SECTION 1: NAME OF SUBSTANCE AND COMPANY

1.1 Product Identification

Name of Substance: Granular Gaseous Technical Sulphur

EC No. 231-722-6

REACH Registration No. 01-2119487295-27-0005

CAS No. 7704-34-9

1.2 Product Use

Established use: feedstock in chemical industry

1.3 Detailed Information on MSDS Supplier

Manufacturer:

Public Company *ORLEN Lietuva*
Juodeikiai village, LT-89467 Mažeikiai District, Lithuania
Tel.: (370) 443 92121
Telefax: (370) 443 92525
E-mail address: info@orlenlietuva.lt

1.4 Emergency telephone

Public Company ORLEN Lietuva (24 hours a day): +370 443 92510
Poison Center (24 hours a day): +370 52362052, mob. +370 687 53378

SECTION 2: POSSIBLE HAZARDS

2.1 Classification of the Substance

Classification according to Regulation (EC) No. 1272/2008:
Skin Irrit. 2, H315

2.2 Labelling

Labeling according to Regulation (EC) No. 1272/2008

Hazard pictograms

GHS07

Signal word:
CAUTION.

Hazard statements:
H315: Irritating to skin.

Precautionary statements:
P280**:** Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352**:** IF ON SKIN: Wash with plenty of soap and water.
P332+P313: If skin irritation occurs: Get medical advice/attention.

2.3 Other hazards

Sulphur is solid combustible material which is attributed to products of low hazard when at ambient temperature and normal conditions. Finely dispersed sulphur particles may form explosive mixtures in air.

Sulphur dust irritates mucous membrane of respiratory tract and eyes, and the skin. Ingestion may cause digestive tract diseases.
Burning sulphur emits toxic sulphur dioxide (SO_2).
Low environment hazard at ambient temperature. Hazard of soil and ground water contamination.

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Chemical composition:

Granular Gaseous Technical Sulphur.

Components according to Regulation (EC) No. 1272/2008:

Description	CAS No.	EC No.	Concentration, % m/m
Granular Gaseous Technical Sulphur	7704-34-09	231-722-6	100

SECTION 4: FIRST-AID MEASURES

4.1 Description of first aid measures

General Information

Solid sulfur is flammable. Burning sulphur emits toxic and suffocating sulfur dioxide (SO_2). Finely dispersed particles form explosive mixtures in air. Liquid sulfur can cause thermal burns.

Inhalation

In case of symptoms arising from inhalation of sulfur dust: Remove casualty to a quiet and well ventilated place if safe to do so.
If casualty is unconscious and:
- Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.
- Breathing – place in the recovery position. Administer oxygen if necessary. Obtain medical assistance if breathing remains difficult.

Obtain medical assistance if breathing remains difficult.
If there is any suspicion of inhalation of SO_2:
- Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures. Remove casualty to fresh air as quickly as possible.
- Immediately begin artificial respiration if breathing has ceased. Provision of oxygen may help.
- Obtain medical advice for further treatment.

Skin Contact

Immediately remove contaminated clothing and footwear and dispose of safely. Wash affected area with soap and water. Seek medical attention if skin irritation, swelling or redness occurs.
For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.
Do not put ice on the burn. Remove non-sticking garments carefully. DO NOT attempt to remove portions of clothing glued to burnt skin but cut round them. Seek medical attention in all cases of serious burns.

Eye Contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If dust particles remain in the eye, do not rub the eye as mechanical abrasion due to the dust may damage the cornea. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.

If hot product is splashed into the eye, it should be cooled immediately to dissipate heat, under cold running water. Immediately obtain specialist medical assessment and treatment for the casualty.

Ingestion
In contact with mouth, wash out with plenty of water. Except as deliberate acts, ingestion of large amounts of sulphur is unlikely. DO NOT induce vomiting. Get medical assistance.

4.2 Most important symptoms and effects
Inhalation of sulphur dust may cause irritation of the upper respiratory tract. Skin and eye contact – irritation (product at ambient temperature). May cause burn in case of contact with product at high temperature. Ingestion – light laxative effect.

4.3 Information to doctor or other competent person providing first aid
Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

Flammability and Special Hazards
Dust clouds may present an explosion hazard. They may be ignited by heat, sparks, static electricity or flames. The flames generated by the burning product are short, dark blue colored at night and invisible in the daylight, with the exception of the fume and the heat. The burning material acquires a dark red-black colour.

5.1 Extinguishing Media
Suitable Extinguishing Media
- Foam (specifically trained personnel only);
- Water fog (specifically trained personnel only);
- Dry chemical powder;
- Carbon dioxide;
- Other inert gases (subject to regulations);
- Sand or earth;
- Steam.

Unsuitable Extinguishing Media
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Hazards arising from the substance
Combustion Products
Combustion products include sulphur oxide (SO_2).

Specific Hazards
Whereas burning sulphur emits toxic gas which irritates mucous membrane of respiratory tract and eyes, do not come close to the source of fire without suitable breathing apparatus. Burning sulphur in railway cars and storage facilities should be extinguished with water at a safe distance. Nearest building and area evacuation should be arranged considering toxic burning sulphur products movement direction.

5.3 Protective Equipment for Fire-fighters
In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Protection Equipment and Emergency Procedures

Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material.

Work gloves providing adequate chemical resistance. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated.

NOTE: Gloves made of PVA are not water-resistant, and are not suitable for emergency use.

Work helmet. Antistatic non-skid safety shoes or boots. Closed goggles. Face shield, if contact of hot product or vapors with eyes is possible or anticipated.

Respiratory protection: a half mask with dust filter, a full face respirator with filter(s) for organic vapours / SO_2 / H_2S, or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

As sulphur is flammable, any leakage or spill in dust form creates a fire hazard in case of presence of ignition sources. Finely dispersed sulphur particles may form explosive mixtures in air.

Stop or contain leak at the source, if safe to do so. Prevent generation and spreading of dust. Avoid direct contact with released material. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. It is recommended to eliminate all ignition sources, if safe to do so (e.g. electricity, sparks, fires, flares).

When the presence of dangerous gases around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training.

If required, notify relevant authorities according to all applicable regulations.

6.2 Environmental Measures

Spillages on to Land

Prevent product from entering sewers, rivers or other bodies of water. Leaks and spillages of molten sulphur cause the risk of severe burns.

NOTE: Solidified product may clog drains and sewers.

If necessary dike the molten product with earth, sand or similar non-combustible materials. Let molten sulphur cool naturally. If necessary, cautiously use water fog to help the cooling. Do not play direct jets of water on the spilled molten product, as this may cause splattering.

When inside buildings or confined spaces, ensure adequate ventilation.

Spillages in Water or at Sea

The product in solid form is heavier than water, and normally no intervention will be possible. Fine dust may momentarily float. If possible, control the spreading of the solid sulphur dust by suitable mechanical means. In case of spillages of molten sulphur in the water, the product will cool down rapidly, become solid and sink to the bottom.

6.3 Cleaning Methods and Procedures

Spillages on to Land

Collect free product with suitable mechanical means. Collect recovered product and other contaminated materials in suitable containers for recycle, recovery or safe disposal.

Spillages on Water or at Sea

Collect the solid sulphur dust by skimming or other suitable mechanical means. Do not use solvents or dispersants, unless specifically advised by an expert, and, if required, approved by local authorities. Collect recovered product and other materials in suitable tanks or containers for recovery or safe disposal.

Additional Information
NOTE: Recommended measures are based on the most likely spillage scenarios for this material, however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.
In those cases when the presence of dangerous amounts of gases around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special equipment for detection and personal protection, procedures and personnel training.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid release to the environment. When handling, risk of explosive mixtures of dusts and air. Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products, are followed. Keep away from heat/sparks/open flames/hot surfaces. No smoking.
A specific assessment of inhalation risks from the presence of sulfur dioxide (SO_2) in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances.
Use only outdoors or in a well-ventilated area. Avoid contact with the product, namely when in the molten form.

7.2 Conditions for safe storage and handling
Handling
Handle only in areas away from potential ignition sources, therefore take precautionary measures against static electricity. Ground/bond container and receiving equipment. Transfer equipment must be designed in a manner that minimizes the airborne dust.
Avoid skin and eye contact. Do not breathe dusts of product. Use personal protective equipment as required.

Storage
Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Store in facilities designed for flammable solid or liquid material storage.
Cleaning, inspection and maintenance of internal structure of storage equipment must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.
Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, SO_2, and flammability.
Store separately from oxidizing agents.

Recommended and Unsuitable Materials for Storage
Recommended materials:
Solid sulphur: carbon steel. Liquid sulphur: carbon steel and concrete. Acid-resistant internal coating is recommended for containments and storage spaces. Hulls of sea carriers for the transport of solid sulphur should be either coated or lime washed. Compatibility should be checked with the manufacturer.
Unsuitable materials:
Some synthetic materials may be unsuitable for containers (tanks) or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

Container Advice if the Product is Supplied in Containers
Keep only in the original container or cargo container designed for this kind of product. Cargo container shall be tightly closed and properly labeled.
Empty cargo container may contain combustible product residues. Do not weld, solder, drill, cut or incinerate empty cargo container, unless they have been properly cleaned.

7.3 Specific end use
Granular Gaseous Technical Sulphur is used as feedstock in chemical industry.

SECTION 8: EXPOSURE CONTROL/ PERSONAL PROTECTION

8.1 Control parameters
Exposure Limits
It is recommended to observe national allowed occupational exposure limits. Where not established, the following long-term exposure limits are recommended: - sulphur dust – 6 mg/m^3;
- SO_2 – 5 mg/m^3.

8.2 Exposure controls
8.2.1 Technical measures
At ambient temperature sulphur evolves small amounts of toxic dust and gas. However, during granular sulphur transfer, sulphur dust may be generated. In case of fire, toxic SO_2 gas is emitted. Toxic material concentrations in the air of working environment should be controlled to the minimum allowed limit.

8.2.2 Personal Protective Equipment:
Respiratory Protection
If during operations the exposure to dust inevitable, then suitable respiratory protective equipment, such as protective respirator or B filtering mask against SO_2 and H_2S and sulphur dust (e.g. acc. to EN 141) should be worn. Respiratory protection equipment should be selected and used in accordance with the manufacturer's instructions and requirements established by the law.

Eye Protection
Wear safety goggles if contact of sulphur dust with eyes may occur (e.g. acc. to EN 166).

Skin and Body Protection
Hand Protection
Acid-resistant gloves (e.g. acc. to EN 388, EN 374-2, EN 374-3).

Other Protective Measures
It is necessary, wear protective clothing (e.g. acc. to EN 11612, EN 1149-5), gloves and other protective equipment. Heat and acid resistant clothes and boots should be worn to avoid thermal burns when handling molten hot sulphur. Cover your face, head and neck. Protective clothing and equipment should be regularly inspected and maintained.

Special Hygienic Recommendations
Wash hands before breaks and after work.

8.2.3 Environmental Impact Control
To ensure the compliance of ventilation and process equipment with requirements of environmental legal acts, emissions of such equipment are subject to check-ups.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	crystal solid material of yellow colour.

Odour	solid material with specific odour at ambient temperature.
pH	insignificant information.
Melting point	119 ^{o}C.
Boiling point	444 ^{o}C.
Sulphur dust explosive concentration in air	> 17 g/m^3.
Density: - liquid	1790 kg/m^3.
- solid (at 20 ^{o}C)	2100 kg/m^3.
Solubility in water	water insoluble.
Auto-ignition temperature	190 ^{o}C.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No hazardous reaction when handled and stored according to provisions.

10.2 Stability
Stable at ambient temperature.

10.3 Possibility of hazardous reactions
No known hazardous reactions.

10.4 Conditions to Avoid
High ambient temperature.
Avoid all open and potential sources of ignition.

10.5 Materials to Avoid
Avoid contact with strong oxidizing agents.

10.6 Hazardous Decomposition Products
Burning sulphur emits toxic sulphur dioxide which may build-up of dangerous concentrations in ambient air, especially in confined spaces.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Sources of Exposure
Dust particles may enter the body when inhaled together with air.

Toxicity
Acute or chronic effects are not characteristic to granular sulphur.

Acute Health Effects
Sulphur dust is irritating to eyes, mucous membrane of respiratory tract and skin, causes eye irritation and redness, coughing, and skin dryness. If hot molten product is splashed into the eyes or on skin, it may cause thermal burns. Except for deliberate acts, ingestion of large amounts of sulphur is unlikely.

Chronic Health Effects
Repeated or prolonged contact with sulphur and dust may cause skin redness, dermatitis. Prolonged exposure to sulphur dust may cause eye inflammation and pneumonia.

NOTE: Product handling at normal conditions is not subject to toxicity.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity
Sulphur does not cause any long-term adverse affects in the aquatic and other environment.

12.2 Durability and Degradability
Non-biodegradable. In normal conditions, the product is not mobile and therefore remains in the same location.

12.3 Bioaccumulation Potential
Bioaccumulation will not occur.

12.4 Mobility
According to its physical properties granular sulphur is not mobile; therefore it stays on the surface of soil. Sinks in water.

12.5 Results of PBT and vPvB assessment
This substance no contains representative structure were found to meet the PBT or vPvB.

SECTION 13: WASTE MANAGEMENT

13.1 Waste Disposal Methods
Waste is disposed of by decontamination in accordance with national requirements and local regulations or via a licensed waste disposal contractor. Identify the hazards of waste handling and undertake required safety measures. Personal protective equipment is necessary for personnel involved in waste disposal.
Empty containers or cargo containers may contain some remaining sulphur; therefore, hazard-warning labels are to be retained as a guide to the safe container handling and waste disposal**.**

SECTION 14: TRANSPORT INFORMATION

14.1 UN number	1350
14.2 UN proper shipping name	UN 1350, Sulphur, 4.1, III.
14.3 Transport hazard class	**–**
14.4 Packing group	**–**
14.5 Environmental hazard	**–**
14.6 Special precautions for users	Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No date.

NOTE: Granular Gaseous Technical Sulphur in **ADR, RID, IMDG, IATA** systems is not classified as hazardous cargo, when it has been formed to a specific shape (e. g. granules, pellets, pastilles or flakes).

SECTION 15: REGULATORY INFORMATION

15.1 Legislation
Lithuanian:
Commission Regulation (EU) No. 2015/830; Commission Regulation (EU) No. 453/2010; Regulation (EC) No. 1907/2006 of the European Parliament and of the Council; Regulation (EC) No. 1272/2008 of the European Parliament and of the Council; Law on Chemical Substances and Preparations of the Republic of Lithuania (*Official Gazette (Valstybės Žinios)*, 2000, No. 36-987;

2004, No. 116-4329; 2005, No. 79-2846; 2006, No. 65-2381; 2008, No. 76-3000); Order No. 532 /742; 2010, Nr. 145-7434; 2010, Nr. 157-7967; 2012, Nr. 132-6648; Teisės aktų registras, Nr. 2015-11085); Law of the Republic of Lithuania on Packing and Packing Wastes Management (*Official Gazette*, 2001, No. 85-2968; 2005, No.86-3206; 2008, No.71-2699; 2011, Nr. 138-6526; 2012, Nr. 6-191; 2013, Nr. 110-5429; 2013, Teisės aktų registras, Nr. 2014-00038; Nr. 2014-05579; Nr. 2016-00088); Lithuanian Hygienic Norm HN 23:2011 „Concentration Limit Values of Hazardous Chemicals in Working Environment Air. General Requirements“ (*Official Gazette*, 2011, Nr. 38-1804) approved by Order No. V-824/A1-389 of the Minister of Health Care and the Minister of Social Security and Labour of the Republic of Lithuania on 1 September 2011.

15.2 Chemical Safety Assessment

Granular Gaseous Technical Sulphur chemical safety assessment has been conducted.

SECTION 16: OTHER INFORMATION

The Material Safety Data Sheet has been reviewed and the data therein were revised and laid out according the requirements of the Commission Regulation (EU) No. 2015/830.

Abbreviations and acronyms

CAS	Chemical Abstracts Service
EC No	EINECS and ELINCS Number
EN	European Standard
EU	European Union
PBT	Persistent, Bioaccumulative and Toxic substance
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation
UN	United Nations
vPvB	Very Persistent and Very Bioaccumulative

Hazard statements:

H315**:** Irritating to skin.

Precautionary statements:

P280**:** Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352**:** IF ON SKIN: Wash with plenty of soap and water.

P332+P313: If skin irritation occurs: Get medical advice/attention.

Do not use Granular Gaseous Technical Sulphur for purposes other than indicated in the manufacturer’s information. During such use the user may be exposed to unforeseen hazards.

Should you have any questions or doubts regarding the MSDS, its contents or other issues related to the material safety, please contact us at the address: *info@orlenlietuva.lt*

NOTE: Information provided herein is considered to be accurate as of the date specified below. No warranty is made as to the accuracy or completeness of the data and information provided in this data sheet. Information provided herein serves only as guidelines for safe work, use, processing, storage, and waste management. It cannot be considered as a warranty or quality certificate. This information applies only to specific material designated and may not be suitable for such material used in combination with any other materials or in any other manner not described in this document. Public Company *ORLEN Lietuva* shall not be responsible for any damage or injury resulting from abnormal use of the material and from any failure to adhere to recommendations.