HALLIBURTON

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

N-PLEX™

Revision Date: 21-Sep-2015 **Revision Number:** 28

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name N-PLEX™
Internal ID Code HM003703

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

Recommended Use Loss Circulation Material
Sector of use SU2a - Mining, (without offshore industries)
SU2b - Offshore industries
Product category PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process categories PROC 26 - Handling of solid inorganic substances at ambient temperature

1.3. Details of the supplier of the safety data sheet

Halliburton Manufacturing Services, Ltd.
Halliburton House, Howemoss Crescent
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom

www.halliburton.com

For further information, please contact
E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	**112**
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 1 B - (H314)
Serious Eye Damage / Eye Irritation	Category 1 - (H318)

Reproductive Toxicity	Category 1B - (H360)
Specific Target Organ Toxicity - (Single Exposure)	Category 2 - (H371)

2.2. Label Elements

Hazard Pictograms

Signal Word **Danger**

Hazard Statements
H314 - Causes severe skin burns and eye damage
H360 - May damage fertility or the unborn child
H371 - May cause damage to organs

Precautionary Statements - EU (§28, 1272/2008)
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
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
P310 - Immediately call a POISON CENTRE or doctor/physician

Contains

Substances	**CAS Number**
Sodium borate	1303-96-4
Sodium hydroxide	1310-73-2

2.3. Other Hazards
This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients

3.2. Mixtures Mixture

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Sodium borate	Not applicable	1303-96-4	1 - 5%	Eye Irrit. 2A (H319) Repr. 1B (H360) STOT SE 1 (H370)	No data available
Sodium hydroxide	215-185-5	1310-73-2	1 - 5%	Skin Corr. 1A (H314) STOT SE 3 (H335) Met. Corr. 1 (H290)	01-2119457892-27

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation If inhaled, move victim to fresh air and seek medical attention.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse. Destroy or properly dispose of contaminated shoes.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

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

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause birth defects. Potential reproductive hazard. Prolonged or repeated exposure may cause blood forming system, nervous, urinary tract and reproductive system damage. May cause damage to internal organs.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards

May form explosive mixtures with strong acids. Reaction with steel and certain other metals generates flammable hydrogen gas.

5.3. Advice for firefighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store away from acids. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 36 months.

7.3. Specific End Use(s)

Exposure Scenario	No information available
Other Guidelines	No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Sodium borate	1303-96-4	Not applicable	TWA: 5 mg/m³ STEL: 15 mg/m³	Not applicable	5 mg/m³
Sodium hydroxide	1310-73-2	Not applicable	STEL: 2 mg/m³	Not applicable	2 mg/m³

Substances	CAS Number	Germany	Spain	Portugal	Finland
Sodium borate	1303-96-4	Not applicable	TWA: 2 mg/m³ 6 mg/m³ STEL [VLA-EC]	TWA: 2 mg/m³ STEL: 6 mg/m³	Not applicable
Sodium hydroxide	1310-73-2	2 mg/m³	2 mg/m³ STEL [VLA-EC]	Not applicable	STEL: 2 mg/m³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Sodium borate	1303-96-4	Not applicable	5 mg/m³ TWA; 5 mg/m³ TWA 15 mg/m³ STEL (calculated)	TWA: 5 mg/m³ STEL: 5 mg/m³	TWA: 5 mg/m³ STEL: 10 mg/m³
Sodium hydroxide	1310-73-2	TWA: 2 mg/m³ STEL" 4 mg/m³	2 mg/m³ STEL	TWA: 2 mg/m³ STEL: 2 mg/m³	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Sodium borate	1303-96-4	Not applicable	TWA: 0.5 mg/m³ STEL: 2 mg/m³	Not applicable	Not applicable
Sodium hydroxide	1310-73-2	Not applicable	TWA: 0.5 mg/m³ STEL: 1 mg/m³	TWA: 2 mg/m³ STEL: 2 mg/m³	TWA: 1 mg/m³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Sodium borate	1303-96-4	TWA: 2 mg/m³	Not applicable	TWA: 5 mg/m³	Not applicable
Sodium hydroxide	1310-73-2	Not applicable	Not applicable	STEL: 2 mg/m³	Not applicable

Derived No Effect Level (DNEL)

Worker

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Hazards for the eyes - local effects
Sodium hydroxide	Not available	Not available	1 mg/m³	Not available	Not available	Not available	Not available	Not available	Not available

General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Sodium hydroxide	Not available	Not available	1 mg/m³	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Hand Protection Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct

	contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.35 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.
Skin Protection	Full protective chemical resistant clothing.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Liquid	**Color:**	Clear colorless
Odor:	Odorless	**Odor Threshold:**	No information available

Property Remarks/ - Method	Values
pH:	> 12.5
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.1
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity
Not expected to be reactive.
10.2. Chemical Stability
Stable
10.3. Possibility of Hazardous Reactions
Will Not Occur
10.4. Conditions to Avoid
None anticipated
10.5. Incompatible Materials
Strong acids. Peroxides. Halogenated compounds. Amphoteric metals such as aluminum, magnesium, lead, tin, or zinc.
10.6. Hazardous Decomposition Products
None known.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects
Acute Toxicity

Inhalation	May cause respiratory irritation.

Eye Contact	Causes eye burns. Causes serious eye damage.
Skin Contact	Causes severe burns.
Ingestion	Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity Prolonged, excessive exposure may cause erosion of the teeth. May cause reproductive effects based on animal studies. May cause birth defects.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium borate	1303-96-4	2660 mg/kg (Rat) 2403 mg/kg (Rat) > 2500 mg/kg (Rat) 2000 mg/kg (Mouse)	> 2000 mg/kg (Rabbit) >10,000 mg/kg (Rabbit) > 2000 mg/kg (Rabbit) (Similar substance)	> 2.04 mg/L (Rat) 4h (similar substance)
Sodium hydroxide	1310-73-2	No data available	1350 mg/kg (Rabbit)	No data available

Substances	CAS Number	Skin corrosion/irritation
Sodium borate	1303-96-4	Not irritating to skin in rabbits. (similar substances)
Sodium hydroxide	1310-73-2	Causes severe burns

Substances	CAS Number	Eye damage/irritation
Sodium borate	1303-96-4	Causes moderate eye irritation. (Rabbit) (similar substances)
Sodium hydroxide	1310-73-2	Causes severe eye burns (Rabbit)

Substances	CAS Number	Skin Sensitization
Sodium borate	1303-96-4	Patch test on human volunteers did not demonstrate sensitization properties
Sodium hydroxide	1310-73-2	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Sodium borate	1303-96-4	No information available
Sodium hydroxide	1310-73-2	No information available

Substances	CAS Number	Mutagenic Effects
Sodium borate	1303-96-4	Not regarded as mutagenic. (similar substances)
Sodium hydroxide	1310-73-2	Did not show mutagenic effects in animal experiments In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Sodium borate	1303-96-4	Did not show carcinogenic effects in animal experiments
Sodium hydroxide	1310-73-2	No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Sodium borate	1303-96-4	Experiments have shown reproductive toxicity effects on laboratory animals
Sodium hydroxide	1310-73-2	No information available

Substances	CAS Number	STOT - single exposure
Sodium borate	1303-96-4	May cause disorder and damage to the (Kidney), Central Nervous System (CNS), Respiratory system.
Sodium hydroxide	1310-73-2	May cause respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Sodium borate	1303-96-4	No significant toxicity observed in animal studies at concentration requiring classification.
Sodium hydroxide	1310-73-2	No significant toxicity observed in animal studies at concentration requiring classification. Not applicable due to corrosivity of the substance.

Substances	CAS Number	Aspiration hazard
Sodium borate	1303-96-4	Not applicable
Sodium hydroxide	1310-73-2	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Sodium borate	1303-96-4	EC50 (96h) 15.4 mg/L (Pseudokirchnerella subcapitata) EC10 (3d) 35 mg/L (Pseudokirchnerella subcapitata)	LC50 (96h) 14.2 mg/L (Danio rerio) LC50 (96h) 27 mg/L (Oncorhynchus mykiss)	No information available	EC50 (48h) 102 mg/L (Ceriodaphnia dubia) LC50 (96h) > 447 mg/L (Sphaerium simile) LC50 (96h) > 544 mg/L (Megalonaias nervosa)
Sodium hydroxide	1310-73-2	No information available	LC50 (96h) 125 mg/L (Gambusia affinis) LC50 (48h) 189 mg/L (Leuciscus melanotus) LC50 (24h) 145 mg/L (Poecilia reticulate)	No information available	EC50 (48h) 40.4 mg/L (Ceriodaphnia sp.)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Sodium borate	1303-96-4	The methods for determining biodegradability are not applicable to inorganic substances.
Sodium hydroxide	1310-73-2	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Sodium borate	1303-96-4	No information available
Sodium hydroxide	1310-73-2	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Sodium borate	1303-96-4	No information available
Sodium hydroxide	1310-73-2	No information available

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Sodium borate	Not applicable
Sodium hydroxide	Not applicable

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

SECTION 14: Transport Information

IMDG/IMO

UN Number: UN1824

UN Proper Shipping Name: Sodium Hydroxide Solution

Transport Hazard Class(es): 8

Packing Group: III
Environmental Hazards: Not applicable

RID
UN Number: UN1824
UN Proper Shipping Name: Sodium Hydroxide Solution
Transport Hazard Class(es): 8
Packing Group: III
Environmental Hazards: Not applicable

ADR
UN Number: UN1824
UN Proper Shipping Name: Sodium Hydroxide Solution
Transport Hazard Class(es): 8
Packing Group: III
Environmental Hazards: Not applicable

IATA/ICAO
UN Number: UN1824
UN Proper Shipping Name: Sodium Hydroxide Solution
Transport Hazard Class(es): 8
Packing Group: III
Environmental Hazards: Not applicable

14.1. UN Number: UN1824

14.2. UN Proper Shipping Name: Sodium Hydroxide Solution

14.3. Transport Hazard Class(es): 8

14.4. Packing Group: III

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory Information

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

International Inventories

EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

List of the carcinogenic, mutagenic and toxic for reproduction substances SZW
Sodium borate

Substances	CAS Number	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization
Sodium borate	1303-96-4	Use restricted. See item 30.	Not applicable

15.2. Chemical Safety Assessment
No information available

SECTION 16: Other Information

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

H290 - May be corrosive to metals
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H360 - May damage fertility or the unborn child
H370 - Causes damage to organs
H371 - May cause damage to organs

Key or legend to abbreviations and acronyms
bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit
SU – Sector of Use category

Key literature references and sources for data
www.ChemADVISOR.com/

Revision Date: 21-Sep-2015
Revision Note
SDS sections updated: 1

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

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End of Safety Data Sheet