




Black Iron Oxide

Distributed by:
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	SAFETY DATA SHEET According to Regulation (EC) No 453/2010 amending Annex II of Regulation (EC) No 1907/2006		Last revision: 2013-10-18
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SECTION 1 - IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

Product identifier (Trade Name): MICRONOX®BK01, MICRONOX®BK02, MICRONOX®BK03 and MICRONOX®BK04

Product name: Triiron tetraoxide, Magnetite, Ferrous-ferric oxide, Iron (II) diiron (III) oxide, Fe₃O₄.

CAS No.: 1309-38-2. **EINECS No.:** 215-169-8

REACH Registration No.: 17-2119409089-38-0000.

Identified uses: Used by industry, mostly by professionals, as pigment mainly but not exclusively, in paints, cement, concrete, ceramic, plastics, fertilizers.

Uses advised against: Other uses are not recommended unless an assessment has been conducted before the start of that use, showing that the risks associated with their use are controlled.

Supplier's details:
Name: Productos Minerales para la Industria, S.A. (PROMINDSA).
Address: Centro de Negocios Somport, Pta. 3, Of. 124-127, Ciudad del Transporte, 50.820-Zaragoza (Spain).
Phone number: +34 976151074 Fax number: +34 976587133 E-mail: promindsa@promindsa.com
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SECTION 2 - HAZARDS IDENTIFICATION

CLP classification: Substance not classified according to Regulation (EC) No. 1272/2008.

DSD classification: Substance not classified according to Directive 67/548/EEC.

GHS classification:

+ **Physical hazards:** None known.

+ **Health hazards:**

- Specific target organ toxicity – Repeated exposure..... 2 (lung)

+ **Environmental hazards:** None known.

Hazard category



Labelling:

CLP labelling: STOT RE2.

GHS labelling:

- Signal words: *Warning*.

- Hazard symbols: *Health hazard*.

- Hazard statements: *May cause damage to lung through prolonged or repeated exposure by inhalation.* (H373)

- Precautionary statements:

+ **General precautionary statements:**

- *If medical advice is needed, have product container or label at hand.* (P101)

- *Keep out of reach of children.* (P102)

- *Read label before use.* (P103)

+ **Prevention:**

- *Do not breathe dust.* (P260).

+ **Response:**

- *Get medical advice/attention if you feel unwell.* (P314)

+ **Disposal:**

- *Dispose of contents/container in accordance with local/regional/national/international regulations.* (P501)

Other hazards which do not result in classification: Handling and/or processing of this material may generate dust, which may cause mechanical irritation of the eyes, skin, nose and throat.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical identity: Fe₃O₄, Triiron tetraoxide.

Common names and synonyms: Magnetite, Magnetic iron oxide, Black Iron Oxide, Pigment Black 11, C.I. 77499.

CAS number and other unique identifiers: CAS No.: 1309-38-2, EINECS No.: 215-169-8.

Constituents	Chemical formula	CAS No.	EINECS No.
Magnetite	Fe ₃ O ₄	1309-38-2	215-169-8

The products contain variable amounts of quartz and other minerals that are the gangues (impurities) of the iron deposits.

SECTION 4 – FIRST-AID MEASURES

Description of the necessary first-aid measures:

Inhalation: If inhaled, remove victim to fresh air and keep at rest in a comfortable position for breathing. If breathing difficulties develop, give oxygen. If respiratory irritation occurs, get medical attention.

Skin contact: This product does not cause skin irritation by itself, but this might happen by mechanical abrasion of the contaminated skin, as it would happen with any other dust. If skin irritation occurs, get medical attention.

Eye contact: This product does not cause eye irritation by itself, but this might happen by mechanical abrasion after eye contact. In this case, do not rub your eyes and rinse cautiously with water. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation occurs, get medical attention.

Ingestion: Ingestion of high dosages of this product is unlikely. If this would occur, do not induce vomiting unless directed to do so by medical personnel. If victim is conscious and alert, give some cups of water. Seek medical attention immediately.

SECTION 5 – FIRE-FIGHTING MEASURES

Suitable and unsuitable extinguishing media: The product is non-combustible. So, in case of fire use water spray (fog), foam, dry chemical or CO₂. Avoid the use of high pressure water, which could generate dust.

Specific hazards arising from the chemical: These products are not flammable or explosive.

Special protective equipment and precaution for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus with a full face-piece operated in positive pressure mode.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not breathe dust. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8). Hazard of slipping on spilt product.

Environmental precautions: These products are not environmental hazards. In any case, avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up: Move containers from spill area and prevent entry into sewers, water courses, basements of confined areas. Avoid creating dusty conditions and prevent wind dispersal. Vacuum or sweep up the spillage and place in a designated, labelled waste container. Residual material should then be cleared by wet sweeping to avoid dust generation. Dispose of via a licensed waste disposal contractor.

SECTION 7 – HANDLING AND STORAGE

Precautions for safe handling: Do not breathe dust, avoid handling that can generate it and do not permit dust to collect on workplace. Avoid contact with eyes and skin to prevent mechanical irritation. Protective clothing, dust-proof goggles and leather/rubber gloves are recommended. Wash or vacuum clothing that has become dusty and observe good personal hygiene.

Conditions for safe storage, including any incompatibilities: Store at moderate temperatures in a dry and well ventilated area away from strong oxidizers and acids. Ensure containers are adequately labelled and protected



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against physical damage.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters: Occupational exposure limits.

Constituent (CAS No)	NIOSH-IDLH (mg/m ³)	NIOSH-REL (mg/m ³)	ACGIH-TLV (mg/m ³)	OSHA-PEL (mg/m ³)	MSHA STANDARD (mg/m ³)
Magnetite Fe ₃ O ₄ (1309-38-2)	2500 (RD)	5 (RD)	5 (RD)	8 hours TWA 15 (TD) 8 hours TWA 5 (RD)	Nuisance particulates

NIOSH: National Institute for Occupational Safety and Health. **ACGIH:** American Conference of Governmental Industrial Hygienists. **OSHA:** Occupational Safety and Health Administration. **MSHA:** Mine Safety Health Administration. **PEL:** Permissible exposure limit. **IDHL:** Immediately dangerous to health and life. **REL:** Recommended exposure limit. **TLV:** Threshold limit value. **MAK:** Max. value. (RD): Respirable dust or fume. (TD): Total dust. **Mppcf:** million particles per cubic foot. **n.f.:** Not found. **OEL:** Occupational exposure limit. **LTEL:** Long-term exposure limit. **STEL:** Short-term exposure limit. **TWA:** Time-weighted average.

Appropriate engineering controls: Maintain air concentrations of the hazardous substances below the occupational exposure limits. Use local exhaust ventilation or a dust extraction if necessary.

Individual protection measures:

Eye protection: Dust-proof goggles are recommended to avoid mechanical irritation after friction.

Skin protection: If prolonged or repeated skin contact is likely, bodysuit, boots and leather/rubber gloves are recommended to avoid mechanical irritation by friction.

Respiratory protection: If air concentrations of hazardous substances are unknown or higher than their occupational exposure limits, wear an approved air purifying dust respirator.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black solid powder with particle size smaller than 10 µm, i.e., with respirable size.

Odour: Odourless.

Odour threshold: Not applicable.

pH: The pH-value of the water extract is 7 (±2).

Melting point / freezing point: The product is solid at normal conditions. Its exact melting point is unknown.

The melting points of its main constituents (≥99.5 wt. %) are in the following table:

	Chemical formula	Melting point
Magnetite	Fe ₃ O ₄	≈1538 °C (2800 °F)

Initial boiling point and boiling range: Initial boiling point > 2000 °C (>3632 °F).

Flash point: Non-flammable.

Evaporation rate: Not applicable.

Flammability (solid, gas): Non-flammable.

Upper / lower flammability or explosive limits: Not applicable.

Explosion limits: Not applicable.

Vapour pressure: 0.0 mm Hg at 20 °C (68 °F).

Vapour density: Not applicable.

Relative density: 5.1 (±0.1) with respect to water at 3.98 °C (39.2 °F). **Bulk density:** 0.9 (±0.1) g/cm³

Solubility: Negligible (less than 0.1 wt. %) in water at 20 °C (68 °F).

Partition coefficient: Not applicable.

Auto-ignition temperature: Not applicable.

Decomposition temperature: Fe₃O₄ decomposes at its melting temperature (1538 °C) giving out toxic iron oxide fumes.

Viscosity: Not applicable.

SECTION 10 - STABILITY AND REACTIVITY



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Reactivity: The product is not self-reactive.

Chemical stability: Stable under ordinary conditions of use and storage. Magnetite may oxidise at temperatures above 300 °C giving out γ -Fe₂O₃ (maghemite), which is a non-hazardous substance. That reaction is slightly exothermic.

Possibility of hazardous reactions: None known.

Conditions to avoid: Avoid stirring or shaking up this product in order not to generate dust.

Incompatible materials: Calcium hypochlorite, carbon monoxide, hydrogen peroxide, hydrazine, fluorine, bromine pentafluoride, chlorine trifluoride, oxygen difluoride and strong acids (hydrofluoric, performic,...).

Hazardous decomposition products: None under ordinary conditions. Fe₃O₄ decomposes at its melting temperature (1538 °C) giving out toxic iron oxide fumes.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on the likely routes of exposure: This product is a solid with a powder form. So, the likely routes of exposure are inhalation, eye and skin contact. Ingestion of high dosages of this product is unlikely but not impossible.

Symptoms related to the physical, chemical and toxicological characteristics: The immediate symptoms are related to the physical form (powder) of the product because its particles has a rough shape and may cause mechanical irritation to airways, digestive tract, eyes and skin, as would happen with any other non-toxic dust. So, symptoms such a sneezing, runny nose and coughing may suggest a short exposure to high dosages through inhalation, while gastrointestinal disturbances such a salivation, nausea, vomiting and diarrhoea may suggest that a very high dosage has been swallowed. In addition, mechanical irritation of contaminated eyes or skin may appear by friction, as for example, by rubbing. In any case, it is unlikely that a short overexposure to this product may cause any delayed or chronic adverse effect.

Numerical measures of toxicity:

	Route	Effects		Magnetite
Humans	Inhalation	Acute toxicity	IDLH	-
		Pneumoconiosis	LPTC	-
		Cancer - death	LPLC	-
Dogs	Intravenous	Death	LPLC	-
Rats	Ingestion	Mortality 50%	LD50	>10000 mg/kg
		Gastroint. disturb.	LPTC	-
	Inhalation	Respiratory disturb.	LPTC	-
		Pneumoconiosis	LPTC	-
	Intratracheal	Tumours (liver)	LPTC	-
		Respiratory disturb.	LPTC	-
	Intratracheal	Death	LPLC	-
		Intratracheal	Lymphoma (blood)	LPTC
	Intravenous	Death	LPLC	-
	Intraperitoneal	Focal cancer	LPTC	-
	Implant	Focal tumours	LPTC	-
	Inhalation	Respiratory disturb.	LPTC	-
	Intratracheal	Acute lung oedema	LPTC	-
Intravenous	Death	LPLC	-	

LPTC: Lowest published toxic concentration. LPLC: Lowest publ. lethal concentration. IDHL: Immediately dangerous to health and life.

LD50: Lethal dosage for 50% of specimens. int: intermittent. con: continuous. -: No data found.

Interactive effects: No data are available.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Aquatic toxicity: All the constituents of this product are minerals with a negligible solubility and low content of heavy metals. So, it is unlikely that may cause any adverse effect to waters and aquatic life.



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Fish (fresh water): *Leuciscus idus*: 48h LC0: > 1000 mg/l. (no harmful effects)

Bacteria: *Pseudomona fluorescens*: 24 h LC0>1000 mg/l (no harmful effects)

Terrestrial toxicity: All the constituents of this product occur naturally. In fact, they are common minerals of the earth's crust and soils. So, it is not anticipated to cause any adverse effect to plants or animals.

Persistence and degradability: The constituents of this product are not "readily biodegradable" due to their very low (negligible) solubilities and reactivities. On the other hand, magnetite can be extracted easily by magnetic methods.

Bio-accumulative potential: There is no evidence to suggest bioaccumulation will occur.

Mobility in soil: Accidental spillage of this dusty product may cause a shallow penetration in soil. However, is unlikely that this would cause adverse ecological effects because of the negligible solubility of its constituents. Besides, some of the constituents of this product are common minerals of soils.

Other adverse effects: Spillages of this product may cause visual impact due to its black colour.

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal methods: These products are not hazardous wastes by U.S. Resource Conservation and Recovery Act (RCRA) criteria neither by the Council Directive 91/689/EEC. Dispose of contents/container in accordance with local/regional/national/international environmental regulations. Avoid generating dust. Ensure that containers are empty prior to disposal. Keep out of drains, sewers and waterways to prevent occlusions.

SECTION 14 - TRANSPORT INFORMATION

Harmonised Commodity Code (Customs Tariff Number): 2821.10.00

UN Number: Not regulated.

UN proper shipping name: Not regulated.

Transport hazard class(es): These products are non-hazardous goods.

Packing group (if applicable): Not applicable.

Environmental hazards: None.

Special precautions for users: If the container breaks accidentally during transport, DO NOT BREATHE DUST.

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable.

SECTION 15 - REGULATORY INFORMATION

INTERNATIONAL

Montreal Protocol: This product does not contain substances that produce the depletion of the Ozone Layer.

Kyoto Protocol: This product does not contain *Greenhouse Gases*.

Rotterdam Convention: This product is not subjected to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

Stockholm Convention: This product does not contain *Persistent Organic Pollutants*.

CANADA

CEPA (Canadian Environmental Protection Act): "Respirable particulate matter less than or equal to 10 microns" is included on Priority Substances List (PSL) and Toxic Substances List (TSL) of CEPA Environmental Registry.

EUROPEAN COMMUNITY

None of the constituents of this product appears on the lists of the hazardous substances that are forbidden, restricted or submitted to special requirements by the following European regulations in force:

-**Council Regulation (EEC) No 793/93** on the evaluation and control of the risks of existing substances.

-**Directive 98/8/EC** and its amendments on placing of biocidal products on the market

-**Council Regulations (EC) No 304/2003** and **689/2008** related to Export and Import of Dangerous Chemicals.



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- Council Regulation (EC) No 1907/2006 on Registration, Evaluation and Authorization of Chemicals (REACH).
- Directive 67/548/EEC and Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
- Commission Regulation (EC) No 465/2008 about certain substances that are listed in EINECS and may be persistent, bio-accumulating and toxic.

UNITED STATES

CERCLA (Comprehensive Environmental Response Compensation and Liability Act): The components of this product are not classified as hazardous substances under regulations of CERCLA, 40 CFR §302.

EPCRA (Emergency Planning and Community Right-to-Know Act) and Clean Air Act, Section 112(r): None of the components of this product are subjected to the EPCRA and Clean Air Act.

RCRA (Resource Conservation and Recovery Act): None of the components of the product is classified as a hazardous waste under the RCRA, or its regulations, 40 CFR §261 et seq.

SARA Title III: None of the components of this product are Extremely Hazardous Substances (EHS) under Section 302 neither toxic chemicals subject to the requirements of Section 313.

SECTION 16 - OTHER INFORMATION

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. It is the user's responsibility to satisfy itself as to the suitability and completeness of such information for its own particular use.



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