

# Flake Sulphur

Devco Australia Holdings

MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021



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### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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#### PRODUCT NAME

FLAKE SULPHUR

#### SYNONYMS

Commercially Formed Solid Elemental Sulphur, Flake Sulphur

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### Section 2 - HAZARDS IDENTIFICATION

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Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road or Rail; NON-DANGEROUS GOODS. Sulphur is not subject to the provisions of the Australia Dangerous Goods Code when it has been formed into a specific shape such as pastilles, prills, granules, pellets or flakes.

This material is hazardous according to Safe Work Australia – HAZARDOUS SUBSTANCE

**Signal Word:** WARNING



**Hazard Statement:** H315 Causes Skin Irritation

#### Precautionary Statement(s):

**Prevention:** P264 Wash Hands Thoroughly after handling  
P280 Wear Protective Gloves / protective clothing / eye protection / face protection

**Response:** P302 & P352 If on skin – wash with plenty of soap and water  
P321 Specific treatment (see 1<sup>st</sup> Aid Measures on SDS)  
P332 & P313 If skin irritation occurs then get medical advice/attention  
P362 Take off contaminated clothing and wash before re-use

**Storage:** No Storage Statements

**Disposal:** No Storage Statements

# Flake Sulphur

Devco Australia Holdings  
**MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021**

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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NAME	CAS RN	%
Sulphur	7704-34-9.	100

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## Section 4 - FIRST AID MEASURES

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### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### EYE

- If this product comes in contact with the eyes:
  - Wash out immediately with fresh running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Seek medical attention without delay; if pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

- If skin or hair contact occurs:
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

### INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

- Treat symptomatically.
- Sulphur dioxide inhalation is a potential hazard in fire situations.  
Sensitive persons can experience skin irritation from repeated exposure to the sulphur dust. Allergic responses can occur.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

- Water spray or fog.
- Steam and carbon dioxide may be useful in special cases. Sand can be used.  
In Large Fires: Fire can be smothered by experts using additional sulphur (since SO<sub>2</sub> decomposition product does not support combustion).

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
  - Wear breathing apparatus plus protective gloves.
  - Prevent, by any means available, spillage from entering drains or water courses.
- If safe to do so, switch off electrical equipment until vapour fire hazard is removed.  
DO NOT approach containers suspected to be hot.  
Cool fire exposed containers with water spray from a protected location.  
If safe to do so, remove containers from path of fire.

# Flake Sulphur

Devco Australia Holdings  
**MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021**

## **FIRE/EXPLOSION HAZARD**

### ■ Combustible.

- Sulphur fires are deep blue at night, with very short flames. Fire is invisible by daylight except for smoke and heat. Burning material, however, turns a deep red-black.

NOTE: Burns with intense heat. Produces melting, flowing, burning liquid and dense acrid black smoke. Decomposes on heating and produces acrid and toxic fumes of: sulphur dioxide (SO<sub>2</sub>).

Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding.

## **FIRE INCOMPATIBILITY**

### ■ Avoid contamination / mixing with oxidising agents as ignition may result.

When molten, sulphur can generate hydrogen sulfide and carbon disulfide in contact with some organic materials.

## **HAZCHEM**

None

## **Personal Protective Equipment**

Gloves, boots (chemical resistant).

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## **Section 6 - ACCIDENTAL RELEASE MEASURES**

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## **MINOR SPILLS**

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste disposal.

## **MAJOR SPILLS**

- Remove all ignition sources.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Recover product wherever possible. Avoid generating dust.
- Sweep / shovel up.
- If required, wet with water to prevent dusting.
- Put residues in labelled plastic bags or other containers for disposal.
- Wash area down with large quantity of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

**Personal Protective Equipment advice is contained in Section 8 of the MSDS.**

# Flake Sulphur

Devco Australia Holdings  
**MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021**

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## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

- Polylined drum.  
Steel drum with plastic liner.

### STORAGE INCOMPATIBILITY

- Avoid storage with oxidisers.

### STORAGE REQUIREMENTS

- Keep dry.
- Store under cover.
- Store in a well ventilated area.
- Store away from sources of heat or ignition.
- Observe manufacturer's storing and handling recommendations.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>
Australia Exposure Standards	sulphur granules, pellets, prills, flakes, pastilles (Inspirable dust (not otherwise classified))	10

### PERSONAL PROTECTION

#### EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly.

# Flake Sulphur

Devco Australia Holdings

## MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021

### HANDS/FEET

■ Wear general protective gloves: i.e. Disposable polythene gloves or Cotton gloves or Light weight rubber gloves, with Barrier cream preferably Safety footwear.

### OTHER

- Overalls.
- Eyewash unit.

### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

\* - Negative pressure demand

\*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

■ General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas.

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

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### APPEARANCE

Bright yellow solid, as prills, granules, pellets, flakes or pastilles; insoluble in water. Slightly soluble in alcohol and ether.

Soluble in carbon disulfide, benzene and toluene.

Odourless, but impurities may cause H<sub>2</sub>S smell.

Sulphur is not subject to the provisions of the ADG Code when it is transported in quantities of less than 400 kg per package, or when it has been formed into a specific shape (e.g. prills, granules, pellets, pastilles or flakes). [Special Provision 242]

### PHYSICAL PROPERTIES

Solid.			
Does not mix with water.			
Sinks in water.			
State	Divided solid	Molecular Weight	32.06
Melting Range (°C)	112.8- 119	Viscosity	Not Applicable
Boiling Range (°C)	444.6 (IBP)	Solubility in water (g/L)	Ins oluble
Flash Point (°C)	>180 (as dust)	pH (1% solution)	Not applicab le.
Decomposition Temp (°C)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°C)	232 (as dust)	Vapour Pressure (kPa)	0.133 @ 184 deg
Upper Explosive Limit (%)	1400 g/m <sup>3</sup> dust	Specific Gravity (water=1)	1.92- 2.07
Lower Explosive Limit (%)	35 g/m <sup>3</sup> dust	Relative Vapour Density (air=1)	Not available.
Volatile Component (%vol)	Nil	Evaporation Rate	Non Volatile

# Flake Sulphur

Devco Australia Holdings  
**MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021**

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## Section 10 - STABILITY AND REACTIVITY

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### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

*For incompatible materials - refer to Section 7 - Handling and Storage.*

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

- Considered to be non-toxic.

Ingestion may result in nausea, abdominal irritation, pain and vomiting.

Ingested sulphur is converted to sulfides in the gastrointestinal tract, and ingestion of 10 to 20 grams has caused irritation of the GI tract and renal injury. Individuals with known allergies to sulfide drugs may

also have allergic reactions to elemental sulphur. Swallowing large amounts may cause nausea and vomiting. Can be taken in fairly large doses without injury.

##### EYE

- There is some evidence to suggest that this material can cause eye irritation and damage in some persons. The dust may irritate the inner surfaces of the eyelids.

##### SKIN

- There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons. Irritant effects may be aggravated by perspiration or moisture.

##### INHALED

- The dust may be discomforting.

There is no evidence that systemic poisoning results from inhalation of sulphur dust.

Sulphur vapour irritates both the upper and lower respiratory passages and if inhaled may cause coughing, conjunctivitis, nausea, vomiting and chest tightness, bronchitis and in extreme pulmonary oedema (sudden or delayed).

#### CHRONIC HEALTH EFFECTS

- Sensitive persons can experience skin irritation from repeated exposure to the sulphur dust.

Allergic responses can occur.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.

# Flake Sulphur

Devco Australia Holdings

## MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021

### TOXICITY AND IRRITATION

SULPHUR GRANULES, PELLETS, PRILLS, FLAKES, PASTILLES:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

Oral (rat) LD50: >8437 mg/kg

Eye (human): 8 ppm Irritant

Oral (rabbit) LDLo: 175 mg/kg

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### Section 12 - ECOLOGICAL INFORMATION

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SULPHUR GRANULES, PELLETS, PRILLS, FLAKES, PASTILLES:

#### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
sulphur granules, pellets, prills, flakes, pastilles	LOW		LOW	HIGH

#### GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / Cas No / RTECS No	EHS	TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Sulphur / CAS:7704- 34- 9 / WS4250000	906	675	Ino rg	0	0	Ino rg	0	NI	0	0	(1)	1	1			S	1

#### Legend:

EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l),

C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acute mammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation & corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities,

For column A2: R=Readily biodegradable, NR=Not readily biodegradable.

For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic.

For column E1: NT=Not tainting (tested), T=Tainting test positive.

For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances.

The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard.

(GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

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### Section 13 - DISPOSAL CONSIDERATIONS

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- Consult manufacturer for recycling options and recycle where possible .
- Consult State Land Waste Management Authority for disposal.
- Incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

# Flake Sulphur

Devco Australia Holdings  
**MATERIAL SAFETY DATA SHEET – SEPTEMBER 2021**

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## Section 14 - TRANSPORTATION INFORMATION

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### HAZCHEM:

None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, UN, IATA, IMDG

*GESAMP hazard profiles for this material can be found in section 12 of the MSDS.*

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## Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE None

### REGULATIONS

#### **Elemental Sulphur (CAS: 7704-34-9) is found on the following regulatory lists;**

"Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals"

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## Section 16 - OTHER INFORMATION

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■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Issue Date: Sept 2021

End of MSDS