



Powder metallurgical hard alloys

Wear and corrosion resistant

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 many applications.

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.

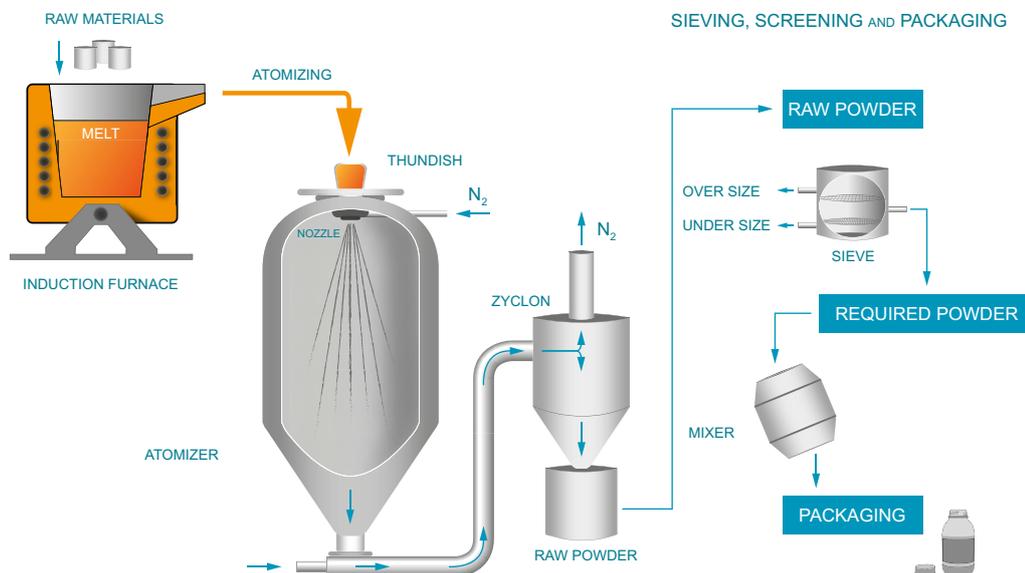
The know-how of Deutsche Edelstahlwerke is characterized by more than 160 years of experience in steel production. All products are manufactured using state-of-the-art technology - from powder and semi-finished products to ready-to-install components.

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.

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

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

► Powder production at Deutsche Edelstahlwerke



Wear and corrosion resistant

Hard alloys are metallic materials based on Fe, Ni or Co which contain a hard phase content of up to 50 Vol.-%. This makes them ideal for coating of e.g. highly stressed components and surfaces.

With experience of over a decade in successfully producing powder metallurgical material

grades, we have a wide product range of over 200 materials in our portfolio. We would be pleased to develop materials for your applications together with you.



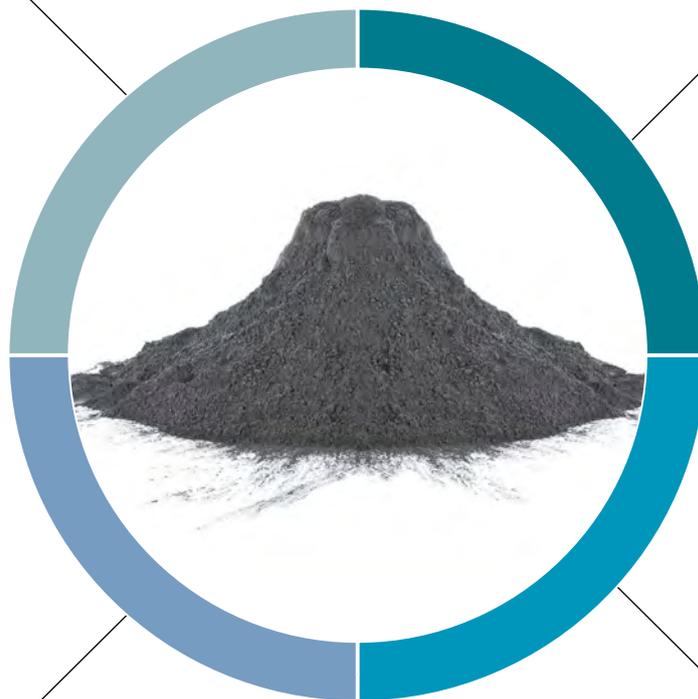
Tailor-made for every application

Iron-based

Our portfolio includes more than 50 different iron-based materials and ranges from low- to high-alloyed grades. We will gladly assist you selecting the optimal material for your application.

Cobalt-based

Our cobalt-based alloys offer excellent high-temperature strength and oxidation resistance in combination with high wear resistance. This makes them ideal for high-temperature applications.



Nickel-based

Our self-flowing nickel-boron-silicon alloys offer a wide smelting interval and thus the ideal conditions for processing by thermal spraying or build-up welding. In addition they're characterized by a high wear resistance. For applications that also require very good corrosion and oxidation resistance, our nickel-chromium alloys are the optimal choices.

It's all in the mix

In addition to „pure“ hard alloys, we also offer powder mixtures for build-up welding and thermal spraying. For example, our material SuperDur WC-P has a content of up to 60 weight-% fused tungsten carbides (FTC). The addition of FTC leads to an exceptionally high resistance to coarse mineral wear.

Iron-based alloys*

Low alloyed alloys

Alloy / Standard	Chemical composition [Weight-%]					
	C	Si	Mn	Cr	Mo	V
SW-5407	0.10	0.5	0.9	0.5	0.7	0.3
Bainidur AM	0.22	0.8	1.4	1.0	1.0	-

Corrosion resistant alloys

Alloy / Standard	Chemical composition [Weight-%]								
	C	Si	Mn	Cr	Mo	Ni	Co	Cu	Nb
AS 4-P/LC (1.4404)	< 0.03	1.0	1.0	17.0	2.0	13.0	-	-	-
Fesit 604-P	0.20	0.5	0.5	15.0	2.5	-	15	-	-
Antinit DUR 300	0.2 ¹⁾	5.5	6.3	21.5	-	8.0	-	-	-
HSA	1.0 ²⁾	-	21.0	18.0	2.0	< 0.1	-	-	-
17-4 PH (1.4548)	< 0.07	0.5	< 1.0	17.0	-	4.0	-	4.0	0.3

¹⁾ C + N = 0.2

²⁾ C + N = 1.0

Wear resistant alloys

Alloy / Standard	Chemical composition [Weight-%]								
	C	Si	Mn	Cr	Mo	Ni	Co	V	W
Powderfort (~1.2709)	< 0.02	0.5	0.5	-	5.0	18.0	13.5	-	-
FeCrV1-P	0.55	0.3	0.3	4.5	2.7	-	-	1.2	2.2
FeCrV10-P	2.50	1.0	1.0	4.5	1.2	-	-	10.0	-
FeCrV12-P	2.80	1.0	1.0	4.5	1.2	-	-	12.0	-
FeCrV15-P	4.30	1.1	1.1	13.0	1.2	-	-	15.0	-
SZW 5033	2.10	1.3	1.0	28.5	5.0	11.0	-	-	-

*This is only an excerpt from our portfolio.

We would be pleased to develop a material for your application together with you. Our materials experts will gladly assist you.

Our metal powders are available in a grain size distribution from 0 - 250 µm. Fractionations and alloy specifications according to customer requirements are possible. Please contact us. Our metal powder production is certified according to IATF 16949 (Quality Management Automotive) and DIN EN ISO 13485 (Quality Management Medical Devices).

Nickel- and cobalt-based alloys*

Corrosion and temperature resistant nickel alloys

Alloy / Standard	Chemical composition [Weight-%]						
	C	Si	Mn	Cr	Mo	Fe	Nb
Nibasit 625-P (2.4856/ Alloy 625)	< 0.03	0.5	0.5	22.0	9.0	4.0	3.5
Nibasit 625-P/LFe (2.4856/ Alloy 625)	< 0.03	0.5	0.5	22.0	9.0	< 0.5	3.5

Wear resistant nickel alloys

Alloy / Standard	Chemical composition [Weight-%]							
	C	Si	P	Cr	Mo	Fe	B	Al
Niborit 227-P	< 0.05	2.4	1.8	-	-	-	0.8	-
Niborit 234-P	0.20	2.8	1.8	4.3	3.0	-	1.1	-
Niborit Al 0,8-P	0.25	3.1	-	4.2	-	0.9	0.9	1.2
Niborit 4-P	0.25	3.3	-	8.0	-	2.5	1.6	-
Niborit 5-P	0.50	4.0	-	12.0	-	3.5	2.2	-
Niborit 6-P	0.75	4.4	-	15.5	-	3.5	3.2	-

High temperature resistant cobalt-based alloys

Alloy / Standard	Chemical composition [Weight-%]							
	C	Si	Mn	Cr	Mo	Ni	Fe	W
Celsit 21-P	0.25	1.2	0.5	27.0	5.3	3.0	1.0	-
Celsit V-P	1.10	1.2	0.5	28.0	-	1.0	1.0	4.5
Celsit SN-P	1.40	1.2	0.5	30.0	-	1.0	1.0	8.5
SZW 5021	1.90	1.2	0.5	26.0	-	22.0	1.0	12.5
Celsit N-P	2.40	1.2	0.5	32.0	-	1.0	1.0	12.5
CoCrF75	< 0.14	< 1.0	< 1.0	28.0	6.0	< 0.1	< 0.75	-

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More than metal powder

Excellent properties due to optimal microstructure – Powder metallurgical tool steel

In addition to the smelting metallurgical production, we also offer cold work and high speed tool steels produced by powder metallurgy. In contrast to tool steels produced by smelting metallurgy, powder metallurgical tool steel offers optimized properties regarding wear, toughness and hardness. These properties are achieved by a fine-grained and segregation-free microstructure. This can increase the service life of highly stressed components. Learn more on:

www.dew-powder.com

Printdur-Portfolio for Additive Manufacturing

In addition to our hard alloys and our powder metallurgical tool steels, we offer metal powders for Additive Manufacturing. We provide you with a wide range of products, state-of-the-art production facilities combined with highest product quality.

Whether in Aerospace, medical technology, toolmaking or automotive lightweight construction. Additive Manufacturing is on the advance and high-quality metal powders are elementary.

In addition to our wide Printdur-Portfolio, we also offer our customers the opportunity to develop tailor-made materials together. Here, we can fall back on classic powder steel grades as well as bainitic steels or martensitic tool steels. The offer of Deutsche Edelstahlwerke goes even further. Discover:

www.dew-powder.com

Highest quality, individual services and direct customer proximity are only some of our strengths. Our experts are at your disposal. Contact us.

You interested in other special steel solutions? Learn more on: www.dew-stahl.com

General note (liability)

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