SDS no. J481
Version 2
Revision date 10-Aug-2017
Supersedes date 11-Sep-2015

Safety Data Sheet
Breaker J481

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product identifier

Product name Breaker J481
Product code J481

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

Recommended Use Used as a fracturing additive in oilfield applications

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
Schlumberger Oilfield Australia Pty Ltd
ABN: 74 002 459 225
ACN: 002 459 225
256 St. Georges Terrace, Perth WA 6000
+47 5157 7424

SDS@slb.com

1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 595 3518

Denmark	Poison Control Hotline (DK): +45 82 12 12 12
Germany	+49 69 222 25285
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)

2. Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Health hazards

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1B
Specific target organ toxicity - Single exposure	Category 3

Environmental hazards Not classified

Physical Hazards

Oxidizing Solids	Category 1

2.2 Label elements

Signal word
DANGER

Hazard statements
H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H271 - May cause fire or explosion; strong oxidizer

Precautionary Statements - EU (§28, 1272/2008)
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P220 - Keep/Store away from clothing/ combustible materials
P221 - Take any precaution to avoid mixing with combustibles
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P370 + P378 - In case of fire: use VERY LARGE quantities of water to extinguish
P371 + P380 + P375 - In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion

Supplementary precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P283 - Wear fire/ flame resistant/ retardant clothing
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P306 + P360 - IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P337 + P313 - If eye irritation persists: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P410 - Protect from sunlight
P411 - Store at temperatures not exceeding 43 °C/ 110 °F
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

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Contains
Sodium bromate

2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

Australian statement of hazardous/dangerous nature
Classified as Hazardous according to the criteria of NOHSC.
HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3. Composition/information on ingredients

3.1 Substances

Chemical Name	EC No	CAS No	Weight-%	Regulation (EC) No 1272/2008	REACH registration number
Sodium bromate	232-160-4	7789-38-0	60 - 100	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Acute Tox. 4 (H302) Ox. Sol. 1 (H271) STOT. SE. 3(H335) Muta. 2 (H341) Carc. 1B (H350)	No data available

3.2 Mixtures

Not applicable

4. First aid measures

4.1 First aid measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.

Eye Contact Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Get medical attention if irritation persists.

4.2. Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Deluge with water. Other methods not effective.

Extinguishing media which must not be used for safety reasons
Dry chemical, carbon dioxide and other gas-filled extinguishers.

5.2. Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
May intensify fire; oxidizer.

Hazardous combustion products
Fire or high temperatures create: Oxygen, Bromine, bromine oxides and hydrogen bromide.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

Hazchem code ADG
1Y

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Take up mechanically and collect in suitable container for disposal. Take precautionary measures against static discharges. Use non-sparking tools and equipment. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Do not handle until all safety precautions have been read and understood. Handle in accordance with good industrial hygiene and safety practice. Follow procedures for safe handling of oxidizers. Keep away from heat, sparks and open flame. No smoking. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene Measures
Use good work and personal hygiene practices to avoid exposure. Wash hands and face before breaks and immediately after handling the product Remove contaminated clothing. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation. Keep airborne concentrations below exposure limits.
Storage precautions	Oxidizers must be stored separately from all other materials. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture Keep away from direct sunlight. Keep at a temperature not exceeding 110 °F /43 °C Keep away from open flames, hot surfaces and sources of ignition. Oxidising material - Keep away from flammable and combustible materials. Store away from incompatible materials Oxidizing agents Reducing Agents Acids
Storage class	Oxidiser storage.
Packaging materials	Use specially constructed containers only. Coated (epoxy phenolic) steel drum or high density polyethylene (HDPE) can
Packaging materials to be avoided	Containers made of MONEL, copper, brass, or iron.

7.3 Specific end uses

See Section 1.2.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits NUI = Nuisance dust, TWA 4mg/m^3 Respirable Dust, 10mg/m^3 Total Dust.

Chemical Name	EU OEL	Austria	Australia	Denmark
Sodium bromate	Not determined	Not determined	Not determined	Not determined
Chemical Name	**Malaysia**	**France**	**Germany**	**Hungary**
Sodium bromate	Not determined	Not determined	Not determined	Not determined
Chemical Name	**New Zealand**	**Italy**	**Netherlands**	**Norway**

Sodium bromate	Not determined	Not determined	Not determined	Not determined
Chemical Name	**Poland**	**Portugal**	**Romania**	**Russia**
Sodium bromate	Not determined	Not determined	Not determined	Not determined
Chemical Name	**Spain**	**Switzerland**	**Turkey**	**UK**
Sodium bromate	Not determined	Not determined	Not determined	Not determined

Notes
No biological limit allocated

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering Controls
Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed.

Personal protective equipment

Eye protection Use eye protection according to EN 166, designed to protect against powders and dusts. Safety glasses with side-shields. Tightly fitting safety goggles.

Hand protection Wear gloves according to EN 374 to protect against skin effects from powders Use protective gloves made of: Neoprene Nitrile PVC Butyl Frequent change is advisable

Respiratory protection Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust), Half mask with a particle filter P2 (European Norm EN 143 = former DIN 3181), At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

Skin and body protection Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.

Hygiene Measures Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

8.2.3 Environmental exposure controls

Environmental exposure Use appropriate containment to avoid environmental contamination See section 6 for more information

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state Solid
Appearance Granules
Odor None
Color White
Odor threshold Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	6.5 +/- 1	(5% solution)
Melting / freezing point	381 °C / 717.8 °F	

Boiling point/range	No information available	
Flash point	No information available	
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not applicable	
Flammability Limit in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	Not applicable	
Vapor density	Not applicable	
Specific gravity	3.3	20 °C
Bulk density	2060 kg/m^3	
Relative density	No information available	
Water solubility	360 g/L	@ 20 °C
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	381 °C / 718 °F	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
log Pow	No information available	

Explosive properties	None
Oxidizing properties	Oxidizer. Contact with other material may cause fire

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

Comments
The data listed above are typical physical and chemical properties and should not be construed as product specification.

10. Stability and reactivity

10.1 Reactivity

Reacts violently with any compounds containing ammonium salt creating a shock-sensitive explosion. Strong oxidizing agents.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Oxidising material - Keep away from flammable and combustible materials. Avoid heat, flames and other sources of ignition. Protect from moisture. Avoid dust formation. Avoid contamination. Keep away from direct sunlight. Keep at a temperature not exceeding 110 °F /43 °C.

10.5 Incompatible materials

SEVERELY incompatible with ammonium salts (explosive). Do not mix oxidizers of any concentration with other oxidizing agents, reducing agents, flammable or combustible liquids or solids, acids, most metals and heavy metals, oxygen scavengers, corrosion inhibitors, surfactants, gelling agents, fluid-loss additives, cross linkers, solvents, foaming agents, clay control agents, or any chemical not specifically mentioned as being compatible with the specific oxidizer.

10.6 Hazardous decomposition products

See Section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation May cause respiratory irritation.

Eye contact Causes serious eye irritation.

Skin contact Causes skin irritation.

Ingestion Harmful if swallowed.

Unknown acute toxicity Not applicable.

Toxicology data for the components

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium bromate	300 mg/kg	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects Suspected of causing genetic defects.

Carcinogenicity May cause cancer.

Reproductive toxicity This product does not contain any known or suspected reproductive hazards.

Routes of exposure Eyes. Skin contact. Inhalation. Ingestion.

Routes of entry Inhalation.

Specific target organ toxicity - Single exposure Category 3

Specific target organ toxicity - Repeated exposure Not classified.

Target organ effects Respiratory system.

Aspiration hazard Not applicable.

12. Ecological information

12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Toxicity to algae
This product is not considered toxic to algae.

Toxicity to fish
This product is not considered toxic to fish.

Toxicity to daphnia and other aquatic invertebrates
This product is not considered toxic to invertebrates.

Toxicology data for the components

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Sodium bromate 7789-38-0 (60 - 100)	No information available	No information available	No information available

12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

12.4 Mobility in soil

Mobility
The product is water soluble, and may spread in water systems.

12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Waste from residues / unused products — Dispose of in accordance with local regulations.

Contaminated packaging — Do not re-use empty containers. Dispose of contents/container to an approved waste disposal plant.

EWC Waste Disposal No — According to the European Waste Catalog, Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: 16 03 03

14. Transport information

14.1. UN number

UN/ID No. (ADR/RID/ADN/ADG)	UN 1494
UN No. (IMDG/ANTAQ)	UN 1494
UN No. (ICAO/ANAC)	UN 1494

14.2. UN proper shipping name
SODIUM BROMATE,

14.3 Hazard class(es)

ADR/RID/ADN/ADG Hazard class	5.1
IMDG/ANTAQ Hazard class	5.1
ICAO/ANAC Hazard class/division	5.1

14.4 Packing group

ADR/RID/ADN/ADG Packing group	II
IMDG/ANTAQ Packing group	II
ICAO/ANAC Packing group	II

14.5 Environmental hazard
No

14.6 Special precautions

Hazard identification no (ADR)	50
EmS (IMDG)	F-H, S-Q
Emergency Action Code (EAC)	1Y
Tunnel restriction code	(E)
Hazchem code ADG	1Y

14.7 Transport in bulk according to Annex I/II of MARPOL 73/78 and the IBC Code
Please contact SDS@slb.com for info regarding transport in Bulk.

15. Regulatory information

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

Germany, Water Endangering Classes (VwVwS)	Hazardous to water/Class 3

Australian Standard for the Uniform Scheduling of Drugs and Poisons

Sodium bromate

Schedule 6

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

This safety data sheet complies with the requirements of Regulation (EC) No. 1272/2008.

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC: 2011 (2003)].
National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004) 3rd Edition].
National Occupational Health and Safety Commission's Exposure Standards for Atmospheric Contaminants in the occupational Environment [NOHSC:1003 (1995)].

Safe Work Australia.

Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

ADG Code – Australian Dangerous Goods Code.

Dutch Mining Regulations: In accordance with Mining Regulations 9.2 and Chapter 4 of the Working Conditions Decree.

International inventories

USA (TSCA)	Complies
European Union (EINECS and ELINCS)	Complies
Canada (DSL)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

Europe - REACH
All products supplied from the European Economic Area (EEA) are compliant with the REACH Regulation EC 1907/2006.For products supplied from the EEA, Schlumberger and/or its suppliers have pre-registered and is registering all of the substances that it and/or its suppliers manufactures in or imports into the EEA that are subject to Title II of the REACH Regulation. All products supplied from outside the EEA are subject to REACH only if imported into the EEA. The importer of the products must comply with REACH for each imported substance. Contact REACH@slb.com for REACH information.

Denmark Pr. no: 1164657

15.2 Chemical Safety Report

No information available

16. Other information

Prepared by	Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Anne Karin (Anka) Fosse
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Version	2

This SDS has been revised in the following section(s) All sections No changes with regard to classification have been made.

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H271 - May cause fire or explosion; strong oxidizer

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