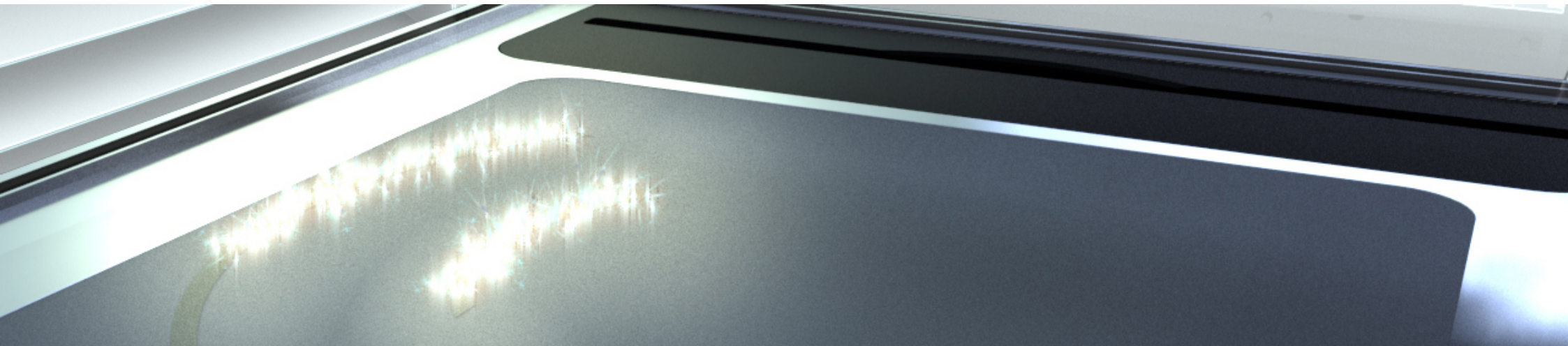


# Materials for Metal Additive Manufacturing

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DMLS materials compatible with  
EOSINT M 280



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## EOS Aluminum AlSi10Mg

### Product information

AlSi10Mg is a typical casting alloy with good casting properties and is typically used for cast parts with thin walls and complex geometry. It offers good strength, hardness and dynamic properties and is therefore also used for parts subject to high loads. Parts in EOS Aluminium AlSi10Mg are ideal for applications which require a combination of good thermal properties and low weight, e.g. motorsports and aerospace interior. The parts can be machined, spark-eroded, welded, micro shot-peened, polished and coated if required.

### Properties

- Good casting properties
- Good strength and hardness
- High dynamic properties

### Applications

- Functional prototypes
- Series-production parts
- Motorsports
- Automotive/Series Production Vehicles
- Aerospace Interior

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## EOS CobaltChrome MP1

### Product information

EOS CobaltChrome MP1 produces parts in a cobalt-chrome-molybdenum-based superalloy. This class of superalloy is characterised by having excellent mechanical properties (strength, hard-ness etc.), corrosion resistance and temperature resistance. Such alloys are commonly used in biomedical applications such as dental and medical implants (note: widely used in Europe but much less so in North America), and also for high-temperature engineering applications such as in aero engines.

### Properties

- High strength, temperature and corrosion resistance
- Mechanical properties improve with increased temperature up to 500-600 °C
- Chemistry conforms to the composition UNS R31538 of high carbon CoCrMo alloy
- Nickel-free (< 0.1 % nickel content)
- Fulfils the mechanical and chemical specifications of ISO 5832-4 and ASTM F75 for cast CoCrMo implant alloys

### Applications

- Functional prototypes
- Series-production parts
- Mechanical engineering
- Biomedical Applications

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## EOS MaragingSteel MS1

### Product information

EOS MaragingSteel MS1 is a martensite-hardenable steel. Its chemical composition corresponds to US classification 18% Ni Maraging 300, European 1.2709 and German X3NiCoMoTi 18-9-5. This kind of steel is characterised by having excellent strength combined with high toughness. The parts are easily machinable after the building process and can be easily post-hardened to more than 50 HRC. They also have excellent polish ability.

### Properties

- Easily machinable
- Age hardenable up to approx. 54 HRC
- Good thermal conductivity

### Applications

- Series-production parts
- Tooling (e.g. aluminium die casting)
- Mechanical Engineering
- Aerospace

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## EOS NickelAlloy HX

### Product information

EOS NickelAlloy HX is a heat and corrosion resistant metal alloy powder intended for processing on EOSINT M 280 systems. It is a nickel-chromium-iron-molybdenum alloy in fine powder form. Its composition corresponds to UNS N06002. This type of alloy is often used up to 1200 °C. Its applications can be found in aerospace technology, e.g. gas turbine parts. Standard laser processing parameters results in full melting across the entire geometry, typically with 20 µm layer thickness. Parts built from EOS NickelAlloy HX can be heat treated and material properties can be varied within a specified range. In both states – as-built and solution heat treated – the parts can be machined, spark-eroded, welded, micro shot-peened, polished, and coated if required. Unexposed powder can be reused.

### Properties

- Heat and corrosion resistant
- Strength and oxidation resistance
- Subsequent heat treatment and machining possible

### Applications

- Functional prototypes
- Rapid Repair
- Rapid Manufacturing
- Aerospace
- Industry

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## EOS NickelAlloy IN625

### Product information

The precipitation and heat-resistant nickel-chromium alloy EOS NickelAlloy IN625 has a chemical composition corresponding to UNS N06625, AMS 5666F, AMS 5599G, W.Nr 2.4856, DIN NiCr22Mo9Nb. It is characterised by having high tensile, creep and rupture strength. EOS NickelAlloy IN625 is expected to have good corrosion resistance in various corrosive environments. This material is also suitable for building complex parts for high-temperature and high-strength applications. The process achieves material properties that are comparable to wrought metals and by far exceeds those of casting.

### Properties

- Heat-resistant
- High tensile, creep and rupture strength
- Good corrosion resistance

### Applications

- Functional prototypes
- Series-production parts
- Aerospace
- Motorsport
- Industry (e.g. high-temperature turbine components)

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## EOS NickelAlloy IN718

### Product information

EOS NickelAlloy IN718 is a nickel based heat resistant alloy. Its composition corresponds to UNS N07718, AMS 5662, AMS 5664, W.Nr 2.4668, DIN NiCr19Fe19NbMo3. This kind of precipitation-hardening nickel-chromium alloy is characterised by having good tensile, fatigue, creep and rupture strength at temperatures up to 700°C. The alloy also has outstanding corrosion resistance in various corrosive environments. This material is ideal for many high temperature applications such as gas turbine parts, instrumentation parts, power and process industry parts etc. The material also possesses excellent cryogenic properties and potential for cryogenic applications.

### Properties

- Heat-resistant
- Outstanding corrosion resistance
- High performance at temperatures up to 700°C, e.g. tensile strength, fatigue, creep and rupture

### Applications

- Functional prototypes
- Series-production parts
- Aerospace
- Industry (e.g. high-temperature turbine components)

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## EOS StainlessSteel GP1

### Product information

EOS StainlessSteel GP1 is a stainless steel. Its chemical composition corresponds to US classification 17-4, European 1.4542 and German X5CrNiCuNb16-4. This kind of steel is characterised by having good mechanical properties, especially excellent ductility in laser processed state, and is widely used in a variety of engineering applications. This material is ideal for many part-building applications (DirectPart) such as functional metal prototypes, small series products, individualised products or spare parts.

### Properties

- Good mechanical properties
- Excellent ductility

### Applications

- Functional prototypes
- Series-production parts
- Mechanical Engineering
- Medical

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## EOS StainlessSteel PH1

### Product information

EOS StainlessSteel PH1 is a stainless steel. The chemical composition conforms to the compositions of 15-5 PH, DIN 1.4540 and UNS S15500. This kind of steel is characterised by having excellent mechanical properties, especially in the precipitation hardened state. This type of steel is widely used in a variety of medical, aerospace and other engineering applications requiring high hardness and strength. This material is ideal for many part-building applications such as functional metal prototypes, small series products, individualised products or spare parts.

### Properties

- Very high strength
- Easily hardenable up to approx. 45 HRC

### Applications

- Functional prototypes
- Series-production parts
- Mechanical engineering
- Medical technology

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## EOS StainlessSteel 316L

### Product information

The iron-based alloy EOS StainlessSteel 316L is characterised by a high ductility and corrosion resistance. It can be used in many areas, such as for watch and jewellery making, in the medical field for surgical aids, endoscopic surgery and orthopaedics or in aerospace for the manufacture of mounting parts. The material meets the requirements of the ASTM F138 norm ("Standard Specification for Wrought 18Cr-14Ni-2.5Mo Stainless Steel Bar and Wire for Surgical Implants, UNS S31673"). It has been optimised for use on the EOSINT M 280 system. The manufactured parts can be further processed or polished.

### Properties

- Excellent corrosion resistance
- High ductility
- Post-processing possible
- Meets the requirements of the ASTM F138 norm ("Standard Specification for Wrought 18Cr-14Ni-2.5Mo Stainless Steel Bar and Wire for Surgical Implants, UNS S31673")

### Applications

- Watch and jewellery making
- Automotive
- Aerospace
- Food and chemical plants

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## EOS Titanium Ti64

### Product information

EOS Titanium Ti64 is a Ti6Al4V alloy. This well-known light alloy is characterised by having excellent mechanical properties and corrosion resistance combined with low specific weight. The ELI version (extra-low interstitials) has particularly high purity.

### Properties

- Light weight with high specific strength (strength per density)
- Corrosion resistance
- Commonly used in biomedical applications
- Laser-sintered parts fulfil requirements of ASTM F1472 (for Ti6Al4V) and ASTM F136 (for Ti6Al4V ELI) regarding maximum concentration of impurities
- Very good bio-adhesion (cell growth tested with good results)

### Applications

- Functional prototypes
- Series-production parts
- Aerospace
- Motorsports
- Biomedical Implants

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## EOS Titanium Ti64ELI

### Product information

Due to excellent mechanical properties, corrosion resistance and a high degree of purity, the light metal alloy EOS Titanium Ti64ELI is suitable for demanding industrial applications. On an EOS DMLS system, the material can be used specifically for applications with high detail resolution. It is commonly used in biomedical applications and has a low specific weight. In terms of chemical composition and technical properties, EOS Titanium Ti64ELI meets the requirements of the ASTM F 136 norm.

### Properties

- Excellent corrosion resistance
- Potential biocompatibility
- Low specific weight
- Meets the requirements of the ASTM F136 norm

### Applications

- Aerospace
- Motor racing
- Medical, e.g. biomedical applications (where applicable, requirements regarding validation and legal regulations need to be observed, e.g. for commercial use as a medical device in most countries)