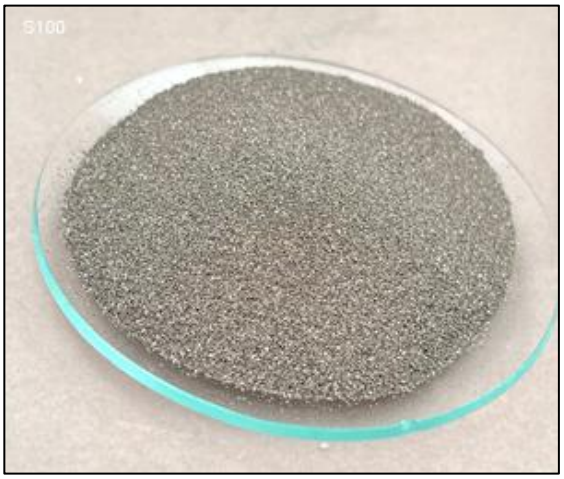
Educational Iron Filings

Atomized Steel Particles

Product Data Sheet (PDS)

Product Description

Educational Iron Filings are manufactured from high-quality atomized steel particles specifically selected for classroom, laboratory, and STEM education applications. The product provides excellent magnetic response, consistent particle size, and clean handling characteristics suitable for demonstrations of magnetism, electromagnetism, magnetic fields, and related scientific principles.



Unlike irregular machining chips or recycled iron filings, this material is not contaminated with cutting oils and does not consist of sharp particles.

Typical Applications

- Magnetic field visualization
- Electromagnet demonstrations
- Physics experiments
- STEM education
- Science kits
- Classroom laboratory activities
- University teaching laboratories
- Science museums
- General educational demonstrations
- Research and instructional projects requiring magnetic steel particles

Designed for Education: *Unlike general industrial metal filings, Educational Iron Filings are prepared specifically for educational and laboratory applications where consistent particle size, magnetic performance, and clean handling characteristics are important.*

Revision date: 2024.10.30

Typical Physical Properties

Property	Typical Value
Product Form	Spherical particles
Appearance	Gray metallic particles
Odor	Odorless
Nominal Particle Size	120–130 µm
Particles Below 100 µm	Typically less than 1%
Bulk Density	Approximately 3.0 g/cm³
Magnetic Properties	Ferromagnetic
Water Solubility	Insoluble
Country of Manufacture	United States

Representative Chemical Analysis (XRF)

The following values represent a typical chemical analysis of the product, mainly determined by X-ray fluorescence (XRF) analysis of the finished product.

Element	Typical wt.%
Iron (Fe)	97.918
Carbon*	0.80 – 1.2
Manganese (Mn)	0.670
Aluminum (Al)	0.509
Copper (Cu)	0.231
Chromium (Cr)	0.209
Silicon (Si)	0.128
Nickel (Ni)	0.043
Molybdenum (Mo)	0.034
Vanadium (V)	0.025
Silver (Ag)	0.006
Cadmium (Cd)	0.006
Niobium (Nb)	0.003

Lead, phosphorus, magnesium, gold, hafnium, and tungsten were below the instrument's limit of detection in the representative XRF analysis.

*** Note:** XRF does not determine carbon content. Carbon content is reported by the supplier of the alloy.

Product Features

- Consistent particle-size distribution
- Excellent magnetic response
- Uniform gray metallic appearance
- Low percentage of fine particles
- Suitable for repeated educational use
- Manufactured in the USA
- Representative chemistry verified through XRF quality-control analysis

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Storage

Store in a clean, dry location in a tightly closed container. Protect from moisture, excessive humidity, and contamination. Keep away from strong acids and strong oxidizing agents.

Safety Information

Under normal educational use, the principal concern is mechanical irritation. Make sure iron filing does not get to your eyes and respiratory system. Wear eye protection and mask if such risk exists in your application. Avoid unnecessary generation of airborne dust and wash hands after handling.

For complete health, safety, handling, first-aid, disposal, transportation, and regulatory information, refer to the current Safety Data Sheet (SDS).

Packaging Options:

Iron filing is available in 8 Oz, 24 Oz, 1-Lb, 5-Lb, 55-Lb packs.

Quality Statement

Educational Iron Filings are manufactured and qualified for instructional and laboratory applications. Representative production lots are verified through quality-control procedures, including X-ray fluorescence (XRF) and microscopic analysis where appropriate. Product characteristics are intended to provide consistent performance for educational and scientific applications.

The information contained in this Product Data Sheet is believed to be accurate at the time of publication and is intended for technical guidance only. Typical values are not product specifications and should not be interpreted as guaranteed analytical limits unless specifically stated in a Certificate of Analysis or product specification.