TECHNICAL DATA SHEET

Date of Issue: 2021/07/22

Zirconium Metal powder, Grade AB, dry

CAS-No.	7440-67-7
EC-No.	231-176-9
REACH No.	01-2119490102-49-0004
Molecular formula	Zr
Product number	10000379, 10001952

APPLICATION

Zirconium powders find application in various pyrotechnic areas. They are a source of heat for squibs and ignition devices for a variety of uses including automotive airbag inflators. For the production of highly reactive and quick fuze compositions in pyrotechnics for use in ammunition, explosives, airbags and safety belt pretensioners. They are also used in manufacture of flash cubes, electronic tubes, as well as as alloying agent with other metals.

SPECIFICATION

Zr total + Hf total	min. 95 %
Hf	approx. 2 % (natural content)
Ignition gain	min. 28.4 %
Burning rate	12.5 +/- 7.5 s/50 cm
Surface area (BET)	1.3 +/- 0.5 m2/g
Auto ignition temperature	235 +/- 65 °C
Ca	max. 0.1 %
Fe	max. 0.1 %
Al	max. 0.1 %

Mg	max. 0.5 %
H	max. 0.2 %
Average particle size (Blaine)	1.9 +/- 0.4 µm
Particle size (by sieving)	max. 99.9 % < 45 µm

Particle size distribution (laser granulometer) particle size % less than 12 µm 100 7 µm 94 - 100 3 µm 75 - 94 0.75 µm 0 - 15

METHOD OF ANALYSIS

Determination of ignition gain, particle size distribution, average particle size, specific surface area (BET), combustion properties, gravimetric analysis of zirconium, spectrometric determination of impurities. For specific information on our standard methods of testing see the special metals sales program.

PHYSICAL PROPERTIES

Appearance	powder
Colour	dark grey
Melting point/range	1,855 °C (Information taken from reference works and the literature.)
Boiling point/boiling range	3,577 °C (Information taken from reference works and the literature.)
Density	6.434 g/cm3 at 20 °C Method: OECD Test Guideline 109
Bulk density	1,200 - 2,300 kg/m3
Water solubility	< 0.00005 g/l at 20 °C Method: OECD Test Guideline 29
Additional Physical Properties	Delivery Form: packed under argon

HANDLING & STORAGE

Handling

Highly flammable solid. Dust explosion hazard. An ultra-fine, high-grade zirconium powder which ignites very easily and burns extremely rapidly at white heat. Zirconium metal powder is fairly inert to most chemical reagents, but at elevated temperatures is attacked by oxidizing agents and acids. Zirconium powder is attacked by cold acid fluoride solutions. Keep away from flames, sparks and heat sources. Use ground connected metallic apparatus to avoid sudden ignition by electrostatic discharge. Self ignition is possible. Vacuum drying of suspensions is not recommended. Wear gloves, a face shield or safety goggles. In case of fire cover with dry sand or dry chemical/dolomite (powdered limestone). Never extinguish with water, carbon dioxide, or halocarbon. See our safety data sheet and special precautionary advice for more information on safety.

Storage

Store in tightly closed containers.

TRANSPORT & PACKAGING

UN number 2008

ADR	Class: 4.2	PG: I	Label: 4.2
RID	Class: 4.2	PG: I	Label: 4.2
IMDG	Class: 4.2	PG: I	Label: 4.2
IATA_C	Class: 4.2		
IATA_P	Class: 4.2		

Hazard pictograms

Signal word

Danger

H&P Phrases

See Safety Data Sheet

Labelling	The labelling is according to EU-GHS classification ((EG) 1272/2008) and may vary in other countries. Please refer to the respective Safety Data Sheet for your country.

Packaging

As dry powder in tin cans. Standard unit size 1 kg quantity.

OTHER INFORMATION

Further Related Documents	Safety Data Sheet