025.

The report firstly introduced the 3D Printing Metals basics: definitions, classifications, applications and market overview; product specifications; manufacturing processes; cost structures, raw materials and so on. Then it analyzed the world's main region market conditions, including the product price, profit, capacity, production, supply, demand and market growth rate and forecast etc. In the end, the report introduced new project SWOT analysis, investment feasibility analysis, and investment return analysis.

The major players profiled in this report include: Stratasys Ltd. 3D Systems Corporation EOS GmbH Materialise NV GE Additive Renishaw plc Voxeljet AG 3D Systems, Inc Sandvik AB Hoganas AB

The end users/applications and product categories analysis: On the basis of product, this report displays the sales volume, revenue (Million USD), product price, market share and growth rate of each type, primarily split into-General Type

On the basis on the end users/applications, this report focuses on the status and outlook for major applications/end users, sales volume, market share and growth rate of 3D Printing Metals for each application, including-Aerospace & Defense Automotive



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