

TECHNICAL DATA SHEET

Date of Issue: 2016/09/02

Zirconium Metal powder, Grade CA, wet, aqueous

CAS-No. 7440-67-7

EC-No. 231-176-9

Molecular Formula Zr

Product Number 453011

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.

FURTHER INGREDIENTS

Hafnium

CAS-No. 7440-58-6

EC-No. 231-166-4

SPECIFICATION

Zr total + Hf total	min. 97.4 +/- 0.8 %	
Hf	approx. 2 %	(natural content)
Ignition gain	min. 31.5 +/- 1.0 %	
Burning rate	13 +/- 5 s/50 cm	(Albemarle standard)
Auto ignition temperature	180 +/- 20 °C	
Apparent density	approx. 1.1 g/ccm	
Si	max. 0.7 %	
H	max. 0.2 %	
Al	max. 0.1 %	
Fe	max. 0.07 %	
Ca	max. 0.05 %	

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Average particle size (Blaine)	2 +/- 0.3 μ m
Particle size	min. 99.9 % < 45 μ m

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	suspension
Color	black to gray
Melting point/ range	1,852 °C (Zirconium powder)
Boiling point/boiling range	3,577 °C
Density	6.5 g/cm ³ at 20 °C
Bulk density	1,200 - 2,300 kg/m ³
Water solubility	(practically insoluble)

HANDLING & STORAGE

Handling	<p>Highly flammable solid. Dust explosion hazard.</p> <p>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.</p> <p>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).</p> <p>Never extinguish with water, carbon dioxide, or halocarbon.</p> <p>See our material safety data sheet and special precautionary advice for more information on safety.</p>
Storage	Store in tightly closed containers.

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TRANSPORT & PACKAGING

UN number 1358

ADR	Class: 4.1	PG: II	Label: 4.1
RID	Class: 4.1	PG: II	Label: 4.1
IMDG	Class: 4.1	PG: II	Label: 4.1
IATA_C	Class: 4.1	PG: II	Packing instruction (cargo aircraft): 448
IATA_P	Class: 4.1	PG: II	Packing instruction (passenger aircraft): 445

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 suspension in PE-bottles overpacked in tin cans. Packaging units 0.5 kg - 10 kg of Zr, water content min. 30 % by weight.

OTHER INFORMATIONFurther Related Safety Data Sheet
Documents

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