



**Printdur<sup>®</sup>**

Metal powder for Additive Manufacturing



# Know-How in metallurgy and manufacturing

Deutsche Edelstahlwerke offers a wide range of gas atomized Fe-, Ni- and Co-based metal powders. These are ideally adapted for additive manufacturing.

The know-how of Deutsche Edelstahlwerke is characterized by more than 160 years of experience in steel production. All products are manufactured using state-of-the-art technology - from powder and semi-finished products to ready-to-install components.

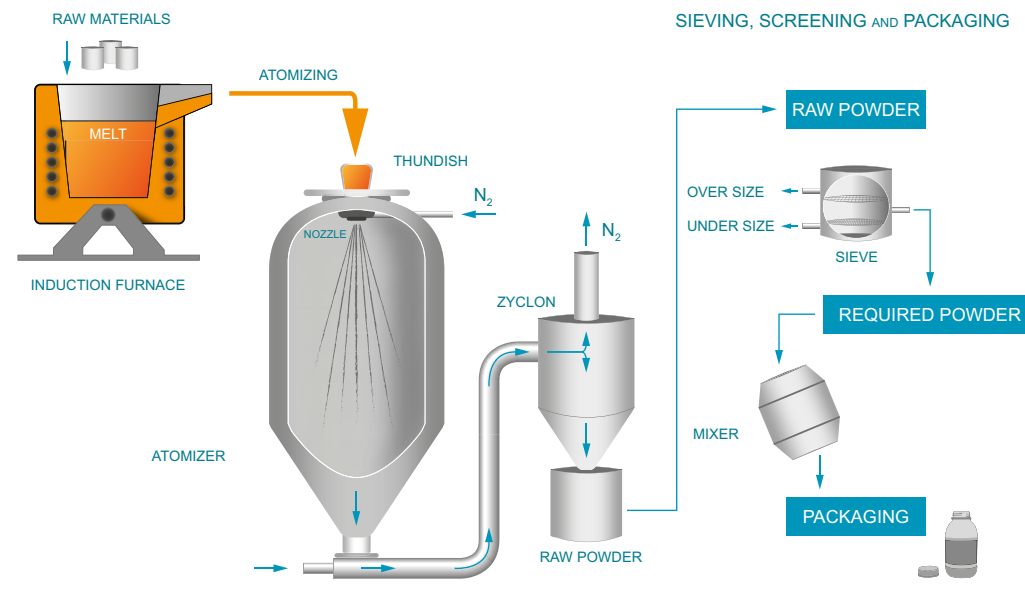
For powder production, raw materials are melted in an induction furnace and filled in an atomizer.

The atomization process takes place in a closed container in which the liquid melt is atomized under high pressure with an inert gas.

In gas atomization, the solidification rate is sufficiently low so that the particles are formed in spherical shape.

The spherical particles guarantee excellent flow characteristics and dosing of the powder. The powder is also separated under inert gas. This ensures that the powder cools down without surface oxidation. The result is a low oxygen content in the powder.

## Metal powder production: Fe-, Ni- and Co-based alloys



› Powder production at Deutsche Edelstahlwerke

## 4 reasons for Printdur®

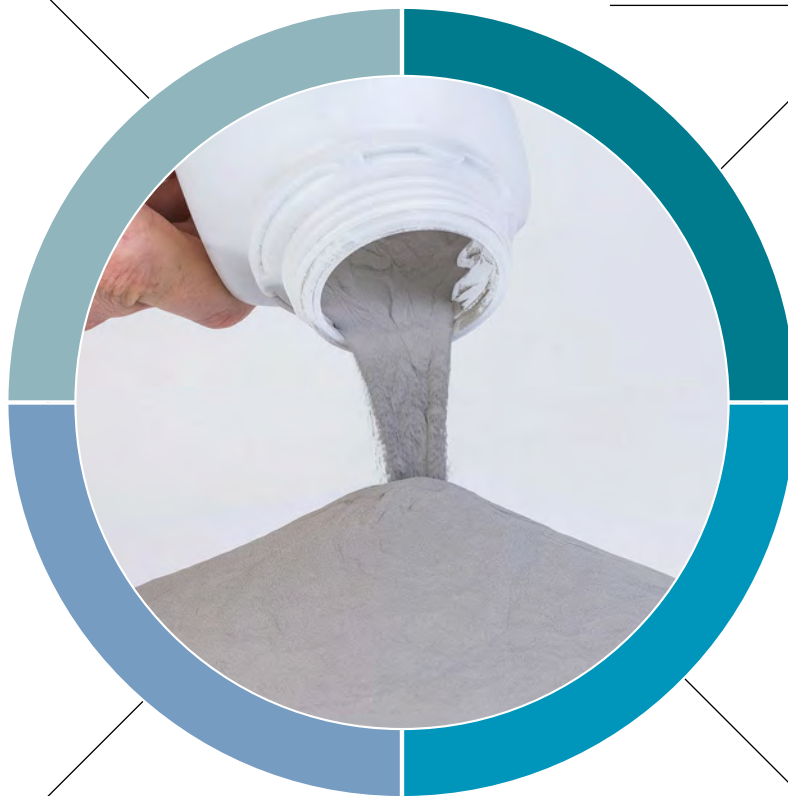
### Production line

Our powder production technology is state-of-the-art and allows an adapted powder processing according to your standards and specifications.

### Range of products

Benefit from the wide product range.

More than 200 alloys are already produced by powder metallurgy and can also be used for Additive Manufacturing.



### Highest quality

Best raw materials without impurities - all powders are controlled in our own laboratory.

### Competence cluster for Additive Manufacturing

Powder atomization and the latest AM-technology combined at one location. Using laser powder bed fusion we are able to atomize and test powder alloys in a very short time.



# The Printdur®-Portfolio<sup>1</sup>

## Iron-based alloys

Grade / Standard	Chemical composition [weight-%]									
	C	Si	Mn	Cr	Mo	Ni	Co	Cu	Nb	V
<b>Printdur® 4404</b> (1.4404 / 316 L)	< 0.03	1.0	1.0	17.0	2.0	13.0	-	-	-	-
<b>Printdur® Powderfort</b> (~1.2709)	< 0.02	0.5	0.5	-	5.0	18.0	13.5	-	-	-
<b>Printdur® 4545</b> (1.4545 / 15-5 PH)	< 0.04	0.3	0.6	15.0	-	5.0	-	3.0	0.3	-
<b>Printdur® 4548</b> (1.4548 / 17-4 PH)	< 0.07	1.0	1.0	17.0	-	4.0	-	4.0	0.3	-
<b>Printdur® 2343</b> (1.2343)	0.37	1.0	0.5	5.5	1.3	-	-	-	-	0.4
<b>Printdur® 2344</b> (1.2344)	0.40	1.0	0.5	5.3	1.3	-	-	-	-	1.0

## Nickel-based alloys

Grade / Standard	Chemical composition [weight-%]									
	C	Si	Mn	Cr	Mo	Fe	Co	Cu	Nb	
<b>Printdur® Ni625 LFe</b> (~2.4856 / ~Alloy 625)	< 0.03	0.5	0.5	22.0	9.0	< 0.5	< 0.5	-	3.5	
<b>Printdur® Ni625</b> (2.4856 / Alloy 625)	< 0.03	0.5	0.5	22.0	9.0	5.0	< 1.0	-	3.5	

## Cobalt-based alloys

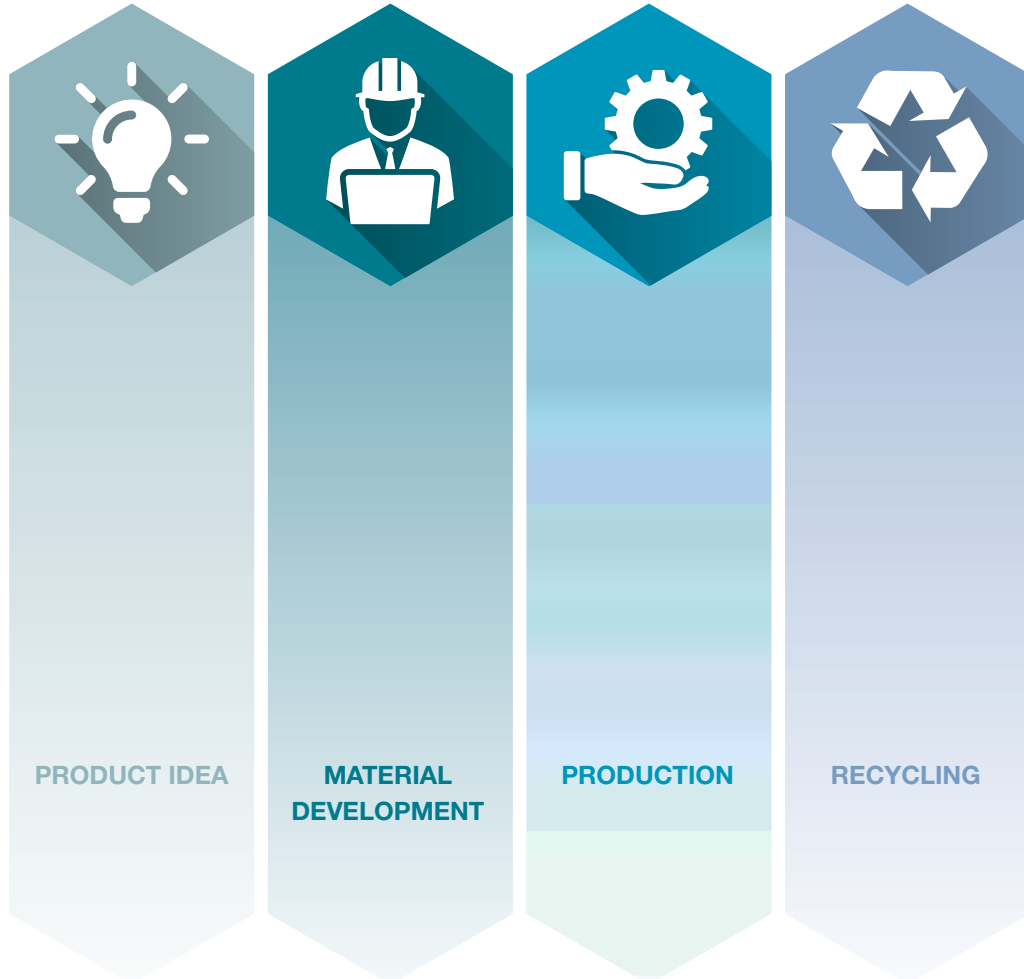
Grade / Standard	Chemical composition [weight-%]								
	C	Si	Mn	Cr	Mo	Ni	Fe	N	
<b>Printdur® CoCrF75</b> (ASTM F75)	< 0.14	< 1.0	< 1.0	28.0	6.0	< 1.0	< 0.75	< 0.25	

<sup>1</sup> In addition to the illustrated Printdur® grades, we manufacture other grades by powder metallurgy. Customer-specific solutions are possible. Our powders are available in a grain size distribution from 0 - 250 µm. For Additive Manufacturing, a grain size distribution from 20 - 53 µm is typically used. Fractionations according to customer requirements are possible. Just contact us. Our metal powder production is certified according to IATF 16949 (Quality Management Automotive) and DIN EN ISO 13485 (Quality Management Medical Devices).

## From your idea to the ready-to-use product

From your own alloying idea to the end product - we support you in every step

- Definition of requirements
- Material development
- Powder atomization: from very small to large quantities
- Testing and optimization of materials in the latest AM systems
- Support for powder recycling





**General note (liability)**

Not liable for printing errors, omissions, and/or changes. All statements regarding the properties and/or utilization of the materials or products mentioned are for the purpose of description only. Product specific data sheets have priority over the information provided in this brochure. The desired performance characteristics are binding only if exclusively agreed upon in writing at the conclusion of the contract.

Deutsche Edelstahlwerke  
Specialty Steel GmbH & Co. KG  
Auestraße 4  
58452 Witten

Telefon: +49 (0)2302 29 - 0  
Fax: +49 (0)2302 29 - 4000

[printdur@dew-stahl.com](mailto:printdur@dew-stahl.com)  
[www.dew-powder.com](http://www.dew-powder.com)

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Swiss Steel Group  
[www.swisssteel-group.com](http://www.swisssteel-group.com)