	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	1 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH) for NaOH (4M) to be used with the ICOS ¹⁴C high-volume sampler

SECTION 1: Identification of the substance and of the supplier

1.1 Product identifier

Trade Name: Sodium hydroxide solution 4 [mol/L] (mass concentration: 14 %)

Index-No: 011-002-00-6

EC-No: 215-185-5

CAS-No: 1310-73-2

REACH-Reg. No: 01-2119457892-27-XXXX

Other means of identification: caustic soda

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

Identified uses:

Use only for absorption of atmospheric CO₂ with the ICOS NaOH sampler at atm. ICOS class 1 stations

Uses advised against:

Any other usage

1.3 Details of the supplier of the safety data sheet

ICOS Cental Radiocarbon Laboratory (CRL)

Address

Berlinerstrasse 53

Postal code / city

69120 – Heidelberg (Germany)

Contact person for technical information

Dr. Samuel Hammer



Telephone / Telefax / E-Mail

+49-(0)6221-54-6357 / -6405 / E-Mail: shammer@iup.uni-heidelberg.de

1.4 Emergency telephone number

Poison Centre Munich, Ismaninger Str. 22 – 81675 München / Tel. +49/(0)89 19240 /

<http://www.toxinfo.med.tum.de/inhalt/giftnotrufmuenchen>

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	2 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008 (CLP)

Section	Hazard class	Hazard class and category	Hazard statement
2.16	substance or mixture corrosive to metals	(Met. Corr. 1)	H290
3.2	skin corrosion/irritation	(Skin Corr. 1A)	H314
3.3	serious eye damage/eye irritation	(Eye Dam. 1)	H318

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Pictograms:



Signal word: Danger

Hazard statements:

H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage

Precautionary statements:

P280	(Prevention) Wear protective gloves/protective clothing/eye protection/face protection
P303+P361+P353	(Response) IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower
P305+P351+P338	(Response) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing..
P310	Immediately call a POISON CENTER/doctor.



Hazardous ingredients for labelling

caustic soda

Labelling of packages where the contents do not exceed 125 ml

2.3 Other hazards

There is no additional information.

 	ICOS-RI CAL Central Radio-carbon Lab	SOP # Revision #	CRL-003 1.0
		Implementation Date Last Reviewed/Update Date	August, 7 th , 2018 August, 7 th , 2018
Page #	3 of 11	SOP Owner	Approval August, 8 th , 2018

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Name of substance: caustic soda
EC-No: 215-185-5
CAS-No : 1310-73-2
Index-No: 011-002-00-6
REACH-Reg.No : 01-2119457892-27-XXXX
content : 10-25%
according to Regulation (EC) No (EG) No. 1272/2008:
Met. Corr. 1/H290
Skin Corr. 1a/H314
Eye Dam. 1/H318

Remarks

(For full text of abbreviations: see SECTION 16.)

Section 4: First aid measures

4.1 Description of first aid measures



Take off immediately all contaminated clothing. Self-protection of the first aider.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

After contact with skin, wipe the NaOH off with dry tissues and use the Diphoterine[®] spray to neutralize. Thereafter, wash immediately with plenty of water. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

Following eye contact

In case of contact with eyes flush immediately with the Diphoterine[®] solution contained in the eyewash station and follow the instructions. Once the Diphoterine solution is empty flush with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye.

Following ingestion



Rinse mouth immediately and drink plenty of water. Call a physician immediately. If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects).

4.2 Most important symptoms and effects, both acute and delayed

Corrosion, Risk of blindness, Gastric perforation, Risk of serious damage to eyes

4.3 Indication of any immediate medical attention and special treatment needed

none

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	4 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Co-ordinate fire-fighting measures to the fire surroundings water spray, foam, dry extinguishing powder, carbon dioxide (CO₂)

Unsuitable extinguishing media: water jet

5.2 Special hazards arising from the substance or mixture

Non-combustible.

5.3 Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

6.2 Environmental precautions

Keep away from drains, surface and ground water.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill



Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	5 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Handling and storage

7.1 Precautions for safe handling

Handle and open container with care

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Conditions for safe storage

Keep container tightly closed.

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 - 25 °C.

Storage class: 8B (flammable corrosive substances)

7.3 Specific end use(s)

No information available

Section 8: Exposure controls / personal protection

8.1 Control parameters

National limit values / Occupational exposure limit values (Workplace Exposure Limits)

Name of agent: sodium hydroxide; CAS-No : 1310-73-2

Identifier : OELV

Threshold level:

8.2 Exposure controls



Valid technical control equipment

Individual protection measures (personal protective equipment)



Eye/face protection

Use safety goggle with side protection.

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	6 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Skin protection

hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

type of material

NBR (Nitrile rubber)

material thickness

≥ 0,5 mm

breakthrough times of the glove material

>480 minutes (permeation: level 6)

other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection

Respiratory protection is not necessary.

Environmental exposure controls

Keep away from drains, surface and ground water.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- physical state: Liquid (fluid)

- Colour : colourless

Odour : odourless

Odour threshold: No data available

pH-value : 14 (20 °C)

Melting point/freezing point : Not determined

Initial boiling point and boiling range : 100 °C

Flash point : Not determined

Evaporation rate : No data available

Flammability (solid, gas) : Not relevant (fluid)



lower explosion limit (LEL)/ upper explosion limit (UEL) this information is not available

Vapour pressure: This information is not available

Density : 1,22 g/cm³ at 20 °C

Relative density: Information on this property is not available.

Solubility

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
Page #	7 of 11	Implementation Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Last Reviewed/Update Date	August, 7 th , 2018
		Approval	August, 8 th , 2018

(Water solubility)	miscible in any proportion
Partition coefficient: n-octanol/water (log KOW)	This information is not available
Auto-ignition temperature :	Information on this property is not available.
Decomposition temperature :	no data available
Viscosity :	Not determined
explosive properties :	none
Oxidising properties :	none

9.2 Other information

There is no additional information.

Section 10: stability and reactivity

10.1 Reactivity

substance or mixture corrosive to metals.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure

Possibility of hazardous reactions

10.3 Light metals (due to the release of hydrogen in an acid/alkaline medium)

Violent reaction with: Ammonium compounds, Magnesium, Acids, Cyanides

10.4 Conditions to avoid



There are no specific conditions known which have to be avoided.

10.5 Incompatible materials

different metals, aluminium, zinc, tin

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	8 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Section 11: toxicological information

11.1 Information on toxicological effects

Acute toxicity

Shall not be classified as acutely toxic.

Skin corrosion/irritation

Causes severe burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ Cell mutagenicity

Shall not be classified as germ cell mutagenic toxicant

Carcinogenicity

Shall not be classified as carcinogenic toxicant

Reproductivity

Shall not be classified as a reproductive toxicant

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• if swallowed

If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects)

• if in eyes

causes burns, Causes serious eye damage, risk of blindness

• if hinalated

data are not available

• if on skin

causes severe skin burns and eye damage

Other information

None


Section 12: Ecological information

12.1 Toxicity:

acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

12.2 Process of degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	9 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Other adverse effects

Slightly hazardous to water.

Section 13: Disposal considerations

Waste treatment methods

13.1 This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

Section 14: Transport information

14.1 UN-Number

1824

14.2 UN proper shipping name

ADR/RID / IMDG-Code / ICAO-TI / IATA-DGR
SODIUM HYDROXIDE SOLUTION

14.3 Transport hazard class(es)



class 8 (corrosive substances)

14.4 Packing group

II (substance presenting medium danger)

14.5 Environmental hazards

none (non-environmentally hazardous acc. to the dangerous goods regulations)

 	ICOS-RI CAL	SOP #	CRL-003
	Central Radio-carbon Lab	Revision #	1.0
		Implementation Date	August, 7 th , 2018
Page #	10 of 11	Last Reviewed/Update Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Approval	August, 8 th , 2018

Indicator for hazardous materials:

ADR/RID / IMDG-Code / ICAO-TI / IATA-DGR: yes / no

Marine Pollutant: yes / no

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

Contamination category (X, Y or Z) :

vessel (1, 2 or 3) :

Section 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Regulation 1005/2009/EC (on substances that deplete the ozone layer (ODS)):

None of the ingredients are listed

Regulation 850/2004/EC on persistent organic pollutants (POP):

None of the ingredients are listed.

Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC):

None of the ingredients are listed

Restrictions according to REACH, Annex XVII:

None of the ingredients are listed

List of substances subject to authorisation (REACH, Annex XIV)

None of the ingredients are listed.

Directive on industrial emissions (VOCs, 2010/75/EU)

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

None of the ingredients are listed.

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)



None of the ingredients are listed

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

None of the ingredients are listed

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out

 	ICOS-RI CAL Central Radio-carbon Lab	SOP #	CRL-003
		Revision #	1.0
Page #	11 of 11	Implementation Date	August, 7 th , 2018
SOP Owner	ICOS CRL	Last Reviewed/Update Date	August, 7 th , 2018
		Approval	August, 8 th , 2018

Section 16: Other Information

Indication of changes (revised safety data sheet)

Abbreviations and acronyms

ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
EC-No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
Eye Dam.	seriously damaging to the eye
Eye Irrit.	irritant to the eye
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Skin corr.	corrosive to skin
Skin Irrit.	irritant to skin

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)

Other Information