

Demonstrator Fact-Sheet

Impeller rotor with custom shape

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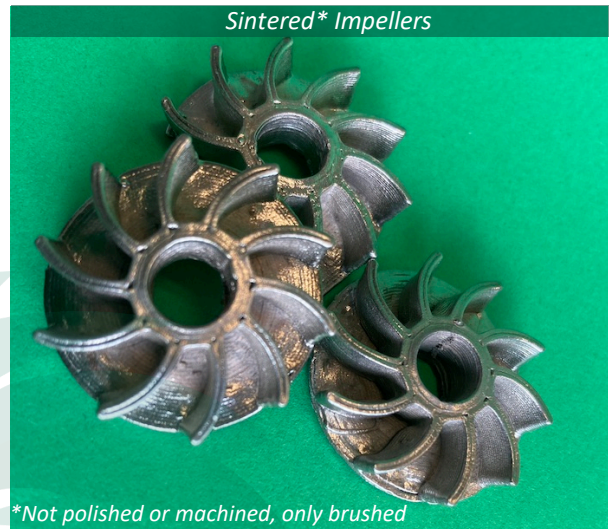


FENIX steel alloy is obtained with Mechanomade® process, using primary and **recycled metals**.

The Alloy has been developed to have optimal sinter-ability and mechanical properties.

The feedstock contains 82% metal by mass and it is suitable for most Fused Filament Fabrication printer to produce metal objects. Once fired in a sintering furnace, the result is 100% metal.

This and more complex geometries can not be easily obtained by machining, the manufacturing flexibility of FFF allows also to explore completely new and possibly more efficient designs.



Main Characteristic Figures

| | | Value |
|---------------------|-------------------|-------|
| Archimedean density | g/cm ³ | 6.65 |
| Porosity* | % | 16 |
| Hardness | HRC | 48 |

*porosity is determined by the STL geometry and toolpath strategy



Impeller, printed debinded and sintered.

Description of its use

An impeller is a rotor used to increase the pressure and flow of a fluid. The design of the impeller determines its efficiency, the material used for its manufacturing determines the application scenario. Metal impellers can be used with hot cases or in presence of dust.

Main Characteristic Figures

| | Value |
|--------------------|---------------|
| Recycled Material | 22% |
| Source of Material | RAMs |
| Binder Type | HDPE - PE wax |
| Printing Time | 1 hour |
| Printing Method | FFF/FDM |
| Debinding Method | Solvent |
| Sintering Method | Furnace |
| Weight Loss | 16,5% |
| Average Shrinkage | 20% |

Debinding

Apolar solvent debinding, 1h at 90° or 1day at room temperature

Sintering

Full metal sintering at 950°C, in inert or reducing atmosphere supported by alumina sand

Printers

Tested with:
Raise3D N2 & Pro2
Zortrax M200 & M300
Craftbot Plus PRO
Creality CR10 MAX
Ultimaker 3



The above data represent typical, average values obtained in accordance with accepted test methods. These data, however, as well properties of any product sample do not imply any legally binding assurance or guarantee. We recommend all users to determine the suitability of the products for their intended uses or for a specific purpose. These results have been obtained thanks to the H2020 Innovation Action – FENIX - this project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N. 760792

More information can be found at :



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