

BWT LIQUID PLUS

Wilhelmsen Ships Service AS

Version No: 3.4

Safety Data Sheet (Conforms to Regulation (EU) No 2015/830)

Issue Date: 29/11/2016

Print Date: 22/01/2019

L.REACH.NOR.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product Identifier

Product name	BWT LIQUID PLUS
Synonyms	Product Part Number: 777701 - Water treatment
Proper shipping name	POTASSIUM HYDROXIDE SOLUTION
Other means of identification	777701, 777701

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

Product Category Chemical	PC37 Water treatment chemicals
Sectors of Use	SU3 Industrial uses: Uses of substances as such or in preparations* at industrial sites
Relevant identified uses	Use according to manufacturer's directions.
Uses advised against	Not Applicable

1.3. Details of the supplier of the safety data sheet

Registered company name	Wilhelmsen Ships Service AS	Outback (M)SDS portal: http://jr.chemwatch.net/outb/account/autologin?login=wilhelmsen	Wilhelmsen Ships Service AS*
Address	Strandveien 20 Lysaker 1366 Norway	-----Use our Outback portal to obtain our (M)SDSs in other languages and/or format.----- For questions relating to our SDSs please use Email: WSS.GLOBAL.SDSINFO@wilhelmsen.com ----- Norway	Willem Barentzstraat 50 Rotterdam Netherlands
Telephone	+47 67 58 40 00	Not Available	+31 10 4877 777
Fax	Not Available	Not Available	+31 10 4877888
Website	http://www.wilhelmsen.com/	Not Available	http://www.wilhelmsen.com
Email	wss.norway.cs@wilhelmsen.com	Not Available	wss.rotterdam@wilhelmsen.com

1.4. Emergency telephone number



Association / Organisation	Giftinformasjonssentralen - 24 timer	American Chemistry Council 24hrs - Chemtrec	Dutch nat. poison centre
Emergency telephone numbers	+47 22591300	+1 703 527 3887	+ 31 30 274 88 88
Other emergency telephone numbers	Not Available	(800) 424 9300	Not Available

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Considered a hazardous mixture according to Reg. (EC) No 1272/2008 and their amendments. Classified as Dangerous Goods for transport purposes.


CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	0	
Toxicity	2	
Body Contact	4	
Reactivity	0	
Chronic	0	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

DSD classification	In case of mixtures, classification has been prepared by following DPD (Directive 1999/45/EC) and CLP Regulation (EC) No 1272/2008 regulations
DPD classification ^[1]	R22 Harmful if swallowed. R35 Causes severe burns. R41 Risk of serious damage to eyes. R53 May cause long-term adverse effects in the aquatic environment. R58 May cause long-term adverse effects in the environment.
Legend:	1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI
Classification according to regulation (EC) No 1272/2008 [CLP] ^[1]	H290 - Metal Corrosion Category 1, H302 - Acute Toxicity (Oral) Category 4, H314 - Skin Corrosion/Irritation Category 1A
Legend:	1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

2.2. Label elements

Hazard pictogram(s)	
SIGNAL WORD	DANGER

Hazard statement(s)

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P234	Keep only in original packaging.
P270	Do not eat, drink or smoke when using this product.

Precautionary statement(s) Response

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 [or shower].
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 CENTER/doctor/physician/first aider.
P363	Wash contaminated clothing before reuse.

P390	Absorb spillage to prevent material damage.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Precautionary statement(s) Storage

P405	Store locked up.
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Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.
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2.3. Other hazards

REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**3.1. Substances**

See 'Composition on ingredients' in Section 3.2

3.2. Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to directive 67/548/EEC [DSD]	Classification according to regulation (EC) No 1272/2008 [CLP]
1.1310-58-3 2.215-181-3 3.019-002-00-8 4.01-2119487136-33-XXXX 01-2120767289-38-XXXX	10-30	<u>potassium hydroxide</u>	R22, R35 ^[2]	Skin Corrosion/Irritation Category 1A, Acute Toxicity (Oral) Category 4; H314, H302 ^[3]
1.7320-34-5* 2.230-785-7 3.Not Available 4.01-2119489369-18-XXXX	10-30	<u>Tetrapotassiumpyrophosphate</u>	R36, R53, R58 ^[1]	Eye Irritation Category 2; H319 ^[1]

Legend: 1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available

SECTION 4 FIRST AID MEASURES**4.1. Description of first aid measures**

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Immediately hold eyelids apart and flush the eye continuously with running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ▶ Transport to hospital or doctor without delay. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▶ Quickly remove all contaminated clothing, including footwear. ▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▶ Transport to hospital, or doctor.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes or combustion products are inhaled remove from contaminated area. ▶ Lay patient down. Keep warm and rested. ▶ Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▶ Transport to hospital, or doctor, without delay. ▶ Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema. ▶ Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs). ▶ As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in

	<ul style="list-style-type: none"> ▶ semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested. ▶ Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered. <p>This must definitely be left to a doctor or person authorised by him/her. (ICSC13719)</p>
Ingestion	<ul style="list-style-type: none"> ▶ For advice, contact a Poisons Information Centre or a doctor at once. ▶ Urgent hospital treatment is likely to be needed. ▶ If swallowed do NOT induce vomiting. ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▶ Observe the patient carefully. ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▶ Transport to hospital or doctor without delay.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

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

For acute or short-term repeated exposures to highly alkaline materials:

- ▶ Respiratory stress is uncommon but present occasionally because of soft tissue edema.
- ▶ Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
- ▶ Oxygen is given as indicated.
- ▶ The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
- ▶ Damage due to alkaline corrosives occurs by liquefaction necrosis whereby the saponification of fats and solubilisation of proteins allow deep penetration into the tissue.

Alkalis continue to cause damage after exposure.

INGESTION:

- ▶ Milk and water are the preferred diluents

No more than 2 glasses of water should be given to an adult.

- ▶ Neutralising agents should never be given since exothermic heat reaction may compound injury.

* Catharsis and emesis are absolutely contra-indicated.

* Activated charcoal does not absorb alkali.

* Gastric lavage should not be used.

Supportive care involves the following:

- ▶ Withhold oral feedings initially.
- ▶ If endoscopy confirms transmucosal injury start steroids only within the first 48 hours.
- ▶ Carefully evaluate the amount of tissue necrosis before assessing the need for surgical intervention.
- ▶ Patients should be instructed to seek medical attention whenever they develop difficulty in swallowing (dysphagia).

SKIN AND EYE:

- ▶ Injury should be irrigated for 20-30 minutes.

Eye injuries require saline. [Ellenhorn & Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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5.3. Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear full body protective clothing with breathing apparatus. ▶ Prevent, by any means available, spillage from entering drains or water course.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▶ Non combustible. ▶ Not considered a significant fire risk, however containers may burn. <p>May emit corrosive fumes.</p>

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

6.3. Methods and material for containment and cleaning up

Minor Spills	<p>Environmental hazard - contain spillage.</p> <ul style="list-style-type: none"> ▶ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. ▶ Check regularly for spills and leaks. ▶ Clean up all spills immediately. ▶ Avoid breathing vapours and contact with skin and eyes. ▶ Control personal contact with the substance, by using protective equipment. 																																																																															
Major Spills	<p>Environmental hazard - contain spillage. Chemical Class: bases For release onto land: recommended sorbents listed in order of priority.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SORBENT TYPE</th> <th style="width: 10%;">RANK</th> <th style="width: 30%;">APPLICATION</th> <th style="width: 10%;">COLLECTION</th> <th style="width: 20%;">LIMITATIONS</th> </tr> </thead> <tbody> <tr> <td colspan="5">LAND SPILL - SMALL</td> </tr> <tr> <td>cross-linked polymer - particulate</td> <td>1</td> <td>shovel</td> <td>shovel</td> <td>R,W,SS</td> </tr> <tr> <td>cross-linked polymer - pillow</td> <td>1</td> <td>throw</td> <td>pitchfork</td> <td>R, DGC, RT</td> </tr> <tr> <td>sorbent clay - particulate</td> <td>2</td> <td>shovel</td> <td>shovel</td> <td>R, I, P</td> </tr> <tr> <td>foamed glass - pillow</td> <td>2</td> <td>throw</td> <td>pitchfork</td> <td>R, P, DGC, RT</td> </tr> <tr> <td>expanded minerals - particulate</td> <td>3</td> <td>shovel</td> <td>shovel</td> <td>R, I, W, P, DGC</td> </tr> <tr> <td>foamed glass - particulate</td> <td>4</td> <td>shovel</td> <td>shovel</td> <td>R, W, P, DGC,</td> </tr> <tr> <td colspan="5">LAND SPILL - MEDIUM</td> </tr> <tr> <td>cross-linked polymer -particulate</td> <td>1</td> <td>blower</td> <td>skiloader</td> <td>R,W, SS</td> </tr> <tr> <td>sorbent clay - particulate</td> <td>2</td> <td>blower</td> <td>skiloader</td> <td>R, I, P</td> </tr> <tr> <td>expanded mineral - particulate</td> <td>3</td> <td>blower</td> <td>skiloader</td> <td>R, I,W, P, DGC</td> </tr> <tr> <td>cross-linked polymer - pillow</td> <td>3</td> <td>throw</td> <td>skiloader</td> <td>R, DGC, RT</td> </tr> <tr> <td>foamed glass - particulate</td> <td>4</td> <td>blower</td> <td>skiloader</td> <td>R, W, P, DGC</td> </tr> <tr> <td>foamed glass - pillow</td> <td>4</td> <td>throw</td> <td>skiloader</td> <td>R, P, DGC., RT</td> </tr> </tbody> </table> <p>Legend DGC: Not effective where ground cover is dense R; Not reusable I: Not incinerable P: Effectiveness reduced when rainy RT:Not effective where terrain is rugged SS: Not for use within environmentally sensitive sites W: Effectiveness reduced when windy Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control; R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988</p> <ul style="list-style-type: none"> ▶ Clear area of personnel and move upwind. ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear full body protective clothing with breathing apparatus. 					SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS	LAND SPILL - SMALL					cross-linked polymer - particulate	1	shovel	shovel	R,W,SS	cross-linked polymer - pillow	1	throw	pitchfork	R, DGC, RT	sorbent clay - particulate	2	shovel	shovel	R, I, P	foamed glass - pillow	2	throw	pitchfork	R, P, DGC, RT	expanded minerals - particulate	3	shovel	shovel	R, I, W, P, DGC	foamed glass - particulate	4	shovel	shovel	R, W, P, DGC,	LAND SPILL - MEDIUM					cross-linked polymer -particulate	1	blower	skiloader	R,W, SS	sorbent clay - particulate	2	blower	skiloader	R, I, P	expanded mineral - particulate	3	blower	skiloader	R, I,W, P, DGC	cross-linked polymer - pillow	3	throw	skiloader	R, DGC, RT	foamed glass - particulate	4	blower	skiloader	R, W, P, DGC	foamed glass - pillow	4	throw	skiloader	R, P, DGC., RT
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6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of exposure occurs. ▶ Use in a well-ventilated area.
Fire and explosion protection	See section 5
Other information	<ul style="list-style-type: none"> ▶ Store in original containers. ▶ Keep containers securely sealed. ▶ Store in a cool, dry, well-ventilated area. ▶ DO NOT store near acids, or oxidising agents

- ▶ No smoking, naked lights, heat or ignition sources.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ▶ Lined metal can, lined metal pail/ can. ▶ Plastic pail. ▶ Polyliner drum. <p>For low viscosity materials</p> <ul style="list-style-type: none"> ▶ Drums and jerricans must be of the non-removable head type. ▶ Where a can is to be used as an inner package, the can must have a screwed enclosure. <p>For materials with a viscosity of at least 2680 cSt.</p>
Storage incompatibility	<p>Sodium hydroxide/ potassium hydroxide:</p> <ul style="list-style-type: none"> ▶ reacts with water evolving heat and corrosive fumes ▶ reacts violently with acids, trans-acetylene dichloride, aminotetrazole, p-bis(1,3-dibromoethyl), benzene, bromoform, halogenated compounds, nitrogen-containing compounds, organic halogens, chlorine dioxide ((explodes), chloroform, cresols, cyclopentadiene, 4-chloro-2-methylphenol, cis-dichloroethylene, 2,2-dichloro-3,3-dimethylbutane, ethylene chlorohydrin, germanium, iodine pentafluoride, maleic anhydride, p-nitrotoluene, nitrogen trichloride, o-nitrophenol, phosphonium iodide, potassium peroxodisulfate, propylene oxide, 1,2,4,5-tetrachlorocresols (highly toxic substance is forme), 2,2,3,3-tetrafluoro-1-propanol, tetrahydrofuran, thorium dicarbide, trichloroethanol, 2,4,6-trinitrotoluene, vinyl acetate ▶ reacts with fluorine, nitroalkanes, (forming explosive compounds) ▶ incompatible with acetic acid, acetaldehyde, acetic anhydride, acrolein, acrylonitrile, allyl chloride, organic anhydride, acrylates, alcohols, aldehydes, alkylene oxides, substituted allyls, ammonium chloroplatinate, benzanthrone, bromine, benzene-1,4-diol, carbon dioxide, cellulose nitrate, chlorine trifluoride, 4-chlorobutyronitrile, chlorohydrin, chloronitrotoluenes, chlorosulfonic acid, cinnamaldehyde, caprolactam solution, chlorocresols, 1,2-dichloroethylene, epichlorohydrin, ethylene cyanohydrin, formaldehyde (forms formic acid and flammable hydrogen gas), glycols, glyoxal, hexachloroplatinate, hydrogen sulfide, hydroquinone, iron-silicon, isocyanates, ketones, methyl azide, 4-methyl-2-nitrophenol, mineral acids (forming corresponding salt), nitrobenzene, N-nitrosohydroxylamine, nitrates pentol, phenols, phosphorus, phosphorus pentaoxide, beta-propiolactone, sodium, sulfur dioxide, tetrahydroborate, 1,1,1,2-tetrachloroethane, 2,2,2-trichloroethanol, trichloronitromethane, zirconium ▶ ignites on contact with cinnamaldehyde or zinc and reacts explosively with a mixture of chloroform and methane ▶ forms heat-, friction-, and/ or shock-sensitive- explosive salts with nitro-compounds, cyanogen azide, 3-ethyl-4-hydroxy-1,2,5-oxadiazole, 3-methyl-2-penten-4-yn-1-ol, N,N'-bis(2,2,2-trinitroethyl)urea, trichloroethylene (forms dichloroacetylene) ▶ increase the explosive sensitivity of nitromethane ▶ attacks some plastics, rubber, coatings and metals: aluminium, tin, zinc, etc, and their alloys, producing flammable hydrogen gas <p>▶ Reacts vigorously with acids</p> <p>▶ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.</p> <p>▶ Avoid contact with copper, aluminium and their alloys.</p>



+ X + O + + +

X — Must not be stored together

O — May be stored together with specific preventions

+ — May be stored together

7.3. Specific end use(s)

See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

DERIVED NO EFFECT LEVEL (DNEL)

Not Available

PREDICTED NO EFFECT LEVEL (PNEC)

Not Available

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Norway regulations on action values and limit values for physical and	potassium hydroxide	Kaliumhydroksid	Not Available	Not Available	2 mg/m3	T

BWT LIQUID PLUS

chemical factors in the work environment and infection risk groups for biological factors (Norwegian)

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
potassium hydroxide	Potassium hydroxide	0.18 mg/m3	2 mg/m3	54 mg/m3
Tetrapotassiumpyrophosphate	Potassium pyrophosphate; (Tetrapotassium diphosphorate)	61 mg/m3	680 mg/m3	1,200 mg/m3


Ingredient	Original IDLH	Revised IDLH
potassium hydroxide	Not Available	Not Available
Tetrapotassiumpyrophosphate	Not Available	Not Available

MATERIAL DATA

for potassium hydroxide:

The TLV-TWA is protective against respiratory tract irritation produced at higher concentrations

8.2. Exposure controls

8.2.1. Appropriate engineering controls	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p>
8.2.2. Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ▶ Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure. ▶ Chemical goggles whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted. ▶ Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes; these afford face protection.
Skin protection	See Hand protection below
Hands/feet protection	<ul style="list-style-type: none"> ▶ Elbow length PVC gloves ▶ When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.
Body protection	See Other protection below
Other protection	<ul style="list-style-type: none"> ▶ Overalls. ▶ PVC Apron. ▶ PVC protective suit may be required if exposure severe.

Recommended material(s)**GLOVE SELECTION INDEX**

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

BWT LIQUID PLUS

Material	CPI
BUTYL	A
NATURAL+NEOPRENE	A
NEOPRENE	A
NITRILE	A
NITRILE+PVC	A
PVC	A
NATURAL RUBBER	B

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

8.2.3. Environmental exposure controls

See section 12

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Liquid, pale yellow, soluble in water		
Physical state	Liquid	Relative density (Water = 1)	1.46 - 1.50
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	14	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	>100	Molecular weight (g/mol)	Not Available
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Miscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

9.2. Other information

Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity	See section 7.2
10.2. Chemical stability	<ul style="list-style-type: none"> ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur.
10.3. Possibility of hazardous reactions	See section 7.2
10.4. Conditions to avoid	See section 7.2
10.5. Incompatible materials	See section 7.2
10.6. Hazardous decomposition products	See section 5.3

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Inhaled	Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which
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	<p>initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs.</p> <p>Inhalation of alkaline corrosives may produce irritation of the respiratory tract with coughing, choking, pain and mucous membrane damage. Pulmonary oedema may develop in more severe cases; this may be immediate or in most cases following a latent period of 5-72 hours. Symptoms may include a tightness in the chest, dyspnoea, frothy sputum, cyanosis and dizziness.</p> <p>Inhalation of potassium hydroxide dust may be fatal due to spasm, inflammation and oedema of the larynx and bronchi, chemical pneumonitis and severe pulmonary oedema. Symptoms of overexposure include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting</p>
Ingestion	<p>Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.</p> <p>Ingestion of alkaline corrosives may produce immediate pain, and circumoral burns. Mucous membrane corrosive damage is characterised by a white appearance and soapy feel; this may then become brown, oedematous and ulcerated. Profuse salivation with an inability to swallow or speak may also result.</p>
Skin Contact	<p>The material can produce severe chemical burns following direct contact with the skin.</p> <p>Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.</p> <p>Potassium hydroxide burns are not immediately painful; onset of pain may be delayed minutes or hours; thus care should be taken to avoid contamination of gloves and boots.</p> <p>Skin contact with alkaline corrosives may produce severe pain and burns; brownish stains may develop. The corroded area may be soft, gelatinous and necrotic; tissue destruction may be deep.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p>
Eye	<p>When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.</p> <p>Direct contact with alkaline corrosives may produce pain and burns. Oedema, destruction of the epithelium, corneal opacification and iritis may occur. In less severe cases these symptoms tend to resolve.</p>
Chronic	<p>Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Gastrointestinal disturbances may also occur.</p> <p>Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.</p> <p>Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.</p>

BWT LIQUID PLUS	TOXICITY	IRRITATION
	Not Available	Not Available
potassium hydroxide	TOXICITY	IRRITATION
	Oral (rat) LD50: =214-324 mg/kg ^[2]	Eye (rabbit): 1mg/24h rinse-moderate
		Skin (human): 50 mg/24h SEVERE
		Skin (rabbit): 50 mg/24h SEVERE
Tetrapotassiumpyrophosphate	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >4640 mg/kg ^[2]	Not Available
	Oral (Rat)LD50: 4000 mg/kg. ^[2]	
	Oral (Rat)LDLo: 4640 mg/kg ^[2]	

Legend:

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

POTASSIUM HYDROXIDE	<p>The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.</p> <p>The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.</p> <p>Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.</p>
Tetrapotassiumpyrophosphate	No data available. Data for sodium analogue only. tetrasodium pyrophosphate

BWT LIQUID PLUS & POTASSIUM HYDROXIDE & Tetrapotassiumpyrophosphate

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant.

Acute Toxicity	✓	Carcinogenicity	✗
Skin Irritation/Corrosion	✓	Reproductivity	✗
Serious Eye Damage/Irritation	✗	STOT - Single Exposure	✗
Respiratory or Skin sensitisation	✗	STOT - Repeated Exposure	✗
Mutagenicity	✗	Aspiration Hazard	✗

Legend: ✗ – Data either not available or does not fill the criteria for classification
 ✓ – Data available to make classification

SECTION 12 ECOLOGICAL INFORMATION**12.1. Toxicity**

BWT LIQUID PLUS	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
potassium hydroxide	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	80mg/L	4
	EC0	48	Crustacea	<1mg/L	2
NOEC	24	Fish	28mg/L	2	
Tetrapotassiumpyrophosphate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	>100mg/L	2
	EC50	48	Crustacea	>100mg/L	2
	EC50	72	Algae or other aquatic plants	>100mg/L	2
NOEC	72	Algae or other aquatic plants	>100mg/L	2	

Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

May cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.

Prevent, by any means available, spillage from entering drains or water courses.

DO NOT discharge into sewer or waterways.

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

12.4. Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

12.5. Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Applicable	Not Applicable	Not Applicable
PBT Criteria fulfilled?	Not Applicable	Not Applicable	Not Applicable


12.6. Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Product / Packaging disposal	<ul style="list-style-type: none"> ▶ Containers may still present a chemical hazard/ danger when empty. ▶ Return to supplier for reuse/ recycling if possible. Otherwise: <ul style="list-style-type: none"> ▶ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▶ Recycle wherever possible. ▶ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ▶ Treat and neutralise at an approved treatment plant.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 TRANSPORT INFORMATION**Labels Required**

	
Marine Pollutant	NO Not Applicable

Land transport (ADR)

14.1. UN number	1814										
14.2. UN proper shipping name	POTASSIUM HYDROXIDE SOLUTION										
14.3. Transport hazard class(es)	<table border="0"> <tr> <td>Class</td> <td>8</td> </tr> <tr> <td>Subrisk</td> <td>Not Applicable</td> </tr> </table>	Class	8	Subrisk	Not Applicable						
Class	8										
Subrisk	Not Applicable										
14.4. Packing group	II										
14.5. Environmental hazard	Not Applicable										
14.6. Special precautions for user	<table border="0"> <tr> <td>Hazard identification (Kemler)</td> <td>80</td> </tr> <tr> <td>Classification code</td> <td>C5</td> </tr> <tr> <td>Hazard Label</td> <td>8</td> </tr> <tr> <td>Special provisions</td> <td>Not Applicable</td> </tr> <tr> <td>Limited quantity</td> <td>1 L</td> </tr> </table>	Hazard identification (Kemler)	80	Classification code	C5	Hazard Label	8	Special provisions	Not Applicable	Limited quantity	1 L
Hazard identification (Kemler)	80										
Classification code	C5										
Hazard Label	8										
Special provisions	Not Applicable										
Limited quantity	1 L										

Air transport (ICAO-IATA / DGR)

14.1. UN number	1814
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14.2. UN proper shipping name	Potassium hydroxide solution	
14.3. Transport hazard class(es)	ICAO/IATA Class	8
	ICAO / IATA Subrisk	Not Applicable
	ERG Code	8L
14.4. Packing group	II	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Special provisions	A3 A803
	Cargo Only Packing Instructions	855
	Cargo Only Maximum Qty / Pack	30 L
	Passenger and Cargo Packing Instructions	851
	Passenger and Cargo Maximum Qty / Pack	1 L
	Passenger and Cargo Limited Quantity Packing Instructions	Y840
	Passenger and Cargo Limited Maximum Qty / Pack	0.5 L

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	1814	
14.2. UN proper shipping name	POTASSIUM HYDROXIDE SOLUTION	
14.3. Transport hazard class(es)	IMDG Class	8
	IMDG Subrisk	Not Applicable
14.4. Packing group	II	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	EMS Number	F-A , S-B
	Special provisions	Not Applicable
	Limited Quantities	1 L

Inland waterways transport (ADN)

14.1. UN number	1814	
14.2. UN proper shipping name	POTASSIUM HYDROXIDE SOLUTION	
14.3. Transport hazard class(es)	8 Not Applicable	
14.4. Packing group	II	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Classification code	C5
	Special provisions	Not Applicable
	Limited quantity	1 L
	Equipment required	PP, EP
	Fire cones number	0

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

Not Applicable

SECTION 15 REGULATORY INFORMATION**15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture**

POTASSIUM HYDROXIDE(1310-58-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Acros Transport Information	European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI - Chemwatch Standard Format
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (English)
Europe ECHA Registered Substances - Classification and Labelling - DSD-DPD	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (French)
Europe European Agreement concerning the International Carriage of Dangerous Goods by Road - ADR 2017 (Russian)	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (German)
Europe European Chemicals Agency (ECHA) REACH Registration Numbers	FisherTransport Information
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Norwegian)	GESAMP/EHS Composite List - GESAMP Hazard Profiles
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Portuguese)	IMO IBC Code Chapter 17: Summary of minimum requirements
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Spanish)	IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2015, German)	IMO Provisional Categorization of Liquid Substances - List 3: (Trade-named) mixtures containing at least 99% by weight of components already assessed by IMO, presenting safety hazards
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017, English)	International Air Transport Association (IATA) Dangerous Goods Regulations
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017, French)	International Maritime Dangerous Goods Requirements (IMDG Code)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR-S 2019, Swedish)	Norway regulations on action values and limit values for physical and chemical factors in the work environment and infection risk groups for biological factors (Norwegian)
European Chemical Agency (ECHA) Classification & Labelling Inventory - Chemwatch Harmonised classification	Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2017 (English)
European Customs Inventory of Chemical Substances ECICS (English)	Sigma-AldrichTransport Information
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (Chinese)
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (English)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (Spanish)

TETRAPOTASSIUMPYROPHOSPHATE(7320-34-5*) IS FOUND ON THE FOLLOWING REGULATORY LISTS

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways	European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
Europe ECHA Registered Substances - Classification and Labelling - DSD-DPD	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (English)
Europe European Agreement concerning the International Carriage of Dangerous Goods by Road - ADR 2017 (Russian)	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (French)
Europe European Chemicals Agency (ECHA) REACH Registration Numbers	European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List (German)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Norwegian)	FisherTransport Information
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Portuguese)	GESAMP/EHS Composite List - GESAMP Hazard Profiles
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2011, Spanish)	International Air Transport Association (IATA) Dangerous Goods Regulations
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2015, German)	International Maritime Dangerous Goods Requirements (IMDG Code)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017, English)	Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2017 (English)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017, French)	Sigma-AldrichTransport Information
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR-S 2019, Swedish)	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (Chinese)
European Chemical Agency (ECHA) Classification & Labelling Inventory - Chemwatch Harmonised classification	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (English)
European Customs Inventory of Chemical Substances ECICS (English)	United Nations Recommendations on the Transport of Dangerous Goods Model Regulations (Spanish)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2015/830; Regulation (EC) No 1272/2008 as updated through ATPs.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

ECHA SUMMARY

Ingredient	CAS number	Index No	ECHA Dossier
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BWT LIQUID PLUS

potassium hydroxide	1310-58-3	019-002-00-8	01-2119487136-33-XXXX 01-2120767289-38-XXXX
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Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Acute Tox. 4; Skin Corr. 1A	GHS05; Dgr	H302; H314
1	Skin Corr. 1A	GHS05; Dgr	H314

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
Tetrapotassiumpyrophosphate	7320-34-5*	Not Available	01-2119489369-18-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Eye Irrit. 2	GHS07; Wng	H319

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

National Inventory Status

National Inventory	Status
Australia - AICS	Yes
Canada - DSL	Yes
Canada - NDSL	No (Tetrapotassiumpyrophosphate; potassium hydroxide)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (Tetrapotassiumpyrophosphate)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Legend:	Yes = All ingredients are on the inventory No = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Revision Date	29/11/2016
Initial Date	29/11/2016

CONTACT POINT

- For quotations contact your local Customer Services - <http://wssdirectory.wilhelmsen.com/#/customerservices> - - Responsible for safety data sheet
Wilhelmsen Ships Service AS - Prepared by: Product HSE Manager, - Email: Email: WSS.GLOBAL.SDSINFO@wilhelmsen.com - Telephone: Tel.: +31 10 4877775

Full text Risk and Hazard codes

H319	Causes serious eye irritation.
R36	Irritating to eyes.

Other information

DSD / DPD label elements

Not Applicable

Relevant risk statements are found in section 2.1

Indication(s) of danger	Not Applicable
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SAFETY ADVICE

S01	Keep locked up.
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S02	Keep out of reach of children.
S04	Keep away from living quarters.

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices

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