MATERIAL SAFETY DATA SHEET
Sulphur Pastilles

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name Sulphur Pastilles
1-2mm

REACH registration notes This Mixture is exempt from REACH registration according to Regulation (EC) No 1907/2006 (REACH).

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses Fertiliser.

1.3 Details of the supplier of the safety data sheet

Supplier Elixir Garden Supplies Ltd.
White Lund Industrial Estate, Morecambe
Lancashire, LA33BN

Telephone +44 (0)1524 741229

Fax +44 (0)1524 741229

E-mail info@elixirgardens.co.uk

1.4 Emergency telephone number

Emergency telephone number 01865 407333 ANGUSHORTICULTURE29003-NCEC

Contact National Chemical Emergency Centre

National response centre

Address NHS Direct

Emergency telephone number +44 111

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification

Classification in accordance with Regulation (EC) No 1272/2008 (CLP)

Health hazards Skin Irrit 2 H315

For the full text of the H-Statements mentioned in this section, see Section 16.

Classification in accordance with Directive 67/548/EEC

For the full text of the H-Statements mentioned in this section, see Section 16.

2.2 Label elements

Labelling (Regulation (EC) No 1272/2008)

Hazard pictograms

Signal word Warning.

Hazard statements H315 Causes skin irritation.

Precautionary statements
P264 Wash face, hands and any exposed skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 IF IN EYES: Wash with plenty of soap and water.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash it before reuse.

2.3 Other hazards P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P241 Use explosion-proof electrical/ventilation/lighting equipment when handling Sulphur.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Sulphur
EC Number: 231-722-6
CAS Number: 7704-34-9

The Full text for all R-Phrases and Hazard Statement are Displayed in Section 16.

SECTION 4: First Aid measures

4.1 Description of first aid measures

Inhalation Should irritation of the respiratory tract occur following inhalation, or if breathing becomes irregular, seek medical advice. If breathing ceases, artificial respiration must be administered and urgent medical help sought.

Ingestion Action is not normally required unless a large quantity is involved. In this case, precautionary medical advice may be needed. Doctors should note that cases of poisoning may be caused by ingestion, intravenous and intraperitoneal routes. Dust can cause an eye irritant and inhalation of dust may cause mucous membranes.

Skin contact Following contact with the skin, wash off thoroughly. Remove contaminated clothing.

Eye contact In the event of contact with eyes, precautionary measures should be taken before the onset of symptoms, which may not occur for some hours. As soon as contact has taken place, wash the eye thoroughly with water for at least 15 minutes, holding the eye open for better irrigation. If any discomfort persists, seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects, Diarrhoea.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor None known.

SECTION 5: Firefighting measures

5.1 Extinguishing media Extinguish with a fine water spray or fog – **not** a water jet. Small sulphur fires can be smothered with an application of earth or sand.

5.2 Special hazards arising from the substance or mixture

Special hazards Irritation of the lung and eye may take place with combustion forms of gaseous oxides of sulphur. Dust can explode in certain conditions.

5.3 Advice for firefighters

Special protective equipment Firefighters Self-contained breathing apparatus should be worn, and firefighters should keep upwind of the blaze.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Non-Emergency personnel - Avoid generation of dust; do not inhale dust. Evacuate the danger area, observe emergency procedures, consult an expert. Personnel should wear full protective clothing: chemical gloves and goggles, anti-static, anti-spark footwear, and regularly laundered overalls. Dust masks and suitable breathing apparatus should also be used if there is a risk of exposure to fumes or combustion products.
Emergency responders – see Section 8 for suitable protective clothing and materials.

6.2 Environmental precautions

Environmental precautions

The relevant authorities must be informed should spillage cause the contamination of vegetation, drains, rivers, streams etc. Any spillage must be swept up, placed in a secure plastic container and disposed as per Waste Disposal Regulations.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up

Remove all sources of ignition, and avoid dust formation. Cover drains. Collect, bund and pump off spills using non-sparking tools and equipment. Observe possible material restrictions (see Sections 7.2 & 10.5).

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Wear personal protective clothing and equipment. Ensure adequate ventilation. Do not get in eyes, on skin or on clothing. Avoid ingestion and inhalation. Make sure that eye baths are available wherever accidental exposure may occur so that quick treatment can be given. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Take measures to avoid build up of electrostatic charge. No smoking in storage and handling areas. When open handling, take local exhaust ventilation or dust extraction measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry and well-ventilated premises. Keep away from open flames, hot surfaces and sources of ignition. Suitable storage materials: laminated paper or plastic sacks, fibreboard kegs, aluminium. Unlined steel or any spark-generating material are not recommended.

Explosive properties of sulphur dusts:

Ignition temperature of dust cloud:	190 deg C
Minimum spark energy for ignition of cloud:	15 mJ
Minimum explosive concentration:	35 mg/l
Maximum explosion pressure:	5.5 bar
Average rate of pressure rise:	116 bar/sec
Maximum rate of pressure rise:	325 bar/sec

7.3 Specific end use(s)

Specific end use(s)

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8: Exposure controls/Personal protection

8.1 Control parameters Occupational exposure limits

Occupational Exposure Limits	Occupation Exposure Limits 8-hour TWA values; For sulphur dust, total dust 10 mg/m³; respirable dust 4 mg/m³. For sulphur dioxide, 5.3 mg/ m³ (2ppm) [and 10-minute TWA value 13 mg/ m³ (5ppm).

8.2 Exposure Controls

Protective equipment

Appropriate engineering controls	It is essential that all users carry out a suitable and sufficient Risk Assessment before handling sulphur.	
Personal equipment	Chemical gloves and goggles. Anti-static, anti-spark footwear. Overalls regularly laundered to avoid accumulation of dust particles. Dust masks and suitable breathing apparatus should be used where there is a risk of exposure to fumes or combustion products. Additives: Operatives should use gloves and/or barrier cream when working with grades containing oil-based additives to avoid irritation of the skin. After use, wash hands thoroughly with soap and water. For Installation Control, see Section 7 – Handling and Storage.	
Individual protection measures	Risk assessment of protective clothing should take into account Council Directive 89/686/EEC and refer to appropriate CEN standards.	
Eye/Face protection	Safety glasses with side-shields.	
Hand protection		
Full contact:	Glove material:	Nitrile rubber
	Glove thickness:	0.11 mm
	Breakthrough time:	> 480 min
Splash contact:	Glove material:	Nitrile rubber
	Glove thickness:	0.11 mm
	Breakthrough time:	> 480 min
Other protective equipment	Protective clothing	
Respiratory protection	Required when dusts are generated.	

SECTION 9: Physical and Chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Solid, Powder
Colour	Light brown
Odour	Weak characteristic sulphurous odour
Odour threshold	No information available
pH	Not applicable – Sulphur is not soluble in water
Melting Point	110.2 – 112.8^{o}C (rhombic form). 114.5 – 119.3^{o}C (monoclinic form)
Initial Boiling Point & Range	444^{o}C
Flash Point	188^{o}C (Liquid, Cleveland Open Cup Test)
Evaporation Rate	Not relevant – Sulphur is a solid
Flammability (solid,gas)	Sulphur/carrier (90% Sulphur & 10% inert carriers) as a mixture is non-flammable
Vapour pressure	0.042 mbar at 120^{o}C, 0.260 mbar at 150^{o}C
Vapour density	2.07 g/cc @ 300K
Relative density	1.25-1.27 g/cm^{3} at 20^{o}C
Solubility (ies)	Practically insoluble
Partition coefficient in water	Not applicable, insoluble in both media
Auto-ignition temperature	190^{o}C Ignition temperature of dust cloud
Decomposition Temperature	>250^{o}C
Viscosity	17 mPa.s at 120^{o}C liquid
Explosive properties	see Section 10: Stability & Reactivity
Oxidising properties	see Section 10: Stability & Reactivity

9.2 Other information

Other information	Ignition temperature - 235^{o}C Dust

SECTION 10: Stability & Reactivity

10.1 Reactivity

Reactivity	Risk of dust explosion. Sulphur can contain hydrogen sulphide, and extremely hazardous, toxic compound which can achieve explosive concentrations if released in unventilated rooms.

10.2 Chemical Stability

Stability	Elemental sulphur will not decompose over time so long as it is stored in a correct manner. Air – Sulphur burns in the air to form sulphur dioxide and other oxides. Only in exceptional circumstances such as atomisation does rapid combustion take place in air at normal handling temperatures. Water – generally no dangerous reaction to water. Acids – generally no dangerous reaction to acids. Bases/alkalis – generally no dangerous reaction to bases/alkalis.

10.3 Possibility of hazardous reactions

Possibility of hazardous reactions	Oxidising agents – when mixed with oxidising materials like chlorates, perchlorates, permanganates and nitrates, sulphur forms a highly sensitive and explosive substance. Other chemicals – other substances that may initiate a dangerous reaction are: halogens, carbides, halogenates; many metals but especially alkali metals and alkaline earths; charcoal, phosphorus, fluorides and nitrides; sulphur dichloride; halogenates.

10.4 Conditions to avoid

Conditions to avoid	Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Take measures to avoid build-up of electrostatic charge. No smoking in storage and handling areas. When open handling, take local exhaust ventilation or dust extraction measures.

10.5 Incompatible materials

Materials to avoid	Copper and mild steel. See also Section 10.3.

10.6 Hazardous decomposition products

Hazardous decomposition products	Gaseous oxides of Sulphur, Hydrogen Sulphide gas, Sulphur dust. See Section 5 for further information on hazardous combustion products and recommendations in the event of a fire.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity - oral		
Acute oral toxicity	LD_{50}	>5000 mg/kg
	Species	Rat
	Source	ICULID
Acute toxicity – dermal		
Acute dermal toxicity	LD_{50}	>2000 mg/kg
	Species	Rabbit
	Source	IUCLID
Acute toxicity – inhalation		
Acute inhalation	LC_{50}	9.23 mg/L
	Duration of exposure	4 hours
	Species	Rat
	Source	IUCLID

Information on likely routes of exposure

Skin	Causes skin irritation.
Eyes	Slight irritation. Eye contact may cause mechanical irritation through dust particles.
Inhalation of dusts	May irritate the respiratory tract.
Sensitisation	Non- sensitising.

Effects after repeated or prolonged exposure (subacute, subchronic, chronic)

Genotoxicity	*in vitro* Ames Test – Salmonella typhimurium. Result negative

Specific target organ toxicity – single exposure
The substance is not classified as a specific target organ toxicant, repeated exposure.

Aspiration hazard	No aspiration toxicity classification.

11.2 Other Information

Ingestion	If swallowed, Sulphur is poorly absorbed. There are no known systemic effects from ingestion of dust vapour below 175 mg/kg (Rabbit).
Eyes	Several hours after exposure to dust or vapour, irritation and lachrymation may occur. (Blurred vision, conjunctivitis and photophobia may follow contact with hydrogen sulphide, a potential by product of sulphur)
Skin	No effects have been documented following sulphur on the skin. There are no known systemic effects following the skin absorption of dust or vapour.
Inhalation	No acute effects following inhalation of sulphur dust. Dust and vapour may cause irritation of the mucus membranes in cases of chronic exposure. Chronic exposure to hydrogen sulphide may give headaches, cause bronchitis or rhinitis. The acute effect of the inhalation of hydrogen sulphide is headache, excitement, diarrhoea, staggering, even death.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to Fish

LC_{50}	Brachydanio rerio (Zebra fish) – 866 mg/l Duration of exposure 96 hours
LC_{50}	Oncorhynchus mykiss (Rainbow Trout) >180 mg/l /Duration of exposure 96 hours

Toxicity to Daphinia & other aquatic invertebrates

EC_{50}	Daphnia magna (Water flea) - >10,000 mg/l Exposure time 24 hours

Toxicity to Bacteria

EC_{50}	Activated sludge – 1,900 mg/l Exposure time 3 hours. Method ISO 8192

12.2 Persistence and degradability

Persistence and degradability	Sulphur is a natural component in water and soil

12.3 Bioaccumulative potential

Partition coefficient	Sulphur has a low potential for bioaccumulation

12.4 Mobility in soil

Mobility	Sulphur has slight mobility in soil

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	This product does not meet the PBT criteria or vPvB criteria; self-classification, as chemical safety assessment not required or previously conducted.

12.6 Other Adverse effects

Other adverse effects	No ecological problems are expected, when the product is handled and used with due care and attention.

SECTION 13: Disposal considerations

All forms of sulphur, or other materials contaminated with sulphur must be disposed of in accordance with Waste Disposal Regulation, using a licensed waste contractor. In the case of spillage, full protective clothing must be worn as detailed in Section 8. Refer also to the accidental release measures in Section 6.

13.1 Waste treatment methods

Product	Allocation of a waste code number, according to the European Waste Catalogue should be carried out in agreement with the regional waste disposal company. For further information, please see the following UK website: *http://www.environment-agency.gov.uk/business/topics/waste/31873.aspx*
Packaging	Residual product must be removed from packaging and when emptied, completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in a form specified by the regional waste disposal company.

SECTION 14: Transport information

Formed Sulphur (Sulphur Pastilles/Sulphur Flakes/Sulphur Rolls)

ADR/RID/IMDG	Non-restricted – exempted from the ADR Regulations under Special Provision 242.
IATA	Non-restricted – exempted from the IATA Regulations under Special Provision A105.

SECTION 15: Regulatory Information

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

EU legislation Regulation (EC) No 1907/2006 (REACH)

Annex XIV – List of substances subject to authorisation Substances of very high concern
None of the components are listed.
Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Not applicable.

Other EU regulations

Europe inventory	All components are listed or exempted.
Black List Chemicals	Not listed.
Priority List Chemicals	Not listed.
Integrated pollution prevention and control list (IPPC)	- Air: Not listed.
Integrated pollution prevention and control list (IPPC)	- Water: Not listed.

International regulations

Chemical Weapons Convention List Schedule I Chemicals:	Not listed.
Chemical Weapons Convention List Schedule II Chemicals:	Not listed.
Chemical Weapons Convention List Schedule III Chemicals:	Not listed.

15.2 Chemical safety assessment Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

SECTION 16: Other information

Abbreviations & Acronyms CLP – Classification, Labelling and Packaging Regulation [Reg (EC) No 1272/2008]

Procedure used to derive the classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Classification	Skin Irrit 2	H315	Expert judgment
Statements	H315		Causes skin irritation
[CLP/GHS]	Skir Irrit 2	H315	SKIN CORROSION/IRRITATION – Category 2

Disclaimer

To the best of our knowledge, the information provided in this Safety Data Sheet is accurate as at the date of its issue. The information it contains is being given for safety guidance purposes and relates only to the specific material and uses described in it. This information does not necessarily apply to that material when combined with other material(s) or when used otherwise than as described herein, since all materials may represent unknown hazards and should be used with caution. Final determination of the suitability of any material is the sole responsibility of the user.