

SECTION 1: Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier

Product form : Mixture
 Name : HypoThermosol® FRS
 Synonyms : HTS-FRS

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

Main use category : Industrial use, professional use.

1.2.2. Uses advised against

Restrictions on use : Any use not specified.

1.3. Details of the supplier of the safety data sheet

BioLife Solutions, LLC
 3303 Monte Villa Parkway
 Suite 310
 Bothell, WA 98021 United States of America
 Tel.: +1 (425) 402-1400 (Monday - Friday, 8:00 am - 5:00 pm Pacific)
 Email: info@biolifesolutions.com

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1.4. Emergency telephone number

Emergency number : +1 (866) 424-6543 (Monday - Friday, 8:00 am - 5:00 pm Pacific)

Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Cardiff Centre) University Hospital Llandough	Penlan Road CF64 2XX	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Edinburgh Centre) Royal Infirmary of Edinburgh	Little France Crescent EH16 4SA	0344 892 0111	Only for healthcare professionals
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER	+44 20 7188 7188	
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre	16/17 Framlington Place Newcastle-upon-Tyne NE2 4AB	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA	0344 892 0111	Only for healthcare professionals

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Skin corrosion/irritation, Category 2 H315

Serious eye damage/eye irritation, Category 2 H319

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP)

:



GHS07

Signal word (CLP)

: Warning

Hazard statements (CLP)

: H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

Precautionary statements (CLP)

: P264 - Wash hands, forearms and face thoroughly after handling.

P280 - Wear protective gloves, protective clothing, eye protection, face protection.

P302+P352 - IF ON SKIN: Wash with plenty of water.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+P313 - If skin irritation occurs: Get medical advice/attention.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P362+P364 - Take off contaminated clothing and wash it before reuse.

Unknown hazards to the aquatic environment (CLP) : Contains 0.1 % of components with unknown hazards to the aquatic environment

2.3. Other hazards

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII.

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Sucrose substance with national workplace exposure limit(s) (BE, FR, IE, LT, PT, ES, GB)	CAS-No.: 57-50-1 EC-No.: 200-334-9	0.5 – 1.5	Not classified
Sodium hydroxide substance with national workplace exposure limit(s) (AT, BE, BG, HR, CZ, DK, EE, FI, FR, GR, HU, IE, LV, LT, PL, PT, SK, SI, ES, SE, GB)	CAS-No.: 1310-73-2 EC-No.: 215-185-5 EC Index-No.: 011-002-00-6	0.1 – 1	Met. Corr. 1, H290 Skin Corr. 1A, H314 Eye Dam. 1, H318
Potassium chloride substance with national workplace exposure limit(s) (LV)	CAS-No.: 7447-40-7 EC-No.: 231-211-8	≤ 1	Not classified

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Potassium hydroxide substance with national workplace exposure limit(s) (AT, BE, BG, HR, CZ, DK, EE, FI, FR, GR, HU, IE, PL, PT, ES, SE, GB)	CAS-No.: 1310-58-3 EC-No.: 215-181-3 EC Index-No.: 019-002-00-8	< 0.2	Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314
Specific concentration limits:			
Name	Product identifier	Specific concentration limits	
Sodium hydroxide	CAS-No.: 1310-73-2 EC-No.: 215-185-5 EC Index-No.: 011-002-00-6	(0.5 ≤ C < 2) Eye Irrit. 2; H319 (0.5 ≤ C < 2) Skin Irrit. 2; H315 (2 ≤ C < 5) Skin Corr. 1B; H314 (5 ≤ C < 100) Skin Corr. 1A; H314	
Potassium hydroxide	CAS-No.: 1310-58-3 EC-No.: 215-181-3 EC Index-No.: 019-002-00-8	(0.5 ≤ C < 2) Eye Irrit. 2; H319 (0.5 ≤ C < 2) Skin Irrit. 2; H315 (2 ≤ C < 5) Skin Corr. 1B; H314 (5 ≤ C ≤ 100) Skin Corr. 1A; H314	

Chemical name, CAS number and/or exact concentration have been withheld as confidential business information

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.
First-aid measures after skin contact	: Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: None under normal conditions.
Symptoms/effects after skin contact	: Causes skin irritation.
Symptoms/effects after eye contact	: Causes serious eye irritation.
Symptoms/effects after ingestion	: None under normal conditions.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide. Sand.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: The product is not flammable.
Explosion hazard	: Product is not explosive.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

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5.3. Advice for firefighters

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Self-contained breathing apparatus. Complete protective clothing. EN 469.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Stop leak if safe to do so. Absorb spillage to prevent material damage. Notify authorities if product enters sewers or public waters.

6.1.1. For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.
Emergency procedures : Evacuate unnecessary personnel. Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to Section 8: "Exposure controls/personal protection".
Emergency procedures : Evacuate unnecessary personnel. Stop leak if safe to do so. Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak without risks if possible. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Absorb spilled material with sand or earth.
Methods for cleaning up : Take up liquid spill into absorbent material. Collect spillage. Store away from other materials.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13. See Section 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wear personal protective equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store refrigerated.
Incompatible materials : Strong acids, strong bases, strong oxidizers. Strong reducing agents. Halogenated organic and mineral acids. Halides. Metal salts. Zinc. Steel. Some plastics. Acid chlorides. Maleic anhydride. Water reactive materials.
Storage temperature : 2 – 8 °C
Storage class (LGK) : LGK 12 - Non-combustible liquids
Joint storage not permitted for : LGK 1, LGK 6.2, LGK 7
Joint storage with restrictions permitted for : LGK 4.1A, LGK 4.3, LGK 5.1C
Joint storage permitted for : LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 4.2, LGK 5.1A, LGK 5.1B, LGK 5.2, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13

7.3. Specific end use(s)

Low temperature storage of biological material.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Sucrose (57-50-1)	
Belgium - Occupational Exposure Limits	
Limit value [mg/m³]	10 mg/m³
France - Occupational Exposure Limits	
Local name	Saccharose
VME [mg/m³]	10 mg/m³
Note (FR)	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
Ireland - Occupational Exposure Limits	
OEL (8 hours ref) (mg/m³)	10 mg/m³
OEL (15 min ref) (mg/m³)	20 mg/m³
Lithuania - Occupational Exposure Limits	
IPRV (mg/m³)	10 mg/m³
Portugal - Occupational Exposure Limits	
Local name	Sacarose
OEL TWA (mg/m³)	10 mg/m³
Remark	A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Spain - Occupational Exposure Limits	
Local name	Sacarosa
VLA-ED (mg/m³)	10 mg/m³
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
United Kingdom - Occupational Exposure Limits	
WEL TWA (mg/m³)	10 mg/m³
WEL STEL (mg/m³)	20 mg/m³
USA - ACGIH - Occupational Exposure Limits	
Local name	Sucrose
ACGIH TWA (mg/m³)	10 mg/m³
Remark (ACGIH®)	Dental erosion
Regulatory reference	ACGIH 2023
Sodium hydroxide (1310-73-2)	
Austria - Occupational Exposure Limits	
Local name	Natriumhydroxid (Ätznatron)
MAK [mg/m³]	2 mg/m³ (E)
MAK Short time value [mg/m³]	4 mg/m³ (E, 8x 5(Mow) min)
Regulatory reference	BGBI. II Nr. 330/2024

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Sodium hydroxide (1310-73-2)	
Belgium - Occupational Exposure Limits	
Local name	Sodium (hydroxyde de) # Natriumhydroxide
Limit value [mg/m³]	2 mg/m³
Remark (BE)	M: la mention "M" indique que lors d'une exposition supérieure à la valeur limite, des irritations apparaissent ou un danger d'intoxication aiguë existe. Le procédé de travail doit être conçu de telle façon que l'exposition ne dépasse jamais la valeur limite. Lors des mesurages, la période d'échantillonnage doit être aussi courte que possible afin de pouvoir effectuer des mesurages fiables. Le résultat des mesurages est calculé en fonction de la période d'échantillonnage. # M: de vermelding "M" duidt aan dat bij de blootstelling boven de grenswaarde irritatie optreedt of er gevaar bestaat voor acute vergiftiging. Het werkproces moet zo zijn ontworpen dat de blootstelling de grenswaarde nooit overschrijdt. Bij een controle geldt dat de bemonsterde periode zo kort mogelijk moet zijn om een betrouwbare meting te kunnen verrichten. Het meetresultaat wordt dan gerelateerd aan de beschouwde periode.
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Натриева основа
OEL TWA (mg/m³)	2 mg/m³ (алкални аерозоли)
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Croatia - Occupational Exposure Limits	
Local name	Natrijev hidroksid; kaustična soda
KGVI (OEL STEL)	2 mg/m³
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
Czech Republic - Occupational Exposure Limits	
Local name	Hydroxid sodný
Expoziční limity (PEL) (mg/m³)	1 mg/m³
Expoziční limity (NPK-P) (mg/m³)	2 mg/m³
Remark	I - dráždí sliznice (oči, dýchací cesty), resp. kůže.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 20/2025 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Natriumhydroxid
Grænseværdi (8 timer) (mg/m³)	2 mg/m³
OEL C	2 mg/m³
Regulatory reference	BEK nr 1619 af 19/12/2024
Estonia - Occupational Exposure Limits	
Local name	Naatriumhüdoksiid
OEL TWA	1 mg/m³
OEL STEL	2 mg/m³ lühiajalise kokkupuute piirnorm, arvutatud viieminutisele kokkupuuteajale
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)

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Sodium hydroxide (1310-73-2)	
Finland - Occupational Exposure Limits	
Local name	Natriumhydroksidi
HTP-arvo (15 min)	2 mg/m ³
HTP (OEL C)	2 mg/m ³
Regulatory reference	HTP-ARVOT 2025 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Sodium (hydroxyde de) (Hydroxyde de sodium)
VME [mg/m ³]	2 mg/m ³
VLE [mg/m ³]	2 mg/m ³
Note (FR)	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
Greece - Occupational Exposure Limits	
Local name	Υδροξείδιο του νατρίου
OEL TWA (mg/m ³)	2 mg/m ³
OEL STEL	2 mg/m ³
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	NÁTRIUM-HIDROXID
AK-érték	1 mg/m ³
CK-érték	2 mg/m ³
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármát); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Sodium hydroxide
OEL (15 min ref) (mg/m ³)	2 mg/m ³
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Latvia - Occupational Exposure Limits	
Local name	Nātrija hidroksīds (nātrija sārms, kaustiskā soda)
OEL TWA	0.5 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Lithuania - Occupational Exposure Limits	
Local name	Natrio hidroksidas
NRV (OEL C)	2 mg/m ³
Remark	Ū (ūmus poveikis)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)

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Sodium hydroxide (1310-73-2)	
Poland - Occupational Exposure Limits	
Local name	Wodorotlenek sodu
NDS (mg/m³)	0.5 mg/m³
NDSch (mg/m³)	1 mg/m³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Hidróxido de sódio
OEL C	2 mg/m³
	2 ppm
Regulatory reference	Norma Portuguesa NP 1796:2014
Slovakia - Occupational Exposure Limits	
Local name	Hydroxid sodný
NPHV (priemerná) (mg/m³)	2 mg/m³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	natrijev hidroksid
OEL TWA	2 mg/m³
OEL STEL	2 mg/m³
Spain - Occupational Exposure Limits	
Local name	Hidróxido de sodio
VLA-EC (mg/m³)	2 mg/m³
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2025. INSHT
Sweden - Occupational Exposure Limits	
Local name	Natriumhydroxid
Nivågränsvärde (NVG) (mg/m³)	1 mg/m³ (inhalerbar fraktion)
Kortidsvärde (KTV) (mg/m³)	2 mg/m³ (inhalerbar fraktion)
Remark	25 (Med inhalerbar och respirabel fraktion menas de dammfractioner som definieras i svensk standard SS-EN 481, Arbetsplatsluft – Partikelstorleksfraktioner för mätning av luftburna partiklar (utgåva 1, 1993). Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i en totaldammprovtagare)
Regulatory reference	Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:14) om gränsvärden för luftvägsexponering i arbetsmiljön
United Kingdom - Occupational Exposure Limits	
Local name	Sodium hydroxide
WEL STEL (mg/m³)	2 mg/m³
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Natríumhýdroxíð (vítissóti)
OEL STEL	2 mg/m³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)

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Sodium hydroxide (1310-73-2)	
Norway - Occupational Exposure Limits	
Local name	Natriumhydroksid
Grenseverdier (AN) (mg/m³)	2 mg/m³
Takverdi (OEL C)	2 mg/m³
Regulatory reference	FOR-2024-04-05-581
North Macedonia - Occupational Exposure Limits	
Local name	Натриум хидроксид
OEL TWA	2 mg/m³ (I) инхалабилна фракција – дел на вкупно суспендирани материи, кои работникот ги вдишува
KTV	1
Short time value [mg/m³]	2 mg/m³
Remark	(KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m³ или во ml/m³(ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (Y)
Regulatory reference	Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)
Switzerland - Occupational Exposure Limits	
Local name	Soude caustique / Natriumhydroxid [Aetznatron]
VME [mg/m³]	2 mg/m³ (i) / (e)
KZGW (mg/m³)	2 mg/m³ (i) / (e)
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 18.06.2025
Turkey - Occupational Exposure Limits	
Local name	Sodyum hidroksit
OEL TWA	2 mg/m³
Regulatory reference	12 Ağustos 2013 Tarihli ve 28733 Sayılı Resmî Gazete (Değişik:RG-20/10/2023-32345)
USA - ACGIH - Occupational Exposure Limits	
Local name	Sodium hydroxide
ACGIH® TLV® C	2 mg/m³
Remark (ACGIH®)	TLV® Basis: Eye, Skin & URT irr
Regulatory reference	ACGIH 2025
Potassium hydroxide (1310-58-3)	
Austria - Occupational Exposure Limits	
MAK [mg/m³]	2 mg/m³
Remark (AT)	(einatembare Fraktion)

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Potassium hydroxide (1310-58-3)	
Belgium - Occupational Exposure Limits	
Local name	Potassium (hydroxyde de) # Kaliumhydroxide
Short time value [mg/m³]	2 mg/m³
Remark (BE)	M: la mention "M" indique que lors d'une exposition supérieure à la valeur limite, des irritations apparaissent ou un danger d'intoxication aiguë existe. Le procédé de travail doit être conçu de telle façon que l'exposition ne dépasse jamais la valeur limite. Lors des mesurages, la période d'échantillonnage doit être aussi courte que possible afin de pouvoir effectuer des mesurages fiables. Le résultat des mesurages est calculé en fonction de la période d'échantillonnage. # M: de vermelding "M" duidt aan dat bij de blootstelling boven de grenswaarde irritatie optreedt of er gevaar bestaat voor acute vergiftiging. Het werkproces moet zo zijn ontworpen dat de blootstelling de grenswaarde nooit overschrijdt. Bij een controle geldt dat de bemonsterde periode zo kort mogelijk moet zijn om een betrouwbare meting te kunnen verrichten. Het meetresultaat wordt dan gerelateerd aan de beschouwde periode.
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
Bulgaria - Occupational Exposure Limits	
Local name	Калиева основа
OEL TWA (mg/m³)	2 mg/m³
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.)
Croatia - Occupational Exposure Limits	
Local name	Kalijev hidroksid; kaustična potaša
KGVI (OEL STEL)	2 mg/m³
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Hydroxid draselný
Expoziční limity (PEL) (mg/m³)	1 mg/m³
Expoziční limity (NPK-P) (mg/m³)	2 mg/m³
Remark	I - dráždí sliznice (oči, dýchací cesty), respektive kůže.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Kaliumhydroxid
OEL C	2 mg/m³
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Kaaliumhüdroksiid
OEL TWA	2 mg/m³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
Finland - Occupational Exposure Limits	
Local name	Kaliumhydroksidi
HTP-arvo (15 min)	2 mg/m³

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Potassium hydroxide (1310-58-3)	
HTP (OEL C)	2 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Potassium (hydroxyde de)
VLE [mg/m ³]	2 mg/m ³
Note (FR)	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
Greece - Occupational Exposure Limits	
Local name	Υδροξείδιο του καλίου
OEL TWA (mg/m ³)	2 mg/m ³
OEL STEL	2 mg/m ³
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	KÁLIUM-HIDROXID
AK-érték	2 mg/m ³
CK-érték	2 mg/m ³
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármat); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Potassium hydroxide
OEL (15 min ref) (mg/m ³)	2 mg/m ³
Regulatory reference	Chemical Agents Code of Practice 2021
Poland - Occupational Exposure Limits	
Local name	Wodorotlenek potasu
NDS (mg/m ³)	0.5 mg/m ³
NDSch (mg/m ³)	1 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Hidróxido de potássio
OEL C	2 mg/m ³
	2 ppm
Regulatory reference	Norma Portuguesa NP 1796:2014
Spain - Occupational Exposure Limits	
Local name	Hidróxido de potasio
VLA-EC (mg/m ³)	2 mg/m ³
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT

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Potassium hydroxide (1310-58-3)	
Sweden - Occupational Exposure Limits	
Local name	Kaliumhydroxid
Nivågränsvärde (NVG) (mg/m³)	1 mg/m³ inhalerbar fraktion
Kortidsvärde (KTV) (mg/m³)	2 mg/m³ inhalerbar fraktion
Remark	3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Potassium hydroxide
WEL STEL (mg/m³)	2 mg/m³
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Kalíumhýdroxíð
OEL STEL	2 mg/m³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Kaliumhydroksid
Takverdi (OEL C)	2 mg/m³
Regulatory reference	FOR-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Potasse caustique / Kaliumhydroxid
VME [mg/m³]	2 mg/m³ (i) / (e)
Critical toxicity	VRS, Peau, Yeux / OAW, Haut, Auge
Remark	NIOSH
Regulatory reference	www.suva.ch, 28.03.2022
USA - ACGIH - Occupational Exposure Limits	
Local name	Potassium hydroxide
ACGIH® TLV® C	2 mg/m³
Remark (ACGIH®)	TLV® Basis: URT, eye, & skin irr
Regulatory reference	ACGIH 2021
Potassium chloride (7447-40-7)	
Latvia - Occupational Exposure Limits	
Local name	Kālija hlorīds
OEL TWA	5 mg/m³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).

8.1.2. Recommended monitoring procedures

No additional information available.

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8.1.3. Air contaminants formed

No additional information available.

8.1.4. DNEL and PNEC

No additional information available.

8.1.5. Control banding

No additional information available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Industrial and professional. Perform risk assessment prior to use. Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment:

Wear recommended personal protective equipment. Avoid all unnecessary exposure.

8.2.2.1. Eye and face protection

Eye protection:

Chemical goggles or safety glasses. EN 166.

8.2.2.2. Skin protection

Skin and body protection:

Long sleeved protective clothing.

Hand protection:

Wear protective gloves. Wear water impervious gloves. Nitrile rubber gloves. Butyl rubber. VITON gloves. EN 374.

8.2.2.3. Respiratory protection

Respiratory protection:

None under normal use. If needed, use an air-purifying respirator with organic vapor cartridges and a dust/mist prefilter. EN 136/140.

8.2.2.4. Thermal hazards

No additional information available.

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colorless or slightly yellow
Appearance	: Clear
Odour	: Odorless
Odour threshold	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Not available
Explosive limits	: Not available
Lower explosion limit	: Not available
Upper explosive limit (UEL)	: Not available
Flash point	: Not available
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: 7.5 – 7.7

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Viscosity, kinematic	: Not available
Solubility	: Soluble in water
Log Kow	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: Not available
Relative vapour density at 20°C	: Not available
Particle size	: Not applicable
Particle size distribution	: Not applicable
Particle shape	: Not applicable
Particle aspect ratio	: Not applicable
Particle aggregation state	: Not applicable
Particle agglomeration state	: Not applicable
Particle specific surface area	: Not applicable
Particle dustiness	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids, strong bases, strong oxidizers. Strong reducing agents. Halogenated organic and mineral acids. Methyl bromide. Sodium hydride. Halides. Metal salts of oxoacids. Metal salts. Zinc. Steel. Some plastics. Acid chlorides. Boron compounds. Maleic anhydride. Water reactive materials.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)

Sucrose (57-50-1)	
LD50 Oral rat	29700 mg/kg
Potassium hydroxide (1310-58-3)	
LD50 Oral rat	333 mg/kg bodyweight

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Potassium chloride (7447-40-7)	
LD50 Oral rat	≈ 3020 mg/kg bodyweight Animal: rat, Animal sex: female

Skin corrosion/irritation	: Causes skin irritation. pH: 7.5 – 7.7
Serious eye damage/irritation	: Causes serious eye irritation. pH: 7.5 – 7.7
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)

Potassium chloride (7447-40-7)	
IARC group	Not listed in carcinogenicity class

Potassium chloride (7447-40-7)	
NOAEL (chronic, oral, animal/male, 2 years)	≈ 1820 mg/kg bodyweight Animal: rat, Animal sex: male
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)

Sodium hydroxide (1310-73-2)	
NOAEC (inhalation, rat, gas, 90 days)	50 ppm

Potassium chloride (7447-40-7)	
NOAEL (oral, rat, 90 days)	≈ 1820 mg/kg bodyweight Animal: rat, Animal sex: male

Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
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11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties	: The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.
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11.2.2. Other information

Potential adverse human health effects and symptoms	: Causes skin irritation. Causes eye irritation.
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SECTION 12: Ecological information

12.1. Toxicity

Unknown hazards to the aquatic environment (CLP)	: Contains 0.1 % of components with unknown hazards to the aquatic environment
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	: Not classified (Based on available data, the classification criteria are not met)

Sodium hydroxide (1310-73-2)	
LC50 fish	> 84 mg/l
EC50 crustacea	40.4 mg/l Test organisms (species): <i>Ceriodaphnia sp.</i>
ErC50 algae	240 mg/l

Potassium chloride (7447-40-7)	
LC50 fish	880 mg/l Test organisms (species): <i>Pimephales promelas</i>
EC50 other aquatic organisms	440 – 880 mg/l Test organisms (species): other

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Potassium chloride (7447-40-7)

EC50 - other aquatic organisms	580 – 670 mg/l Test organisms (species): other
EC50 72h - algae	> 100 mg/l Test organisms (species): <i>Desmodesmus subspicatus</i> (previous name: <i>Scenedesmus subspicatus</i>)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Sodium hydroxide (1310-73-2)

Log Pow	-0.3
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12.4. Mobility in soil

Potassium chloride (7447-40-7)

Ecology - soil	Mixture components are completely soluble in water. Partitions to soil.
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12.5. Results of PBT and vPvB assessment

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This mixture does not meet the PBT criteria of REACH regulation, annex XIII.
This mixture does not meet the vPvB criteria of REACH regulation, annex XIII.

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties

: The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.

12.7. Other adverse effects

Additional information

: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods

: Dispose of contents/container in accordance with licensed collector's sorting instructions.

Waste disposal recommendations

: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Additional information

: Do not re-use empty containers.

Ecology - waste materials

: Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

14.1. UN number or ID number

UN-No. (ADR)

: Not regulated

UN-No. (IMDG)

: Not regulated

UN-No. (IATA)

: Not regulated

UN-No. (ADN)

: Not regulated

UN-No. (RID)

: Not regulated

14.2. UN proper shipping name

Proper Shipping Name (ADR)

: Not regulated

Proper Shipping Name (IMDG)

: Not regulated

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Proper Shipping Name (IATA) : Not regulated
Proper Shipping Name (ADN) : Not regulated
Proper Shipping Name (RID) : Not regulated

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : Not regulated

IMDG

Transport hazard class(es) (IMDG) : Not regulated

IATA

Transport hazard class(es) (IATA) : Not regulated

ADN

Transport hazard class(es) (ADN) : Not regulated

RID

Transport hazard class(es) (RID) : Not regulated

14.4. Packing group

Packing group (ADR) : Not regulated
Packing group (IMDG) : Not regulated
Packing group (IATA) : Not regulated
Packing group (ADN) : Not regulated
Packing group (RID) : Not regulated

14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)
Contains no substance(s) listed on the REACH Candidate List
Contains no substance(s) listed on REACH Annex XIV (Authorisation List)
Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

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Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

15.1.2. National regulations

France	
Occupational diseases	
Code	Description
RG 67	Nasal septum lesions caused by potassium chloride dust in potash mines and their dependencies

Germany

Employment restrictions : Observe restrictions according Act on the Protection of Working Mothers (MuSchG)
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)

Water hazard class (WGK) : WGK nwg, Non-hazardous to water (Not classified according to Regulation Governing Systems for Handling Substances Hazardous to Waters (AwSV))

Twelfth Ordinance on the Implementation of the Federal Immission Control Act (12. BImSchV) : Is not subject to the Major Accidents Ordinance (12. BImSchV)

Netherlands

ABM category : B(4) - low hazard for aquatic organisms

SZW-lijst van kankerverwekkende stoffen : None of the components are listed

SZW-lijst van mutagene stoffen : None of the components are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : None of the components are listed

Switzerland

Storage class (LK) : LK 10/12 - Liquids

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:	
ACGIH	American Conference of Government Industrial Hygienists
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
COD	Chemical oxygen demand (COD)
CSA	Chemical safety assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration

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Abbreviations and acronyms:	
ED	Endocrine disruptor
EN	European Standard
EWC	European waste catalogue
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
Log Kow	Partition coefficient n-octanol/water (Log Kow)
Log Pow	Partition coefficient n-octanol/water (Log Pow)
MAK	maximum workplace concentration
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety Health Administration
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
PPE	Personal protection equipment
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TF	Technical function
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TWA	Time Weighted Average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative
UFI	Unique Formula Identifier

Data sources : Internal Company test data. Manufacturer Information.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Met. Corr. 1	Corrosive to metals, Category 1

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Full text of H- and EUH-statements:

Skin Corr. 1A	Skin corrosion/irritation, Category 1, Sub-Category 1A
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Skin Irrit. 2	H315	Calculation method
Eye Irrit. 2	H319	Calculation method

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Signature Manifest

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Title: HypoThermosol® FRS Safety Data Sheet (EU)

Effective Date: 06 Oct 2026

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HypoThermosol® FRS Safety Data Sheet (EU)

Collaboration Step

Name/Signature	Title	Date	Meaning/Reason
Michele Haler (MHALER)	Quality Engineer	22 Sep 2026, 12:27:35 PM	Complete

Department Approval

Name/Signature	Title	Date	Meaning/Reason
Matthew Selley (MSELLEY)	Director Aseptic Form & Fill	22 Sep 2026, 12:46:51 PM	Approved

Quality Approval

Name/Signature	Title	Date	Meaning/Reason
Brittany Bentcover (BBENTCOVER)	Director of Quality - Media	25 Sep 2026, 03:52:00 PM	Approved

Training Approval

Name/Signature	Title	Date	Meaning/Reason
Misti Long (MLONG)	QA Specialist I	25 Sep 2026, 04:27:00 PM	Approved

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Misti Long (MLONG)	QA Specialist I	25 Sep 2026, 04:37:27 PM	Approved

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Michele Haler (MHALER)	Quality Engineer	25 Sep 2026, 04:37:27 PM	Email Sent