

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/21/2009

Reviewed on 05/21/2009

1 Identification of substance:**Product details:**

Product name: Sulfur in Crude Oil standard solution, Specpure[®],
2500 µg/g (0.25%)

Stock number: 41886

Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

n-Dibutyl sulfide (CAS # 544-40-1): 1.14%

Crude Oil (CAS# 8002-05-9): Balance

Identification number(s):

Index number: 649-049-00-5

3 Hazards identification**Hazard description:**

T Toxic

Information pertaining to particular dangers for man and environment

R 45 May cause cancer.

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	1
FIRE	1
REACTIVITY	1

Health (acute effects) = 1

Flammability = 1

Reactivity = 1

GHS label elements

Danger

3.6/1A - May cause cancer.

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Use personal protective equipment as required.

Response:

IF exposed or concerned: Get medical advice/attention.

Storage:

Store locked up.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

(Contd. on page 2)

USA

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/21/2009

Reviewed on 05/21/2009

Product name: Sulfur in Crude Oil standard solution, Specpure[®],
2500 µg/g (0.25%)

(Contd. of page 1)

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents**

Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Sulfur oxides (SO_x)

Hydrogen sulfide

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

Information about protection against explosions and fires: Keep ignition sources away.**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:** Store away from oxidizing agents.**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace: Not required.**Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

(Contd. on page 3)

- USA -

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/21/2009

Reviewed on 05/21/2009

Product name: Sulfur in Crude Oil standard solution, Specpure[®],
2500 µg/g (0.25%)

(Contd. of page 2)

Material of gloves

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties:**General Information**

Form:	Liquid
Color:	Light brown
Odor:	Petroleum-like

Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	<68°C (<154°F)
Sublimation temperature / start:	Not determined

Flash point:	Not determined
---------------------	----------------

Ignition temperature:	450°C (842°F)
------------------------------	---------------

Decomposition temperature:	Not determined
-----------------------------------	----------------

Danger of explosion:	Product does not present an explosion hazard.
-----------------------------	---

Explosion limits:

Lower:	Not determined
Upper:	Not determined

Vapor pressure:	Not determined
------------------------	----------------

Density at 20°C (68°F):	0.75-0.90 g/cm ³
--------------------------------	-----------------------------

Solubility in / Miscibility with

Water:	Not miscible or difficult to mix
---------------	----------------------------------

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided: Oxidizing agents

Dangerous reactions No dangerous reactions known

Dangerous products of decomposition:

Carbon monoxide and carbon dioxide

Sulfur oxides (SO_x)

Hydrogen sulfide

11 Toxicological information**Acute toxicity:****Primary irritant effect:**

on the skin: Irritant to skin and mucous membranes.

on the eye: Irritating effect.

Sensitization: No sensitizing effects known.

Other information (about experimental toxicology):

Tumorigenic effects have been observed on tests with laboratory animals.

Reproductive effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with bacteria.

Subacute to chronic toxicity:**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

For Crude oil (CAS# 8002-05-9):

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - hepatic microsomal mixed oxidase.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other transferases.

Biochemical - Metabolism (Intermediary) - other proteins.

Gastrointestinal - malabsorption.

Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).

Blood - changes in erythrocyte (RBC) count.

Blood - other changes.

(Contd. on page 4)

USA

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/21/2009

Reviewed on 05/21/2009

Product name: Sulfur in Crude Oil standard solution, Specpure[®],
2500 µg/g (0.25%)

(Contd. of page 3)

Blood - pigmented or nucleated red blood cells.
 Blood - other hemolysis with or without anemia.
 Blood - changes in cell count (unspecified).
 Nutritional and Gross Metabolic - weight loss or decreased weight gain.
 Nutritional and Gross Metabolic - conditioned vitamin deficiency.
 Endocrine - changes in spleen weight.
 Related to Chronic Data - changes in ovarian weight.
 Related to Chronic Data - death.
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects.
 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other oxidoreductases.
 Liver - changes in liver weight.
 Liver - other changes.
 Skin and Appendages - hair.
 Skin and Appendages - tumors.
 Lungs, Thorax, or Respiration - tumors.
 Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.
 Tumorigenic - carcinogenic by RTECS criteria.
 Tumorigenic - equivocal tumorigenic agent by RTECS criteria.
 Tumorigenic - tumors at site of application.
Subacute to chronic toxicity:
 Di-n-butyl sulfide is irritating to the skin, eyes and mucous membranes. It is moderately toxic by ingestion. Exposure may cause neusea, headache and vomiting.
Additional toxicological information:
 To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information:**General notes:**

Do not allow product to reach ground water, water course or sewage system, even in small quantities.
 Danger to drinking water if even extremely small quantities leak into the ground.
 Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:**

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information

Not a hazardous material for transportation.

DOT regulations:

Hazard class: None

Land transport ADR/RID (cross-border)

ADR/RID class: None

Maritime transport IMDG:

IMDG Class: None

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: None

Transport/Additional information: Not dangerous according to the above specifications.

15 Regulations

Product related hazard informations:

Hazard symbols:

T Toxic

(Contd. on page 5)

- USA -

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/21/2009

Reviewed on 05/21/2009

Product name: Sulfur in Crude Oil standard solution, Specpure[®],
2500 µg/g (0.25%)

(Contd. of page 4)

Risk phrases:

45 May cause cancer.

Safety phrases:

53 Avoid exposure - obtain special instructions before use.

45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

Information about limitation of use: For use only by technically qualified individuals.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact: Zachariah Holt

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

USA