TECHNICAL DATA SHEET

Rev. N° 3 - 29.07.2025

2MS.005
Boron Nitride Powders

Summary

Final Advanced Materials Sàrl
4 avenue de Strasbourg
68350 Didenheim – France
Tel : +33 (0) 3 67 78 78 78

Final Advanced Materials GmbH
Basler Strasse 115
79115 Freiburg – Deutschland
Tel: + 49 (0) 761 47 87 336

www.final-materials.com

Overview

Final Advanced Materials offers a wide range of boron nitride powders, purity and grain sizes from 1 to more than 100µm. The grades of these powders may vary depending on:

- Purity
- Grain distribution and size
- Level of agglomeration
- Specific surface area
- Additives

These characteristics affect:

- Interaction with other materials
- Dispersion of particles
- Lubrication
- Thermal conductivity
- Electrical insulation

The high degree of crystallinity gives to this material incredible lubricating properties. It is used as charge to increase thermal conductivity of a piece.

General Applications

- Removal
- Lubrication
- Coating
- Polymer filler
- Filler to enhance the thermal conductivity of plastic materials

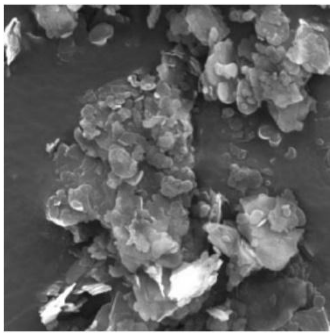
General Characteristics

- High thermal conductivity because of the BN properties
- High resistance to oxidation
- Very good electrical insulation
- High heat dispersion
- Perfect cleanliness
- Easy implementation
- Usure minimale des outils par rapport aux autres charges grâce à sa dureté faible
- Use at very high temperatures:
  - 900°C in air
  - up to 2500°C in a vacuum or inert atmosphere
- Low coefficient of friction, very good lubricant
- Not wet by most metals or glasses.

Product Range

Grade 301

Grade 301 can be distinguished by its structure in platelet and its high purity. Its broad grain size spectrum ensures a lot of applications: this powder improve greases and oils thermal properties and can be used as a charge in polymeric and release agents.

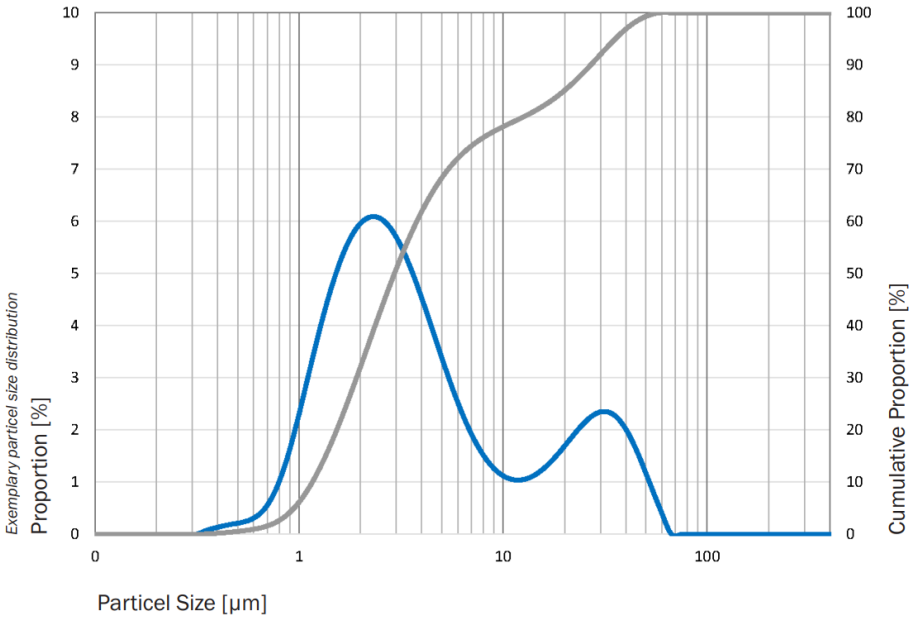


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- Very high thermal conductivity
- Good electrical insulator
- High purity
- Safe

Application

- Improved high temperature properties of oils and greases
- Filler for separating agents and plastics



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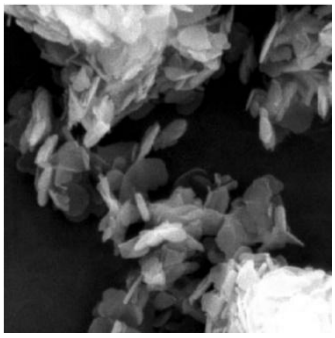
Grade 302

Grade 302 is made of particularly thin particles and has a very reduced grain spectrum. This powder improves greases and oils thermal properties and can be used as a charge in polymeric and release agents.

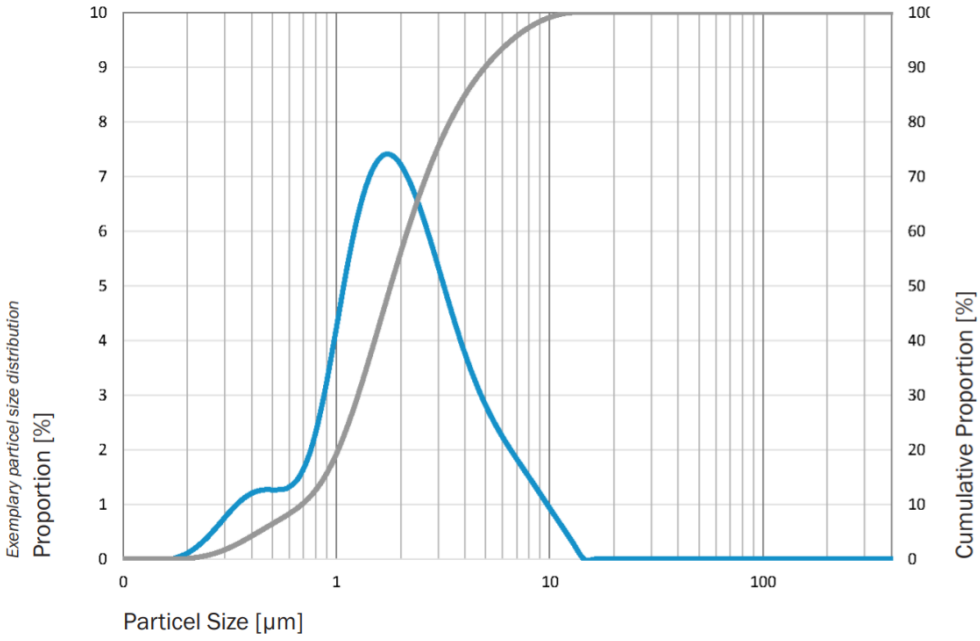
Property



- Optimal separator and lubricant effect, even in extreme temperatures
- High heat dispersion in liquid systems
- Good electrical insulator
- Granulometry D_{50} : 3 µm
- High purity
- Few agglomerates
- High specific surface area
- Safe

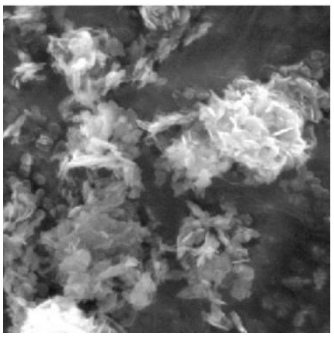
Applications

- Improved high temperature properties of oils and greases
- Filler for separating agents



Grade 303

Grade 303 can be distinguished by its platelet structure and its high purity. Free of agglomerates. It is use as charge and additive to improve the thermal resistance and conductivity.

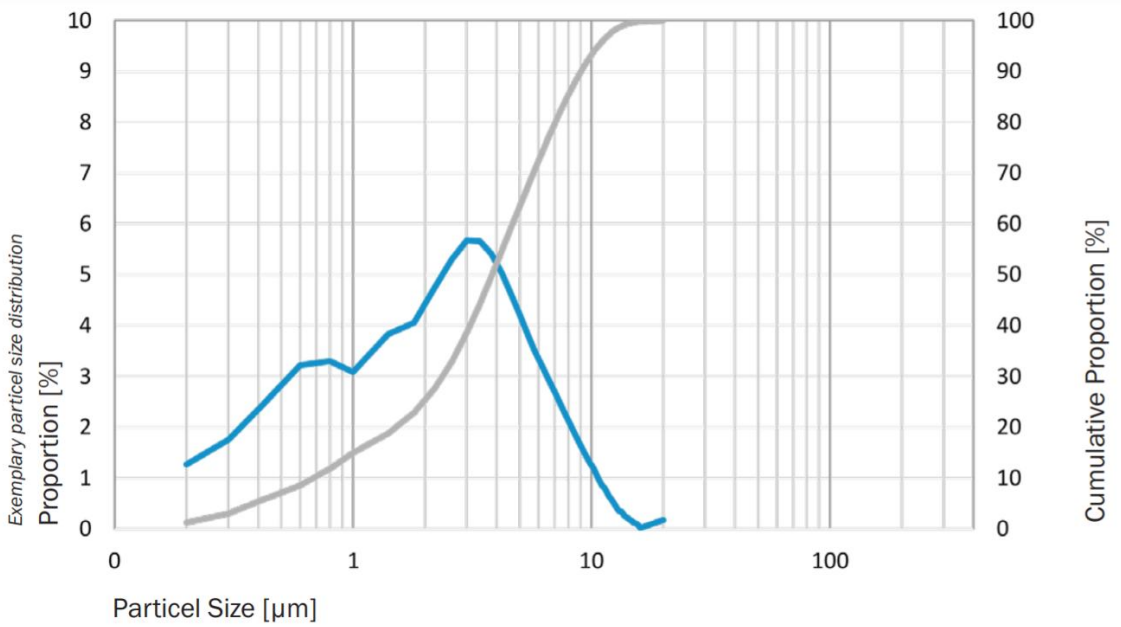


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- Good electrical insulator
- No agglomerates
- Safe

Applications

- Improved high temperature lubricating properties of oils and greases
- Filler for separating and lubricating agents and plastics



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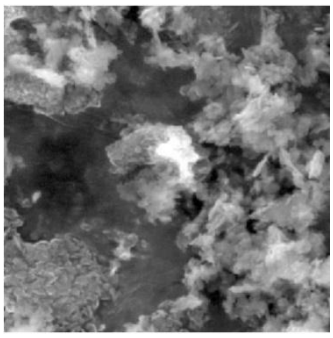
Grade 304

Grade 304 has a reduced grain spectrum. Many applications benefit from the fineness of its particles and the low risk of agglomeration.

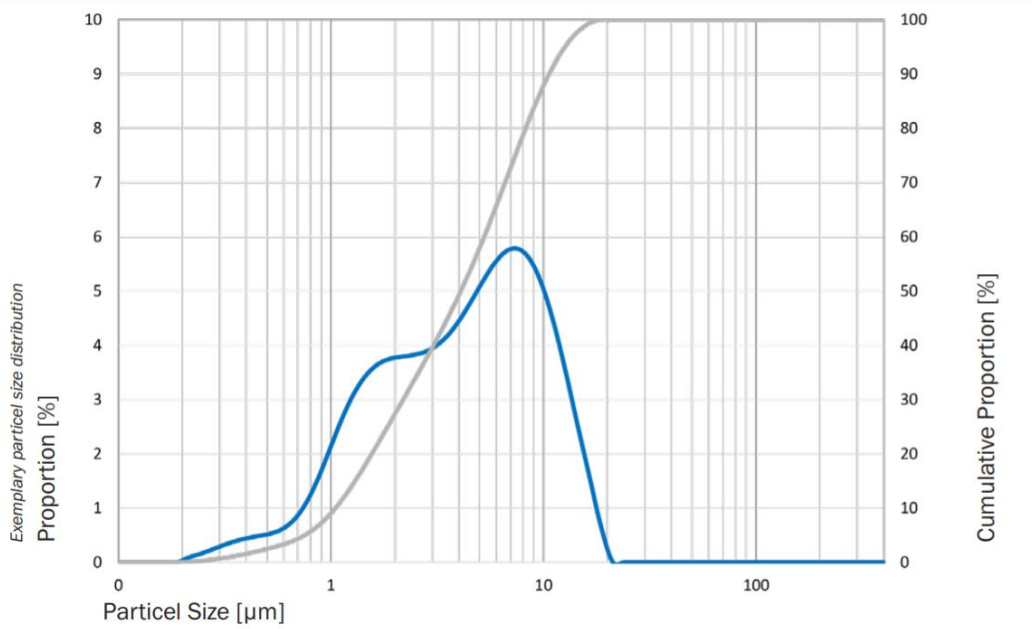


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- Very high thermal conductivity
- High heat dispersion in liquid systems
- Good electrical insulator
- High purity
- Very few agglomerates
- High specific surface area
- Safe

Applications

- Additive for liquid separating and levelling agents
- Additive for separating and lubricating agents
- Filler for applications using plastics
- Treats coatings



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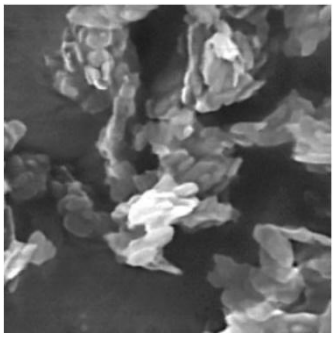
Grade 305

Grade 305 presents very fine particles. It is used as a high temperature additive for lubricants.

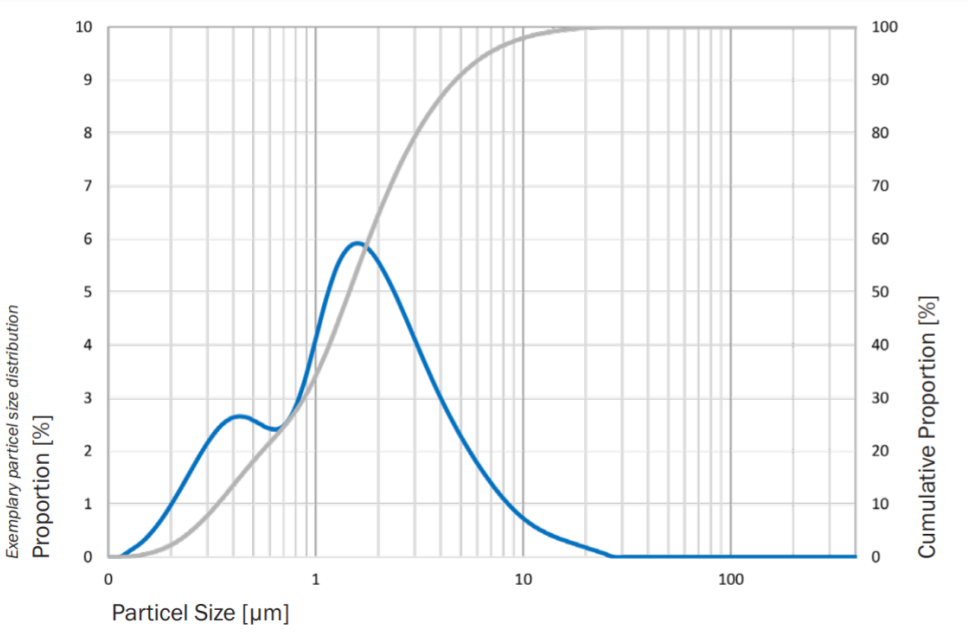


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- High heat dispersion in liquid systems
- Good electrical insulator
- High purity
- Granulometry D_{50} : 2 µm
- Very few agglomerates
- High specific surface area
- Safe

Applications

- Additive for liquid separating and levelling agents
- Additive for separating and lubricating agents
- Filler for coatings



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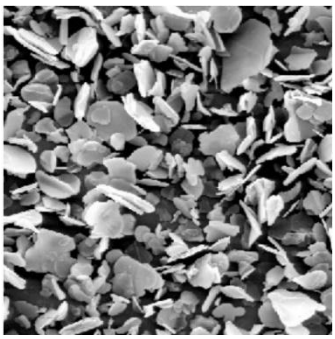
Grade 307

Grade 307 has a coarse grain size and bigger particles than the precedent grades. Its particularly low specific surface area allows more concentrated charges with very little changed viscosity. It composes the ideal charge for plastic materials: their thermal conductivity is increased without changing their electrical insulating properties.

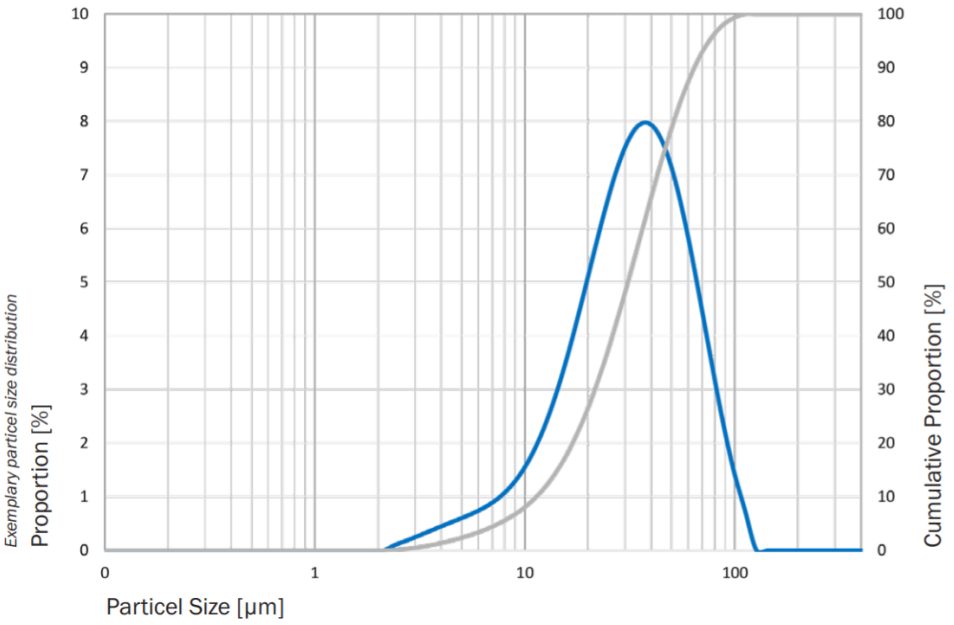


Property

- Very high conductivity, even at low concentration
- Good electrical insulator
- High purity
- Allows concentrated fillers
- Big monocrystals D_{50}: 45 µm
- Low viscosity increase
- Minimum tool wear

Applications

- Filler for thermally conductive pastes
- Filler for silicone resins, thermoplastics, hard plastics



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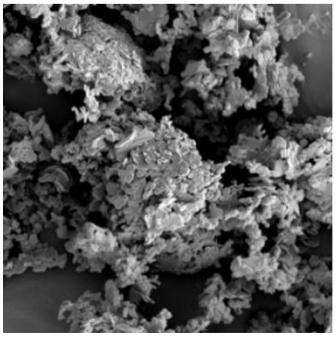
Grade 308

Grade 308 has an ideal structure for charges with low to average concentration. The powder allows to correctly dissipate the heat and provides a very good thermal conductivity. It composes the ideal charge for plastic materials.

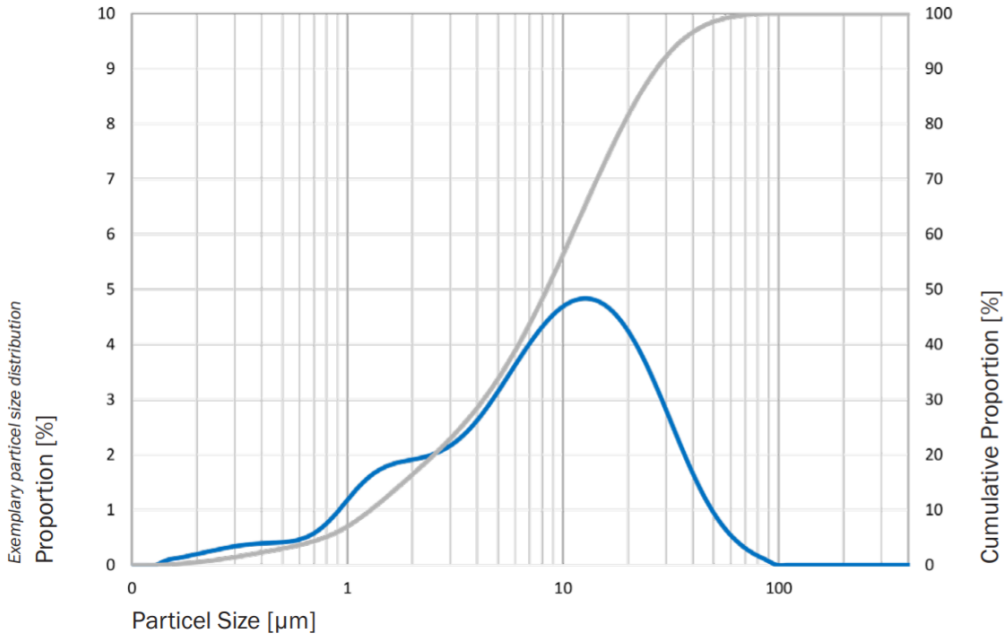


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- Very good thermal conductivity
- Good electrical insulator
- High purity
- Big monocrystals D_{50} :10 µm
- Allows concentrated fillers
- Average specific surface area
- Minimum tool wear

Applications

- Filler for thermally conductive pastes
- Filler for silicone resins, hard plastics
- Additive for lubricating agents



Grade 309

Grade 309 is distinguished by a particularly high specific surface area. The micro-grains crystallites constitute big agglomerates of average sizes of 9 µm. The important surface provides a good distribution in fluid systems.

Property

- High degree of crystallinity
- Good electrical insulator
- Specific surface area très élevée
- Structure cristalline turbostratique
- Significant increase in viscosity with minimal addition of powder
- D50 : 9 µm

Applications

- Filler for improving high temperature properties in oils and greases
- Increased thermal conductivity of plastics
- Filler for coatings

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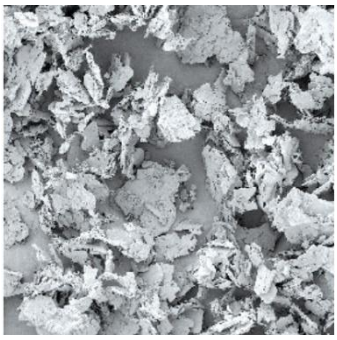
Grade 310

Grade 310 has an outstanding purity and offers exceptional lubricant properties. In addition, the grain size of the powder (D_{50} :12 µm) and its specific surface area are especially low. When the powder is used as a charge, the viscosity of the matrix is a little bit influenced.

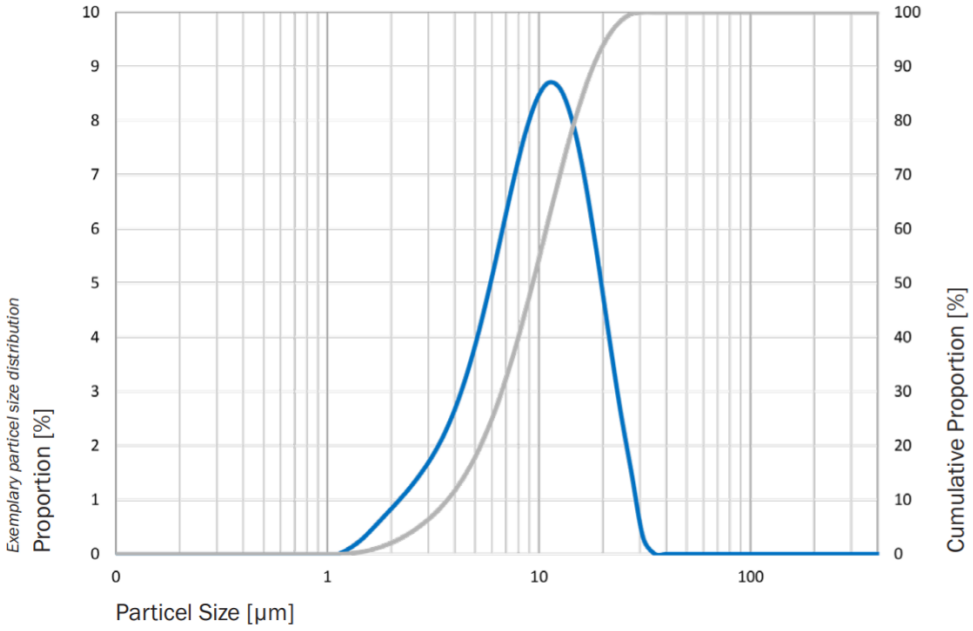


Property

- Optimal separator and lubricant effect, even in extreme temperatures
- Very high thermal conductivity
- Good electrical insulator
- High purity
- Low specific surface area
- Minimum tool wear

Applications

- Filler for improving high temperature properties in oils and greases
- Increased thermal conductivity of plastics
- Filler for waterproofing coatings



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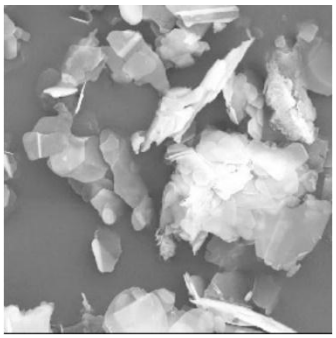
Grade 311

Grade 311 is characterised by its high purity and its flowability. It is often used as charge and additive in plastics. It allows to increase the thermal conductivity.

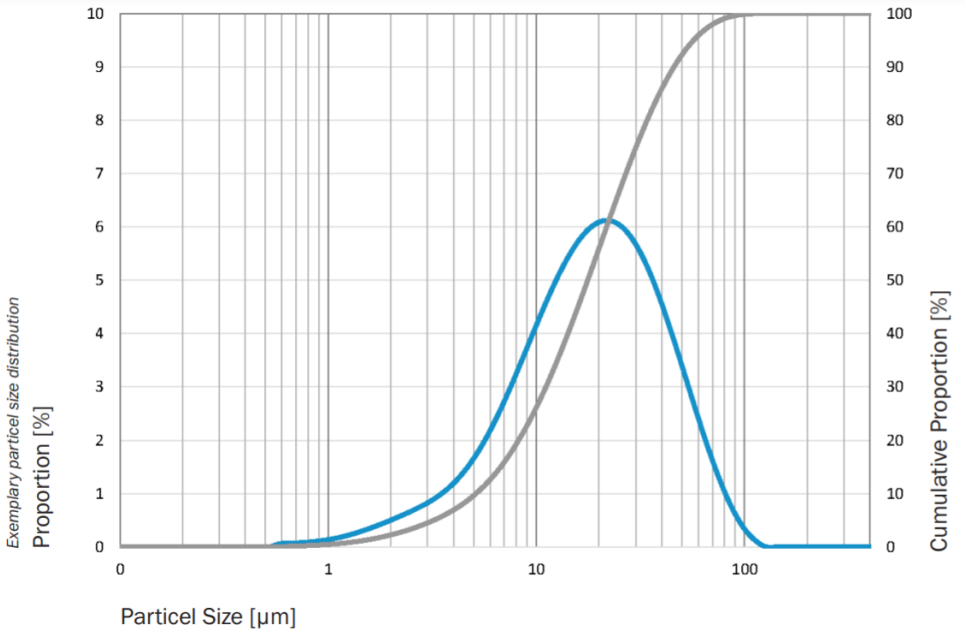


Property

- Very high flowability thanks to its granular structure composed of agglomerates of average resistance
- Exceptional lubricating properties
- Very good thermal conductivity
- Good electrical insulator
- Allows concentrated fillers
- Low increase in viscosity
- Minimum tool wear
- D_{50} : 20 µm

Applications

- Filler for silicone resins and thermosets
- Increased thermal conductivity of plastics
- Filler for composite



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Grade 312

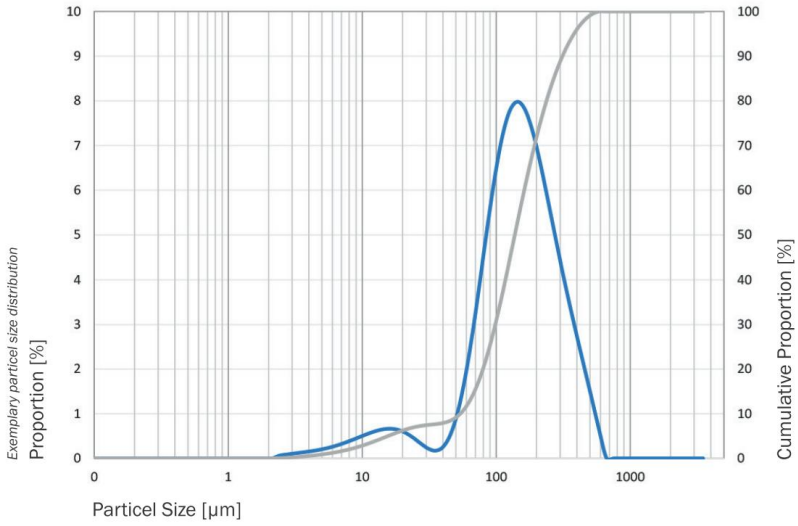
Due to a specific agglomeration of large single crystallites to agglomerates of medium density, this grade is very well suited as filler and additive in plastics, for increasing the thermal conductivity and keeping the electrical insulation at the same time.

Property

- Very high thermal conductivity
- Increase in through-plane thermal conductivity
- High filling degree possible in the system
- Low viscosity increase
- Good free flowing characteristics due to the granular particle structure
- Electrically insulating
- Flame-retardant effect in plastics
- Minimum tool wear compared to other filler materials

Applications

- Filler in plastics to increase the thermal conductivity
- In applications without limitation in particle size
- Liquid systems such as adhesives and potting compounds
- Thermal interface materials, gap fillers



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Grade 313

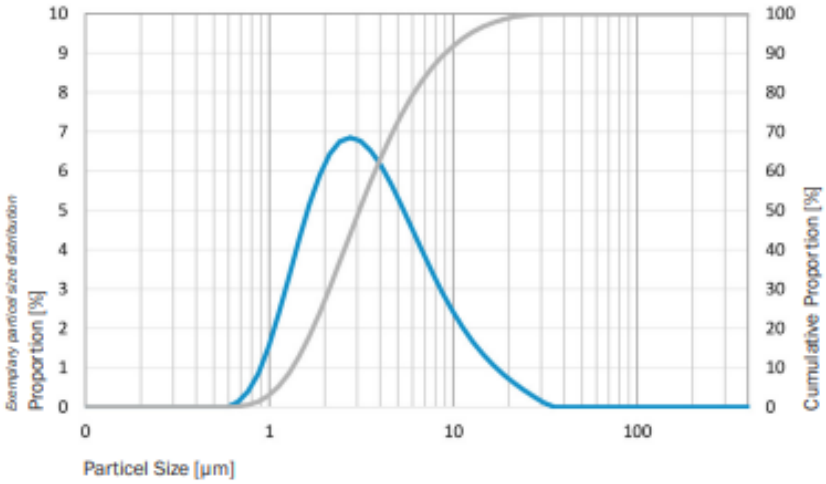
Grade 313 is a Boron Nitride powder with good crystallinity and with a high efficiency level. Its fine particle size and low agglomerate content makes it suitable for a wide variety of applications.

Property

- Optimum release and lubricating properties - also at high temperatures
- Very good distribution within liquid systems
- Electrically insulating
- High purity
- Very low formation of agglomerates
- High specific surface area
- Physiologically safe

Applications

- Filler and additive in liquid release agents and refractory coatings
- High temperature additive in lubricants



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Grade 315

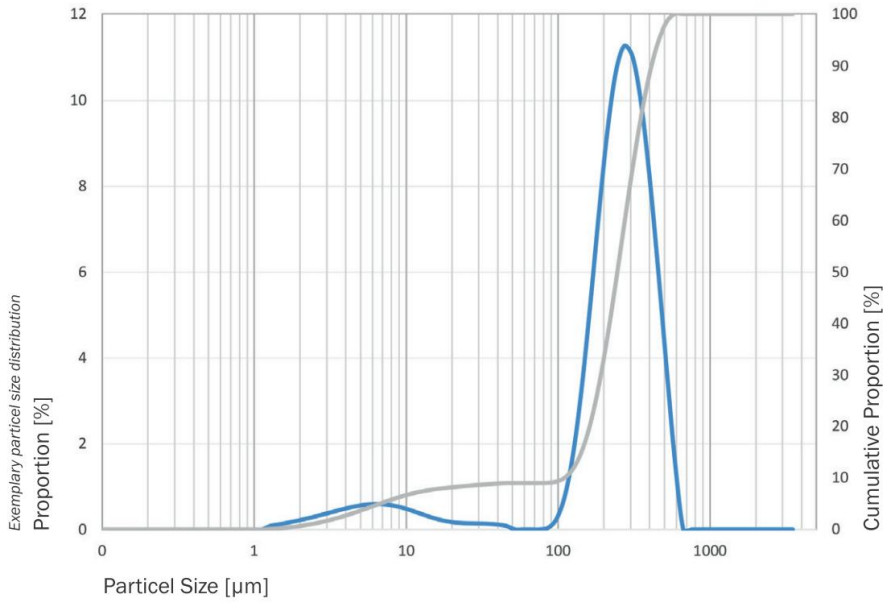
Due to a specific agglomeration of large single crystals to agglomerates of high density, this quality is particularly suitable as filler and additive in plastics for increasing the thermal conductivity while keeping the electrical insulation at the same time.

Property

- Very high thermal conductivity
- High grade of agglomeration
- High filling degree possible in the system
- Low viscosity increase
- Best free flowing characteristics due to the granular particle structure
- Electrically insulating
- Flame-retardant effect in plastics
- Minimum tool wear compared to other filler materials

Applications

- Filler in plastics to increase the thermal conductivity
- In applications without limitation in particle size
- Liquid systems such as adhesives and potting compounds
- Thermal interface materials, gap fillers



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Grade 316

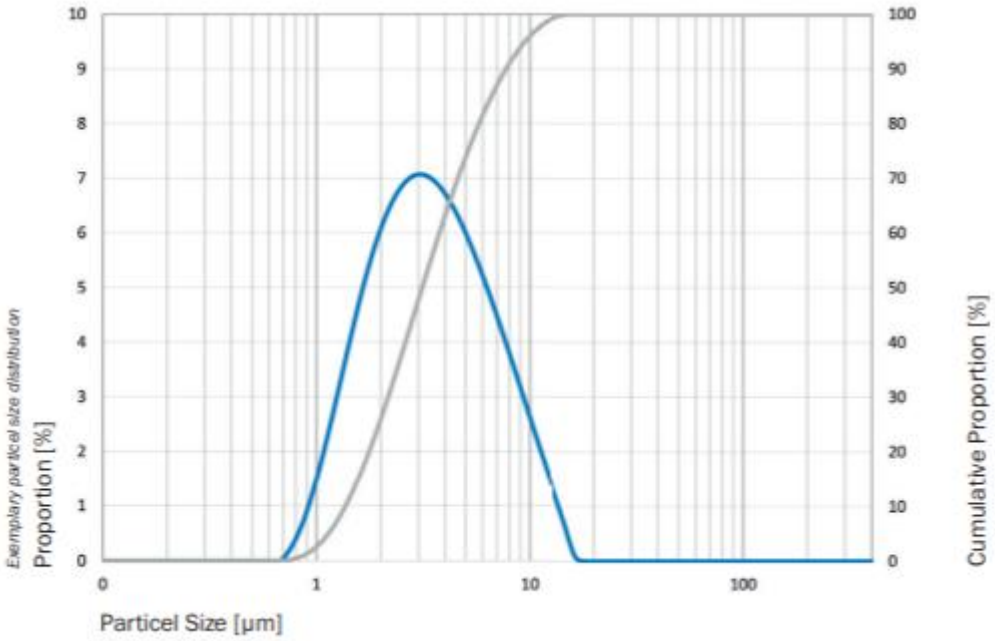
This grade is a boron nitride powder with high purity and a well-defined platelet structure. Due to its good crystallinity, the powder is suitable as a filler and additive for a wide range of applications.

Property

- High fineness
- Low agglomeration
- High purity
- Good release and lubricating properties
- Electrically insulating
- Good thermal conductivity
- Flame-retardant effect in plastics
- Minimal tool wear compared to other fillers
- Physiologically safe

Applications

- Filler in release agents and lubricants
- Filler in plastics to increase the thermal conductivity
- In applications with particle size limitation



Technical Data

Property	Unit	Boron Nitride Powders												
Item N°		116-0301	116-0302	116-0303	116-0304	116-0305	116-0307	116-0308	116-0309	116-0310	116-0311	116-0312	116-0313	116-0315	116-0316
Colour		white	white	white	white	white	white	white	white	white	white	white	white	white	White
BN	%	>98.5	>98.5	>98.5	>98.5	>98.5	>98.5	>98.5	>97	>98.5	>99.0	>99.1	>99	>99.3	> 99
O_2	%	<1.5	<1.2	<1	<1.7	<1.5	<0.5	<1.3	<2.5	<0.7	<0.5	<0.5	<1.0	<0.5	< 1,0
B_2O_3	%	<0.1	<0.2	<0.1	<0.2	<0.1	<0.1	<0.2	<0.5	<0.3	<0.1	<0.1	<0.2	<0.3	< 0,3
C	%	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.05	< 0,1
Specific Surface Area (BET)	**m^2/g**	~ 12	~ 20	~ 13	~ 13	~ 20	~ 1	~ 14	30	7	~3	~4	~13	~2	18-25
Average Grain Size (d_{50})	**µm**	3	2	4	5	1	45	10	9.5	12	20	~150	3.5	280	~ 3,8

Physical variables included in this documentation are provided by way of indication only and do not, under any circumstances, constitute a contractual undertaking. Please contact our technical service if you require any additional information.

FRANCE : 4 avenue de Strasbourg – 68350 Didenheim – Tel : +33 (0) 3 67 78 78 78
DEUTSCHLAND: Basler Strasse 115 – 79115 Freiburg – Tel: + 49 (0) 761 47 87 336
www.final-materials.com