Safety data sheet according to EC Directive 1907/2006/EC and Regulation (EU) No. 830/2015

SECTION 1: Identification of the substance or mixture and of the company

1.1. Product identifier
Product name: Igniter cord
Other names / trade names: ---

1.2. Relevant identified uses of the substance or mixture and uses advised against
Igniter cords are used in pyrotechnics.
Uses which are advised against: Do not use in potentially explosive atmosphere

1.3. Details of the supplier providing the product information sheet
WANO Schwarzpulver GmbH
Kunigunde
38704 Liebenburg, Germany
Phone: +49 - 5346 - 9500 - 0
Fax: +49 - 5346 - 950066
E-mail address of the competent person(s) responsible for the safety data sheet:
info@wano.de

1.4. Emergency number
Production management: +49 -5346 - 950032, 6:00 am to 2:30 pm
Berlin poison control centre : +49 - 30 19240

SECTION 2: Possible hazards

2.1 Classification of the substance or mixture
Product definition: Article containing black powder. Black powder core with flexible foil and textile coating reinforced with copper wire.
Classification according to Regulation (EC) No 1272/2008
Expl. 1.4; H204

2.2 Label elements
Label elements according to Directive 1272/2008/EC
Hazard pictograms: "exploding bomb"

Signal word: Caution
Hazard warning:
H 204: Danger from fire or splinters, explosives and projectiles
Safety notes:
P 210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Do not smoke.
P 401: Store in a cool and dry place.
P 501: Dispose of the contents/container in a safe way.
Please note: Consideration of the provisions of Art. 1272/2008/EC Art. 23 e

2.3 Other specifications
Results of the PBT and vPvB assessment
- PBT: not applicable
- vPvB: not applicable

Abschnitt 3: Composition/Information on components

3.2 Mixtures

Hazardous component	Classification EC No. 1272/2008	(g/m)
Black powder	Expl. 1.1; H201, mass explosion hazard, signal word: Danger	4.3-5.3

Components of black powder:

Name of the ingredient	Identifiers	REACH no.	% (m/m)	Classification EC No. 1272/2008
Potassium nitrate	CAS No.: 7757-79-1 EINECS No.: 231-818-8	01-2119488244-35-XXXX	72-78	Ox. Sol. 3; H272
Sulphur	CAS No.: 7704-34-9 EINECS No.: 231-722-6	01-2119487295-27-XXXX	7-19	Skin Irrit. 2; H315
Charcoal	CAS No.: 16291-96-6 EINECS No.: 240-383-3	01-2119560590-41-XXXX	7-18	none

See section 16 for the full text of the above H-phrases

Section 4: First aid measures

4.1. Description of first aid measures

a) General notes

If you have an accident or feel unwell, consult a doctor immediately - symptoms of poisoning can manifest themselves after many hours, therefore medical surveillance for at least 48 hours after an accident.

b) After inhalation

After inhalation of black powder: remove person affected to fresh air. (also refer to item 4.2)

c) After skin and eye contact

In case of skin contact, wash the affected areas thoroughly with plenty of water and soap. Change contaminated clothing.

In the event of eye contact, rinse the eyes with water for a sufficiently long time with the eyelids open (protect uninjured eye, remove contact lenses).

An ophthalmologist must then be consulted.

d) After swallowing

If the substance has been swallowed and the person concerned is fully conscious, induce vomiting, have him/her drink as much water as possible, arrange for immediate medical treatment and have the safety data sheet ready.

e) After burn injuries

Cover burn wounds with dry, sterile dressing material and then seek medical attention.

4.2 Significant acute and delayed symptoms and effects:

After inhalation of fire or decomposition gases - Fresh air, rest and immediate medical advice. Transport to the doctor in a lying position, if unconscious, position and transport in stable lateral position. Risk of pulmonary oedema, medical surveillance at least 48 h.

4.3 Information on immediate medical assistance or special treatment:

No information available.

Section 5: Fire fighting measures

There is a **DANGER OF DEFLAGRATION** in the event of fire - if the product has caught fire do not attempt to extinguish the fire from an unprotected position; leave the danger zone immediately, large-scale cordoning off is required (at least 300 m); warn the neighbourhood and evacuate if necessary; seek safe cover

5.1 Extinguishing media

a) Suitable extinguishing media

In case of fire, extinguish with water, water spray or extinguishing powder.
Put down nitrous gases produced during thermal decomposition with water spray.

b) Unsuitable extinguishing media

Not Applicable

5.2 Special hazards arising from the substance or mixture

a) Hazard presented by the substance or mixture:

- Oxidising substance. Capable of intensifying fire.
- Strong heating under confinement can lead to a violent reaction or explosion due to decomposition - **Deflagration Hazard!**

b) Hazardous decomposition products:

- Thermal decomposition generates nitrous gases and and in some circumstances ammonia.
- Avoid inhalation of dust, vapours and smoke of burning substances (see section 4.2.).

5.3 Fire-fighting instructions

In the event of fire, especially in case of intense heating under confinement, there is a danger of explosion! Do not attempt to extinguish from an unsafe position!
If this is possible without risk, remove the explosive substance from the hazard zone.
Extinguish burning product only from a safe distance with water spray jet! Keep endangered product cool by spraying with water.
Limit the number of emergency personnel in the hazard zone.
Nitrous gases may develop during fire fighting – therefore use full protective suit with self-contained breathing apparatus (portable insulating unit).
Fire residues and contaminated extinguishing water must be retained and disposed of in accordance with statutory regulations.

Section 6: Measures in case of accidental release

6.1. Personal precautions, protective equipment and emergency procedures

a) Personnel not trained for emergency situations

- Do not take any measures that involve personal risk, that have not been exercised or cannot be judged.
- Wide perimeter required - warn the surroundings and evacuate!
- Removal of ignition sources
- Avoid skin and eye contact
- Keep unprotected and unauthorised persons away or bring them to a safe place

b) Emergency personnel

- Wear standard cotton work clothing that cover the body - change clothing if it is soiled.
- Protective equipment: see section 8.

6.2. Environmental protection measures

Infiltration of spills into the soil, sewer system, pits, cellars, surface water and groundwater shall be prevented by appropriate measures (see section 6.3.).

Close leaks, if possible.

6.3. Methods and materials for retention and cleaning

a) small released amount:

- Collect spilled material either by hand (use protective gloves made of nitrile rubber) or with suitable tools made of spark-proof material (e.g.: shovel), fill into labelled containers and dispose of properly according to section 13.
- Keep labelled containers under lock and key until disposal.

a) large released amount:

- If possible, limit spreading of the spilled material.
- Close the sewer system with sewer covers.
- Collect spilled material with suitable tools made of spark-proof material, fill into labelled containers and dispose of properly according to section 13.
- Keep labelled containers under lock and key until disposal.

6.4 Reference to other sections

For information on personal protective equipment: see section 8
For information on disposal, see section 13

Section 7: Handling and storage

7.1. Handling

Notes on safe handling

- Safety fuse is safe to handle when handled properly
- Handling is only permitted to a person who is competent according to SprengG or is only permitted under the supervision of such a person.
- Keep away from heat and direct sunlight.
- Open and handle packaging with care Use spark-proof, antistatic tools.
- Do not eat, drink or smoke when working. Avoid contact with eyes and skin Personal Protective Equipment: see item 8.2.2
- During thunderstorms in dangerous proximity (< 3 km), handling of the product must be stopped immediately - get into a safe building!

Notes on fire and explosion protection

- Keep ignition sources away.
- Smoking is prohibited.
- Keep away from flammable and non-compatible materials (see section 10.5).
- Impact, friction and shock must be avoided.

7.2. Storage

Requirements for storage rooms and containers:

- Storage requires approval in accordance with § 17 SprengG
- Storage only permitted in sealed original packaging
- Storage rooms must comply with the second ordinance of the German Explosives Act and the Explosives Storage Guidelines

Information on storage in one place

- Explosives must not be stored together with other materials (2. SprengV, Appendix no. 2.7).

Further information on storage conditions

- Store in a fireproof place
- Shelf life: 10 years when stored in original packaging, product slightly hygroscopic - store under lock and key and dry
- Storage class: storage group 1.4, compatibility group S (according to 2. SprengV, §2)

7.3. Intended use

Igniter cords are used in pyrotechnics.

Section 8: Limitation and control of exposure/Personal protective equipment

8.1. Parameters to be monitored
8.1.1 Occupational exposure limit values (OEL)

No occupational exposure limit values are available for the individual components contained in black powder.
General dust limit value: Inhalable fraction (E-dust): 10 mg/m³.
Alveolar fraction (A-dust): 1.25 mg/m³.
Combustion gases:

Carbon monoxide:	ILV (EU) – 8 h– 23 mg/m³
	ILV (EU) – 8 h– 20 ppm
	ILV (EU) – 15 min – 35 mg/m³
	ILV (EU) – 15 min – 30 ppm
	OEL (8h) TRGS 900 – 35 mg/m³
	OEL (8h) TRGS 900 – 30 ppm
	Peak limitation / exceedance factor OEL - TRGS 900 : 2
Carbon dioxide:	ILV (EU) – 8 h– 9000 mg/m³
	ILV (EU) – 8 h– 5000 ppm
	OEL (8h) TRGS 900 – 9100 mg/m³
	OEL (8h) TRGS 900 – 5000 ppm
	Peak limitation / exceedance factor OEL - TRGS 900 : 2
Hydrogen sulphide	ILV (EU) – 8 h– 7 mg/m³
	ILV (EU) – 8 h– 5 ppm
	ILV (EU) – 15 min – 14 mg/m³
	ILV (EU) – 15 min – 10 ppm
	OEL (8h) TRGS 900 – 7.1 mg/m³
	OEL (8h) TRGS 900 – 5 ppm
	Peak limitation / exceedance factor OEL - TRGS 900 : 2: ILV (EU) - 8 H - [mg/m³] : 7

8.1.2 Biological limit value (BLV)
No biological limit values are known.
8.1.3 DNEL values
8.1.3.1 Potassium nitrate
a) workplace-related
- Long-term - dermal, systemic effect: 20.8 mg/kg
- Long-term - inhalative, systemic effect: 36.7 mg/m³

b) General population
- Long-term - dermal, systemic effect: 12.5 mg/m³
- Long-term - oral, systemic effect: 12.5 mg/kg
- Long-term - inhalative, systemic effect: 10.9 mg/m³

8.1.4 PNEC value
8.1.4.1 Potassium nitrate
- *Fresh water (short-term, one-off) 0,45 mg/l*
- *Seawater (short-term, one-off) 0.045 mg/l*
- *Wastewater treatment plant (STP) (short-term, one-off) 18 mg/l*
- *Water (continuous) 4,5 mg/l*

8.2. Limitation and control of exposure
8.2.1 Suitable technical control equipment
- No special ventilation requirements

8.2.2 Individual protective measures, for example personal protective equipment

Technical measures have priority over the use of personal protective equipment. The protective equipment must be selected specifically for the workplace in accordance with the quantity and concentration of hazardous substances. It is recommended to check with suppliers what chemical resistance the protective equipment offers for special applications.
Observe the regulations of the professional associations.

a) Eye protection / face protection:
Not necessary if handled properly.

b) Skin protection:
- *Hand protection:*
  Not necessary if handled properly.
- *other protective measures:*
- Wear cotton work clothing that covers the body – change clothing if it is soiled.
- Wear category 2 safety shoes with anti-slip soles (recommended: low shoes or ankle-high shoes according to EN ISO 20345)

c) Respiratory protection:
Not necessary if handled properly.

d) Thermal hazards
No thermal hazards to be expected - product temperature < 35 °C

8.2.3 Limitation and control of environmental exposure

At present, no exposure limit values are available.
The products are placed on the market exclusively in packaged form. It is therefore almost impossible for black powder to be released into the ground, sewers, pits, cellars, surface and ground water. However, this must be prevented.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a)	Appearance:	Article containing black powder. Black powder core with flexible foil and textile coating reinforced with copper wire.	
b)	Odour:	odourless	
c)	Odour threshold:	not defined	
d)	pH value:	Neutral against litmus (solution 10 %)	/4/
e)	Melting point/freezing point:	Not applicable	
f)	Boiling start and boiling range:	Not applicable	
g)	Flash point:	Not applicable	
h)	Evaporation rate:	Not applicable	
i)	Flammability (solid/gaseous):	Not applicable	
j)	Upper/lower flammability or explosive limits:	Not applicable	
k)	Steam pressure:	Not applicable	
l)	Vapour density:	Not applicable	
m)	Relative density:	1.0 - 1.9 g/cm³ by reference to black powder /4/	
n)	Solubility (solubilities):	in Water at 10 ° by reference to KNO_3: 312 g/l	/3/
o)	Partition coefficient: n-Octanol/ Water	not determined (for individual components see item 12.3)	

p)	Auto-ignition temperature:	Not applicable
q)	Decomposition temperature:	from 290 - 360 °C (by reference to black powder)
r)	Viscosity:	not defined
s)	explosive properties:	Product burns after ignition without explosive effect
t)	oxidizing properties:	Black powder has an oxidizing component (potassium nitrate).

9.2 Other information **/4/**

- Impact sensitivity ≥ 7.5 J (by reference to black powder)
- Friction sensitivity > 360 N (by reference to black powder)

Section 10: Stability and reactivity

10.1. Reactivity

- Explosive substance! See sections 9.2 and 10.3

10.2. Chemical stability

Black powder is stable under the storage conditions specified in section 7.2.

10.3. Possibility of dangerous reactions

Dangerous reactions may occur if storage conditions differ (see section 7.2) or if the product is not properly used.
There is a risk of explosion if heated under confinement!
At temperatures above 290 °C decomposition starts with the release of nitrous gases

10.4. Conditions to avoid

- Impact, shock, friction, heat, fire - the impact sensitivity of "black powder" is 7.5 J. A stronger impact can lead to explosion.
- Avoid moisture.

10.5. Incompatible materials

- strong oxidizing and reducing agents

10.6. Hazardous decomposition products

Thermal decomposition generates nitrous gases, carbon monoxide and hydrogen sulphide.
During detonation / explosion nitrous gases, carbon monoxide and hydrogen sulphide can be produced.

Section 11: Toxicology information

11.1. Information on toxicological effects

Preparation not examined
Substance / single component (relevant LD/LD_{50} values):

a) acute toxicity:

Component	*Type*	*Value*	*Species*
Potassium nitrate /1/	LD50 oral	3750 mg/kg	Rat
Sulphur /2/	LD 50 oral LD50 dermal LC 50 inhalative	> 2000 mg/kg > 2000 mg/kg > 5.43 mg/l (4 h)	Rat Rabbit Rat

b) Irritation

Component	*Skin*	*Eyes*	*Respiratory organs*
Potassium nitrate	irritant	Slight to moderate irritation	No special effects or hazards known
Sulphur	irritant (rabbit 4 h)	not irritating (rabbit 24 h)	Irritant effect known /1/
Charcoal	No irritant effect	No irritant effect	No data available

c) Caustic effect
No biological limit values are known.

d) Sensitisation
No sensitising effect of the components is known.

e) Toxicity on repeated administration
Based on the available data, classification criteria are not met.

f) Carcinogenicity
No special effects or hazards of the individual components are known.

g) Mutagenicity
No special effects or hazards of the individual components are known.

h) Reproductive toxicity
No special effects or hazards of the individual components are known.

Section 12: Environmental information

12.1. Ecotoxicity

Component	*Results*	*Exposure*	*Species*
Potassium nitrate	Short term, LC50; >100 mg/l Long term, NOEC; 157 mg/l	96 h 32 d	Fish; Oncorhynchus mykiss Fish; Pimephales promelas
	Short term, EC50; 490 mg/l Long term, NOEC; >245 - <408 mg/l	24 h 12 d	Water flea; Daphnia magna Freshwater polyp, Hydra attenuata
	EC50; >1700 mg/l	10 d	Algae; benthic diatoms
	Water hazard class: 1 slightly hazardous to water		
Sulphur	Short term, LC50; 866 mg/l Long term, no data available	96 h	Fish: Brachydanio rerio
	Short term, EC50; > 10000 mg/l	24 h	Water flea; Daphnia magna
	Short term, EC50; 0.16 mg/l	24 h	Tetrahymena pyriformis (Protozoa)
Charcoal	No further relevant information available		

12.2. Persistence and degradability
No data on biodegradability are available for the preparation.
Potassium nitrate: Inorganic product, cannot be eliminated from the water by biological cleaning processes

12.3. Bioaccumulation potential
No bioaccumulation potential is known for the preparation.

12.4. Mobility in the soil
Partition coefficient soil/water (KOC):
No information is available for the individual components.
Mobility:
Potassium nitrate can be distributed through surface or ground water due to its high water solubility or miscibility (see item 9.1 n).

12.5. Result of the PBT and vPvB assessment:
No assessment so far

12.6. Other detrimental effects
No other detrimental effects such as ozone depletion potential, photochemical ozone creation potential and/or global warming potential are known of the product or its components.

Section 13: Waste disposal instructions

13.1. Waste treatment processes

Residual stocks

Unused residual stock must be kept in accordance with the second ordinance of the Explosives Act.

Waste

(unusable explosives and packaging materials contaminated with explosives)
In principle, waste generation should be avoided!
Disposal by incineration on an approved fire site by a competent person or disposal by a waste disposal company in compliance with local disposal regulations.

Section 14: Transport information

14.1. UN number

UN 0066
(ADR/GGVSEB, IMDG, IATA)

14.2. Proper shipping designation

IGNITER CORD

14.3. Transport hazard classes

Class: 1
Classification code: 1.4 G

14.4. Packaging group

14.5. Environmental hazards

No

14.6. Special precautions for the user

Packaging instruction: P140
EmS number: F-B, S-Y
Tunnel restriction code: (E)

14.7. Bulk shipment in accordance with Annex II of MARPOL Convention 73/78 and IBC code

Solids - not applicable

Section 15: Regulations

15.1. Safety, health and environmental regulations / specific legislation for the substance or mixture

WATER HAZARD CLASS 1 - SLIGHTLY HAZARDOUS TO WATER (SELF-CLASSIFICATION)
REGULATION (EC) No. 1907/2006 (REACH):
Annex XVII – Restrictions on the manufacture, placing on the market and use of certain hazardous substances, preparations and articles – Not applicable
REGULATION (EC) No. 2037/2000 (ozone layer depletion): Not applicable.
REGULATION (EC) No. 850/2004 (Persistent pollutants): Not applicable.
REGULATION (EC) No. 689/2008

(Import and export of dangerous chemicals): Not applicable.

NATIONAL REGULATIONS

Explosives Act (SprengG)
Ordinances on the Explosives Act (SprengV)
Ordinance on Hazardous Substances (GefStoffV)
Major Accidents Ordinance (StörfallV)

- Quantity threshold 1: 50 t

- Quantity threshold 2: 200 t

General mining regulations
DGUV rule 113-003 (Explosive decomposition or destruction rule)
DGUV regulation 113-017 (activities involving explosives)

15.2. Chemical safety assessment

A chemical safety assessment has not been performed.

Section 16: Other information

a) The Safety Data Sheet has been completely revised in accordance with Regulation (EU) No. 830/2015.
The information is based on the current state of our knowledge and serves to describe the product with regard to the safety precautions to be taken. It does not, however, represent any guarantee of specific features of the described product and do not establish a contractual legal relationship.

b) Abbreviations and acronyms

OEL	Occupational exposure limit value
BLV	Biological limit value
CAS	Chemical Abstracts Service
CLP	Regulation on **C**lassification, **L**abelling and **P**ackaging of Substances and Mixtures
DNEL	Derived no effect level - Exposure limit value below which no adverse effects on human health are to be expected
DGUV	German statutory accident insurance
Expl.	Explosive substances/mixtures and articles containing explosive substances - Explosive
EC50	mean effective concentration
Eye irritat.	Severe eye damage / irritation
K_{ow}	Partition coefficient n-octanol / water
LD50	mean lethal dose
LC50	mean lethal concentration
Ox.Sol.	Oxidizing solids
PNEC	Predicted no effect concentration - Predicted concentration of an environmentally hazardous substance up to which no environmental effects are observed
PBT	Persistent substance, bioaccumulative and toxic
Skin Irrit.	Corrosive/irritating effect on the skin
vPvB	very persistent substance and very bioaccumulative

c) Bibliographical references

/1/ - GESTIS Substance Database - http://gestis.itrust.de/nxt/gateway.dll?f=templates&fn=default.htm&vid=gestisdeu:sdbdeu
/2/ - Safety data sheet "sulphur" of the supplier, CS Additives, issue date: July 8, 2014
/3/ - Safety data sheet "Potassium nitrate" of the supplier, solvadis, issue date: March 10, 2015
/4/ - Declaration of the manufacturer "WANO Schwarzpulver GmbH"

d) List of H-phrases, hazard statements

(H phrases)

H201	Explosive; mass explosion hazard.
H204	Danger from fire or splinters, explosives and projectiles
H315	Causes skin irritation
H272	May intensify fire; oxidizing agent.

e) Training notes

Bi-annual briefing and instruction of employees in accordance with DGUV regulation 113-017, I General Section, item 6.1.7.