

in accordance with Regulation (EC) No. 1907/2006 REACH and all subsequent amendments

Trade name: PiioxK318M

Version 2.0 /EN

Date of issue:16.03.2025

Date of revision:16.03.2025

PIGMENT INTERNATIONAL GmbH & Co.KG, D-40764 Langenfeld

Piiox® K318M

The product is not a hazardous substance. A safety data sheet in accordance with Article 31 REACH is not required. This safety data sheet has been created on a voluntary basis.

Section 1: Identification of the substance or mixture and of the company**1.1 Product identifier**

Substance name / Trade name:	PiioxK318M
REACH substance name:	Triiron Tetraoxide
EC No.:	215-277-5
CAS No.:	1317-61-9
REACH registration no.:	01-2119457646-28-0030
Other names:	C.I. Pigment black 11 (77499) ,Triiron Tetraoxide Fe3O4

1.2 Relevant identified uses of the substance or mixture and uses

not recommended: Not known
Suitable uses: Colorants (pigments and dyes), inorganic

1.3 Details of the supplier providing the safety data sheet**Manufacturer/supplier**

PIGMENT INTERNATIONAL GmbH & Co. KG

Street/P.O. Box

Helmholtzstr. 10-12

Country code / Postal code/City

D-40764 Langenfeld, Germany

Contact point for technical information

em@pigment-international.com

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+49 2205 904 7337 / +49 2205 904 7338 / Email: em@pigment-international.com

1.4 Emergency number

+49 2205 904 7337 (office hours), otherwise +49 30-30686700 (24 hours)

Section 2: Potential hazards**2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008:**

Not a hazardous substance or mixture.

2.2 Label elements**Label elements according to Regulation (EC) No. 1272/2008****Pictogram / Hazard symbol:** Not applicable.**Signal word / Hazard statement:** No signal word. No special effects or hazards known**2.3 Other hazards**

This substance/mixture does not contain any components in concentrations of 0.1% or higher that are classified as persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

Environmental information: The substance/mixture does not contain any components that, according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1% or more.

Toxicological information: The substance/mixture does not contain any components that exhibit endocrine-disrupting properties in quantities of 0.1% or more according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1% or more.

Handling or processing this material may dust that may cause mechanical irritation to the eyes, skin, nose, and throat.

Section 3: Composition/information on ingredients

3.1 Product definition (REACH): Mono-constituent substance Triiron Tetraoxide Fe₃O₄

According to the supplier's current knowledge, this product does not contain any hazardous ingredients in quantities that must be specified in accordance with applicable EU or national regulations.

Section 4: First Aid Measures

4.1 Description of first aid measures

Protection of first responders

No measures should be taken that involve personal risk or for which adequate training has not been provided.

After inhalation

Move the affected person to fresh air.

Seek medical attention if symptoms occur. If breathing is absent or irregular, or if respiratory arrest occurs, trained personnel should initiate artificial respiration or oxygen administration.

personnel should initiate artificial respiration or administer oxygen.

If unconscious, place in the recovery position and seek medical attention immediately.

Loosen tight-fitting clothing (e.g., collars, ties, belts, or waistbands).

After skin contact

No special measures required.

After eye contact

Immediately rinse eyes with plenty of water and occasionally lift the upper and lower eyelids.
Remove contact lenses, if possible. Rinse continuously for at least 10 minutes.
Consult a doctor if symptoms persist.

After swallowing

Rinse mouth with water. Do NOT induce vomiting. If symptoms occur, seek medical attention.

4.2 Most important acute and delayed symptoms and effects

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indications for immediate medical attention or special treatment

Symptoms: See Section 11 for more detailed information on health effects and symptoms.

Risks: See Section 11 for more detailed information on health effects and symptoms.

Treatment: See Section 11 for more detailed information on health effects and symptoms.

Section 5: Firefighting measures**5.1 Extinguishing media**

Suitable: In case of fire, use water spray (mist), foam, dry chemicals, or CO₂.

Unsuitable: None known.

5.2 Special hazards arising from the substance or mixture

No particular fire or explosion hazard.

No dangerous combustion products. The product itself does not burn.

5.3 Firefighting instructions

No special precautions required.

Firefighters should wear appropriate protective clothing and self-contained breathing apparatus with full face protection, operated in positive pressure mode.

Section 6: Accidental release measures**6.1 Personal precautions, protective equipment, and emergency procedures**

Do not take any action that involves personal risk or for which you have not been adequately trained. Keep unauthorized and unprotected personnel away. Avoid inhaling dust. Ensure adequate ventilation. Wear appropriate protective equipment (see Section 8).

Risk of slipping on spilled product.

6.2 Environmental protection measures

Prevent the spread and runoff of released material and contact with soil, water, drains, and sewage systems.

Notify the relevant authorities if the product has caused environmental pollution (sewage systems, surface water, soil, or air).

6.3 Methods and material for containment and cleaning up

Cleanup procedures: Collect and store dust-free.
Sweep up and scoop up.
Place in suitable, sealed containers for disposal.

6.4 Reference to other sections

See Section 8 for information on suitable personal protective equipment.

See Section 13 for further information on waste treatment.

Section 7: Handling and storage**7.1 Precautions for safe handling**

Instructions for safe handling
Procedure:

Personal protective equipment: see Section 8.
Do not eat, drink, or smoke in the area of application.

Explosion protection:

Fire and explosion safety information: Ensure adequate ventilation if dust is formed.

Hygiene measures:

Standard occupational hygiene measures.
Do not eat, drink, or smoke while working. After use, wash face, hands, and all exposed skin thoroughly
Wash contaminated clothing before reuse

7.2 Conditions for safe storage, taking into account incompatibilities

Requirements for storage rooms and containers:

Store in accordance with local regulations. Store only in the original container.

Protect from direct sunlight. Store only in dry, cool, and well-ventilated areas.
Do not store together with incompatible substances (see Section 10) and do not store with food and beverages. Keep container tightly in a dry, cool, and well-ventilated location. Electrical equipment/operating equipment must comply with the latest safety standards.

Storage information:

No substances of particular concern.

Storage class (TRGS 510):

13, non-combustible solids.

Further information on storage stability:

Store in a dry place. No decomposition if stored and used as intended storage and use.

7.3 Specific end uses

Not available.

Section 8: Exposure controls and monitoring

8.1 Parameters to be monitored

Occupational exposure limits

Dusts

Basis: DE DFG MAK

General dust limit value

10 mg/m3
Peak limit: Exceedance factor (category): 2; II
Value type (type of exposure): AGW (inhalable fraction)
Basis: DE TRGS 900
Further information: There is a risk of damage to the fetus if compliance with the occupational exposure limit and the biological limit value (BGW)

1.25 mg/m3
Peak limit: Exceedance factor (category): 2; II
Value type (type of exposure): AGW (alveolar fraction)
Basis: DE TRGS 900
Further information: There is no risk of damage to the fetus if

compliance with the occupational exposure limit and the biological limit value (BGW)

Derived no-effect level (DNEL) according to Regulation (EC) No. 1907/2006:

Name of the ingredient	Type	Exposure routes	Value	Population	Potential health effects
PiioxK318M	DNEL	Inhalation	10 mg/m ³	Workers	Long-term exposure, Local effects

8.2 Exposure limits and monitoring

Suitable technical control measures

Use only with adequate ventilation. If dust, fumes, gas, vapors, or mists are generated during work, use process chambers, local exhaust ventilation, or other engineering controls to keep worker exposure below recommended or regulatory limits.

Individual protective measures - personal protective equipment

Eye/face protection

If the risk assessment requires it, safety glasses that comply with a recognized standard should be worn to avoid exposure to liquid splashes, mists, gases, or dusts. If operating conditions result in high dust concentrations, wear dust goggles. Recommended: Safety glasses with side shields

Skin protection

Before handling this product, personal protective equipment should be selected based on the task to be performed and the associated risks, and approved by a specialist.

Respiratory protection

Recommended: Dust mask if there is a risk of dust formation. Filter type P1 filter

Hand protection

Recommended: Gloves / Material: Leather gloves

Hygiene

Wash hands, forearms, and face thoroughly after handling chemical products and at the end of the working day, as well as before eating, smoking, and using the toilet. Choose suitable methods for disposing of contaminated clothing. Wash contaminated clothing before reuse
 . Ensure that eye wash stations and safety showers are available near the work area.

Limitation and monitoring of environmental exposure

Water: Prevent the product from entering sewers, waterways or soil should be prevented.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Physical state:	solid (powder)
Color:	black
Odor:	odorless
pH value:	5 to 8 (5% aqueous suspension)
Melting point:	> 1000°C
Vapor pressure:	Not available.
Density:	4,7 kg/l at 20°C
Solubility(ies):	insoluble g/l (water)
Decomposition temperature:	At temperatures >80°C the product may become unstable and oxidize.
Flash point:	No data available
Vapor density:	No data available
Initial boiling point and boiling range:	No data available
Evaporation rate:	No data available
Explosive properties:	No data available

Viscosity:	No data available
Auto-ignition temperature:	No data available
Oxidizing properties:	No data available
Flammability (solid/gaseous):	No data available
Distribution coefficient:	No data available

9.2 Other information

No further information.

Section 10: Stability and reactivity

10.1 Reactivity

No specific data on reactivity is available for this product or its ingredients.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Under normal storage conditions and normal use, no hazardous reactions occur.

Conditions to avoid

10.4 At temperatures >80°C the product may become unstable and oxidize. This generates additional heat which may result in the combustion of flammable materials. The product should therefore not be stored near heat sources.

10.5 Incompatible materials

No specific data.

10.6 Hazardous decomposition products

Under normal storage and use conditions, no hazardous decomposition products are formed.

Section 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure:

Inhalation
 Eye contact
 Skin contact.

Acute toxicity Not classified based on available information.

Product/ingredient name	Result	Species	Dose	Exposure	Test
PiioxK318M	LD50 Oral		> 5.000 mg/kg	-	1) 2)

1) Method: OECD Test Guideline 401
 GLP: No information available.
 Comments: Data refer to the main component.

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2) Method: OECD Test Guideline 403

GLP: yes

Assessment: The substance or mixture does not have acute respiratory toxicity

Notes: Information refers to the main component.

Skin corrosion/irritation

Based on the available data, the classification criteria are not met.

Product:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

GLP: Yes

Remarks: Information refers to the main component.

Serious eye damage/irritation

Based on the available data, the classification criteria are not met.

Product:

Species: Rabbit

Method: OECD Test Guideline 405

Result: No eye irritation

GLP: Yes

Comments: Information refers to the main component.

Respiratory/skin sensitization

Sensitization through skin contact

Based on the available data, the classification criteria are not met.

Sensitization by inhalation

Based on the available data, the classification criteria are not met.

Product:

Type of test: Optimization test according to Maurer

Exposure routes: Skin contact

Species: Guinea pigs

Result: Does not cause sensitization in laboratory animals.

GLP: no

Comments: Information refers to the main component.

Germ cell mutagenicity

Not classified due to lack of data.

Product:

In vitro genotoxicity:

Type of test: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: No information available.

Comments: Test results for an analogous substance/product.
Information refers to the main component.

Type of test: In vitro chromosome aberration test
Test system: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes
Comments: Test results of an analogous substance/product.
Information refers to the main component.

Type of test: In vitro gene mutation test on mammalian cells
Test system: Fibroblasts from Chinese hamster
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes
Comments: Information refers to the main component.
Test results for an analogous substance/product.

In vivo genotoxicity:

Type of test: Comet assay
Species: Rat (male)
Route of administration: intratracheal
Result: negative
Comments: Data refer to the main component.

Type of test: Chromosomal aberration assay
Species: Rat (female)
Route of administration: Oral
Result: negative
Comments: Data refer to the main component.

Type of test: Micronucleus test
Species: Rat (female)
Route of administration: Oral
Result: negative
Comments: Information refers to the main component.

Carcinogenicity:

Not classified based on available information.

Product:

Species: Rats, male and female
Route of administration: Intraperitoneal
Exposure time: 914 days
Dose: 600 mg/kg body weight
Result: negative
Comments: Data refer to the main component.

Reproductive toxicity: Not classified based on available information.

Specific target organ toxicity**after single exposure:** Not classified based on available information.**Specific target organ toxicity****after repeated exposure:** Not classified based on available information.**Toxicity after repeated administration****Product:**

Species: Rats, male and female
NOAEL: 4.7 mg/m³
Route of administration: Inhalation
Test atmosphere: Dust/mist
Exposure time: 90 days
Number of exposures: 5 days/week
Dose: 4.7 - 16.6 - 52.1 mg/m³
Method: OECD Test Guideline 413
GLP: yes
Comments: Subchronic toxicity
Test results for an analogous substance/product.
Information refers to the main component.

Species: Male rat
NOAEL: 10.1 mg/m³
Route of administration: Inhalation
Test atmosphere: Dust/mist
Exposure time: 28 days
Number of exposures: 5 days/week
Dose: 10.1 - 19.7 - 45.6 - 95.8 mg/m³
Method: OECD Test Guideline 412
GLP: yes
Comments: Subacute toxicity
Test results for an analogous substance/product.
Information refers to the main component.

Aspiration toxicity: Not classified based on available information.**Chronic effects:** Repeated or prolonged inhalation of dust may cause chronic irritation of the respiratory tract.**11.2 Information on other hazards****Endocrine-disrupting properties****Product:**

Assessment: The substance/mixture does not contain any components that exhibit endocrine-disrupting properties in quantities of 0.1% or more according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1% or more.

Section 12: Environmental claims**12.1 Toxicity**

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Product/ingredient name	Test	Result	Species	Exposure
PiiroxK318M	EU 440/2008-C.2 1)	Acute EC0 >10.000 mg/l	Daphnie-Daphnia magna	48 hours
	2)	Akut LC0 >10.000 mg/L	Fish - Danio rerio	48 hours
	3)OECD guideline 209	Akut EC50 >10.000 mg/l	activated sludge	3hours
	1)	Accompanying analysis: no Method: OECD Test Guideline 202 GLP: yes Comments: Freshwater Information refers to the main component.		
	2)	Accompanying analysis: no GLP: no		
	3)	Accompanying analysis: no Method: ISO 8192 GLP: no Comments: Information refers to the main component.		

12.2 Persistence and degradability

Result: Methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulation potential

Not available.

12.4 Mobility in soil

Not available.

12.5 Results of PBT and vPvB assessment:

Product:

Assessment:

This substance/mixture does not contain any components in concentrations of 0.1% or higher that are classified as persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB)

12.6 Endocrine-disrupting properties**Product:****Assessment:**

The substance/mixture does not contain any components that exhibit endocrine-disrupting properties in quantities of 0.1% or more in accordance with REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605.

12.7 Other adverse effects**Product:**

Other ecological information: No ecotoxicological data available.

No special effects or hazards known.

Section 13: Disposal instructions**13.1 Waste treatment methods****Product****Disposal methods**

Check for reusability. Pack or seal product waste and uncleaned empty containers, label them, and dispose of or reuse them in accordance with national regulations. For larger quantities, consult the supplier.

When passing on uncleaned empty containers, the recipient must be made aware of the potential hazard posed by product residues. For disposal within the EU, use the applicable waste code in accordance with the European Waste Catalogue (EWC). Among other things, it is the responsibility of the waste producer to assign their waste to industry- and process-specific waste codes in accordance with the European Waste Catalogue (EWC).

Hazardous waste

According to the supplier's current knowledge, this product is not to be considered hazardous waste within the meaning of EU Directive 2008/98/EEC.

Packaging**Disposal methods**

Waste generation should be avoided or minimized where possible. Packaging waste should be recycled. Incineration or landfill should only be considered if recycling is not feasible.

Special precautions

Waste and containers must be disposed of in a secure manner. Empty containers and linings may contain product residues. Avoid the spread and runoff of released material and contact with soil, water, drains, and sewers.

Section 14: Transport information**14.1 UN number**

ADN: Not classified as dangerous goods
ADR: Not classified as dangerous goods
RID: Not classified as dangerous goods
IMDG: Not classified as dangerous goods
IATA: Not classified as dangerous goods

14.2 Proper UN shipping name

ADN: Not classified as dangerous goods
ADR: Not classified as dangerous goods
RID: Not classified as dangerous goods
IMDG: Not classified as dangerous goods
IATA: Not classified as dangerous goods

14.3 Transport hazard classes

ADN: Not classified as dangerous goods
 ADR: Not classified as dangerous goods
 RID: Not classified as dangerous goods
 IMDG: Not classified as dangerous goods
 IATA: Not classified as dangerous goods

14.4 Packaging group

ADN: Not classified as dangerous goods
 ADR: Not classified as dangerous goods
 RID: Not classified as dangerous goods
 IMDG: Not classified as dangerous goods
 IATA (cargo): Not classified as dangerous goods
 IATA (passenger): Not classified as dangerous goods

14.5 Environmental hazards

Not classified as dangerous goods

14.6 Special precautions for users

Hazard warnings: Not classified as dangerous goods.
 Protect from moisture.
 Keep away from food and beverages.

14.7 Bulk transport in accordance with Annex II of the MARPOL Convention and in accordance with the IBC Code

Not applicable to product in delivery condition.

Section 15: Regulations**15.1 Regulations on safety, health, and environmental protection/specific legal provisions for the substance or mixture**

REACH - Restrictions on the manufacture, placing on the market, and use of certain hazardous substances, preparations, and articles (Annex XVII):	Not applicable
International Chemical Weapons Convention (CWC) Lists of toxic chemicals and precursors:	Not applicable
REACH - List of substances of very high concern subject to authorization (Article 59)	This product does not contain any substances of very high concern. (REACH Regulation (EC) No. 1907/2006, Article 57).
REACH - List of substances subject to authorization (Annex XIV):	Not applicable
Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast):	Not applicable
Council Regulation (EC) No. 111/2005 laying down rules for the monitoring of trade in drug substances between the Community and third countries.	Not prohibited and/or restricted

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Regulation (EU) No. 649/2012 of the European Parliament and of the Council on the export and import of dangerous chemicals Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. Not applicable

REACH - List of substances subject to authorization (Annex XIV) Not applicable

Water hazard class: nwg – not hazardous to water

Identification number:

Comments: Classification according to AwSV, Annex 1 (2.1.)

Classification according to AwSV, Annex 1 (4)

15.2 Substance safety assessment: Not required.

Section 16: Other information

Changes from the previous version

Abbreviations:

Abbreviations and acronyms: ATE = Acute Toxicity Estimate

CLP = Classification, Labeling, and Packaging Regulation [Regulation (EC) No. 1272/2008]

DNEL = Derived No-Effect Level

EUH statement = CLP-specific hazard statement

PNEC = Predicted No-Effect Concentration

RRN = REACH registration number

DE DFG MAK : Germany. MAK BAT Annex IIa

DE TRGS 900 : Germany. TRGS 900 - Occupational exposure limit values.

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of

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Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

History

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Note to the reader

The information is based on the current state of knowledge and experience. This safety data sheet and its appendix (if required by Regulation (EC) No. 1907/2006 (REACH)) describe products with regard to safety requirements. The information does not constitute a description of the properties, a guarantee of characteristics, or a warranty.
