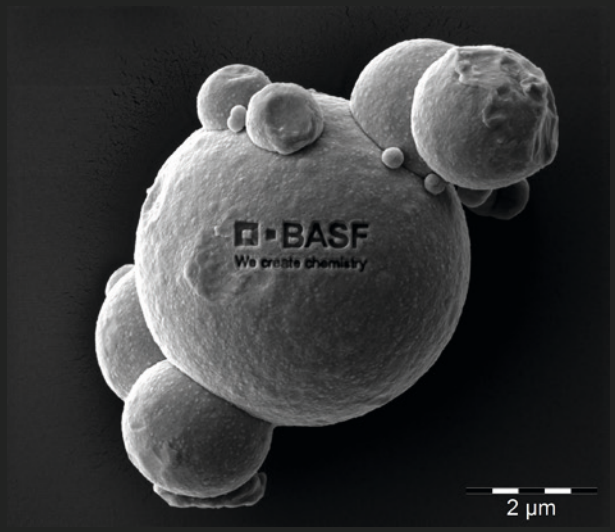


CARBONYL IRON POWDER

Carbonyl Iron Powder

100 YEARS

of innovation

– made by the inventor.

BASF

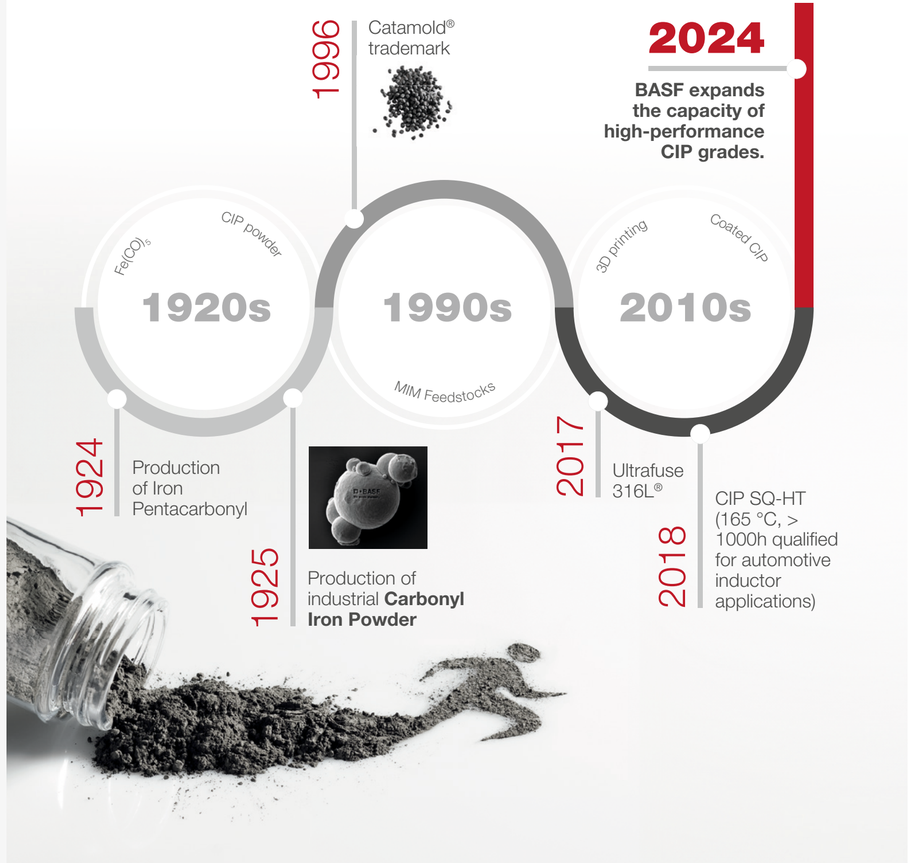
We create chemistry

INTRODUCING BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 110,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world.

The key to success is innovation, combined with quality and tradition.

TRADITION meets INNOVATION

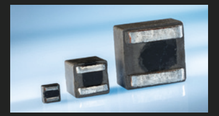


BASF – the inventor of carbonyl iron powder

BASF is the inventor and one leading producer of Carbonyl Iron Powder (CIP) worldwide.
In 1924, BASF filed the first patent for to produce iron pentacarbonyl (IPC) and started the mass production of IPC.
In 1925, BASF invented and started the carbonyl decomposition process for the production of CIP.
In the last 100 years, BASF has been continuously inventing novel CIP grades via smartly combing the pioneering process knowhow, versatile coating technologies and deep chemistry knowhow.

In 2024, BASF expands the capacity of high-performing CIP grades and launches the finest soft CIP powder - CIP SF and the coated SF grades (D50 below 2.5 µm).

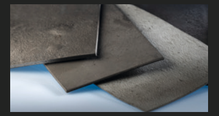
Together with our global customers, BASF continuously develops various areas of applications for CIP, including inductive electronic components (inductor), magneto rheological fluids (MRF), electromagnetic interference shielding/microwave absorption/-radar absorption material (EMI/MWA/RAM), metal injection molding (MIM), production of diamond tool (DT), powder metallurgy (PM), nutrition supplement and earth remediations.



Inductive Electronic Components

Metal Injection Molding and Powder Metallurgy

Diamond Tools



Microwave and Radar Absorption

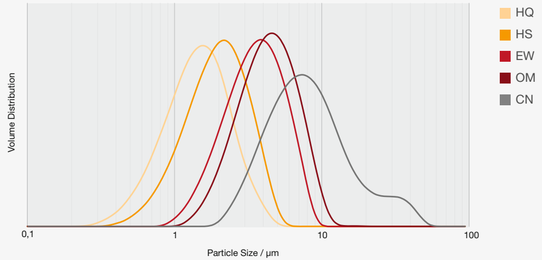
Product	Soft/hard	D50, µm	Coating
CIP SF	Soft	max. 2.5	Silicated
CIP SF-I	Soft	max. 2.5	Insulated
CIP SQ	Soft	3.9-5.0	Silicated
CIP SQ-I	Soft	3.8 -5.4	Insulated
CIP SQ-R	Soft	3.8 - 5.4	Insulated
CIP SQ-W	Soft	4.3 - 5.5	Insulated
CIP SQ-HT	Soft	4.3 - 5.5	Insulated
CIP SW-S	Soft	3.0 - 4.5	Insulated
CIP EM	Hard	4.5 - 6.0	No coating
CIP EW	Hard	3.0 - 4.0	Silicated
CIP EW-I	Hard	3.0 - 4.0	Insulated
CIP ER	Hard	max. 4.5	Silicated
CIP ET	Hard	max 5.5	Silicated
CIP ET-I	Hard	max. 6	Insulated
CIP HS	Hard	1.8 - 2.3	No coating
CIP HF	Hard	max. 2.5	No coating
CIP HQ	Hard	max. 2.0	No coating
CIP HQ UF	Hard	max. 1.5	No coating
CIP HQ-I	Hard	1.2-2.3	Insulated
HQ-I premium	Hard	1.4-1.7	Insulated
CIP SM	Soft	max 3.5	No coating
CIP CC	Soft	3.8-5.3	Silicated
CIP CD	Soft	3.5-6.0	No coating
CIP CS	Soft	6.0 - 7.0	No coating
CIP CN	Soft	6.5 - 8.0	No coating
CIP CM	Soft	7.0 - 9.5	No coating
CIP CF	Soft	max 9.5	No coating
CIP CV	Soft	max. 6	Silicated
CIP CP	Soft	max. 9.5	No coating
CIP OM	Hard	3.9-5.2	No coating
CIP OS	Hard	3.4-4.4	Silicated
CIP OM-C	Hard	3.8-5.1	Silicated
CIP OF	Hard	max. 5.2	No coating
CIP OP	Hard	max. 7	No coating
CIP OV	Hard	max. 7	Silicated
ZERO VALENT IRON MICROSPHERES 200	Hard	max. 5.2	No coating

Unique product properties	Main target applications
Fine CIP, Good electromagnetic performance	Inductor
Fine CIP, High resistivity	Inductor
Good electromagnetic performance	Inductor, MRF
High resistivity	Inductor
Anti-corrosion stability	Inductor
Good temperature stability	Inductor
High temperature stability, high breakdown voltage	Inductor
Low core loss	Inductor
	Inductor
Excellent absorption	EMI/MWA/RAM
High resistivity	EMI/MWA/RAM
Excellent absorption	EMI/MWA/RAM
Excellent absorption	EMI/MWA/RAM
High resistivity	EMI/MWA/RAM
Fine CIP	Inductor, EMI/MWA/RAM, MIM
Fine CIP	Inductor, EMI/MWA/RAM, MIM
Fine CIP	Inductor, EMI/MWA/RAM, MIM
Ultra-fine CIP	Inductor, EMI/MWA/RAM, MIM
Fine CIP, High resistivity	Inductor
Ultra fine CIP and high resistivity	Inductor
Fine CIP	DT, MIM, PM
	MIM, MRF
High purity	DT, MIM, PM, MRF
High purity	DT, MIM, PM
High purity	DT, MIM, PM
Coarse CIP	DT, MIM, PM
Ultra-high purity with strict analytic control	Food/nutrition relevant applications, MIM and DT
	Inductor, DT
	DT
Good sintering property	MIM, DT, Earth remediation
Good sintering property	MIM, Earth remediation
Good sintering property	MIM
Ultra-high purity with strict analytic control	Food/nutrition relevant applications, MIM and DT
	MIM, DT, Earth remediation
	MIM, Earth remediation
High surface area	Earth remediation

DIFFERENCE MATTERS

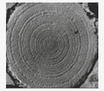
Our extensive expertise in the production of CIP allows us to accurately control the properties of our powders. In addition to our broad standard portfolio, we are able to develop CIP grades with properties, which exactly correspond to the precise requirements of the individual application. Generally, two product CIP groups can be distinguished: unreduced or “hard” grades and reduced or “soft” grades. Both of which can finally also be coated depending on customer’s desired properties.

Hard and soft grades are available with different particle size distributions:



Plot of Beckman Coulter laser diffraction particle sizing analyzer.

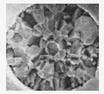
Hard Grades



These grades are produced from the primary decomposition products without further chemical processing resulting in the typical onion skin structure.

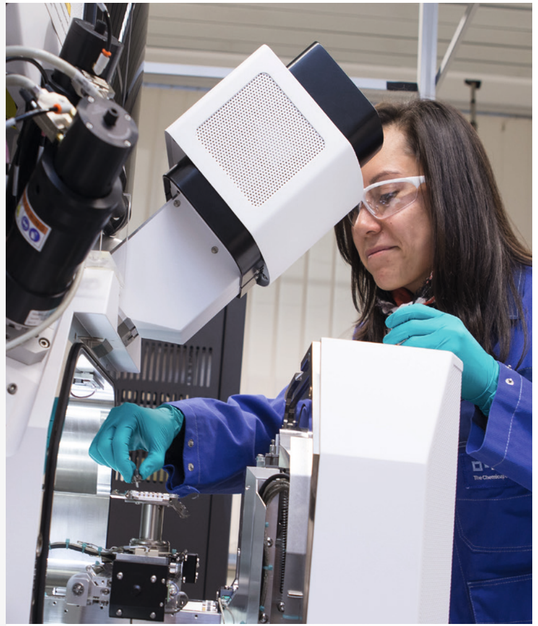
Typical properties of hard grades:
- Onion skin structure
- Mechanically hard
- Fe content up to 97.8 %
- Other elements (typically): C max. 1.0 %, N max. 0.9 %, O max. 0.5 %

Soft Grades



These grades are produced by annealing of hard grades under hydrogen. In this process, the onion skin structure is lost, and the content of N, C, and O is reduced.

Typical properties of soft grades:
- Polycrystalline structure
- Mechanically soft
- Excellent compaction properties
- Fe content up to 99.8 %
- Low C, N, and O content



Carbonyl iron powder by BASF – Benefit from tradition and innovation

CIP by BASF offers you:
Mean particle size < 10 microns
- Unparalleled chemical purity
- Excellent lot-to-lot consistency
- Almost one century of experience in CIP production

BASF offers you:
- Reliability and sustainability by the world’s leading chemical company
- Worldwide network of sales representatives
- Global R & D team with outstanding competencies in chemistry, formulation and processes

Please contact us to discuss the requirements of your CIP application.

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