

SAFETY DATA SHEET

(in accordance with Regulation (EU) 2020/878)

0010-pH MINUS

FLUIDRA
INDUSTRY
INQUIDE

Version 1 Date of compilation: 26/09/2018

Version 9 (replaces version 8)

Revision date: 27/01/2023

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

1.1 Product identifier.

Product Name: pH MINUS
Product Code: 0010
Chemical Name: idrogenosolfato di sodio
Index No: 016-046-00-X
CAS No: 7681-38-1
EC No: 231-665-7
Registration No: 01-2119552465-36-XXXX

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

Regolatore di pH

Uses advised against:

Usi differenti a quelli consigliati.

Gli scenari di esposizione relativi agli usi si possono trovare nell'Allegato.

1.3 Details of the supplier of the safety data sheet.

Company's identification:

Company: **SIBO Fluidra Netherlands B.V.**
Address: Doornhoek 3950,
City: 5465 TC Veghel The Netherlands
Province: Barcelona
Telephone: Tel. +31 413 29 39 18
Fax: +34 93 713 41 11
E-mail: fds@inquide.com

Responsible for market placement:

Company: **SSA Fluidra Österreich GmbH**
Address: Untersbergster, 10
City: A-5082 GRÖDIG
Province: Österreich
Telephone: Tel: +43 6246 77 000

1.4 Emergency telephone number: (Disponibile 24 ore)

CAV accreditati: Roma +39 06 68 59 3726; Foggia +39 800 18 34 59; Napoli +39 081 54 53 333; Roma +39 06 49 97 80 00; Roma +39 06 30 54 343; Firenze +39 055 79 47 819; Pavia +39 0382 24 444; Milano +39 02 66 10 10 29; Bergamo +39 800 88 33 00; Verona +39 800 01 18 58.

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance or mixture.

In accordance with Regulation (EU) No 1272/2008:

Eye Dam. 1 : Provoca gravi lesioni oculari.

2.2 Label elements.

Labelling in accordance with Regulation (EU) No 1272/2008:

Pictograms:



Signal Word:

Pericolo

Hazard statements:

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H318 Provoca gravi lesioni oculari.

Precautionary statements:

P101 In caso di consultazione di un medico, tenere a disposizione il contenitore o l'etichetta del prodotto.
P102 Tenere fuori dalla portata dei bambini.
P103 Leggere attentamente e seguire tutte le istruzioni.
P280 Indossare guanti e maschera protettivi.
P305+P351+P338 IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare.
P301+P310 IN CASO DI INGESTIONE: contattare immediatamente un CENTRO ANTIVELENI o un medico.
P501 Smaltire il contenuto e/o il contenitore in conformità con le normative sui rifiuti pericolosi.

Contains:
idrogenosolfato di sodio

2.3 Other hazards.

La sostanza non è PBT
La sostanza non è vPvB
La sostanza non ha proprietà che alterano il sistema endocrino.

Durante il normale uso e nella sua forma originale, il prodotto non ha altri effetti negativi sulla salute e sull'ambiente.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.

Identifiers	Name	Concentrate	(*)Classification - Regulation (EC) No 1272/2008	
			Classification	Specifics concentration limits and Acute toxicity estimate
Index No: 016-046-00-X CAS No: 7681-38-1 EC No: 231-665-7	idrogenosolfato di sodio	3 - 100 %	Eye Dam. 1, H318	-

3.2 Mixtures.

Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.

In caso di dubbio o quando i sintomi di malessere persistono, consultare un medico. Non dare mai niente per bocca a persone incoscienti.

Inalazione.

Mettere l'accidentato all'aria aperta, mantenerlo caldo e in riposo, se la respirazione è irregolare o si ferma, praticare respirazione artificiale.

Contatto con gli occhi.

Lavare abbondantemente gli occhi con acqua pulita e fresca per almeno 10 minuti tenendo le palpebre aperte. Cercare assistenza medica. Non permettere alla persona di strofinare l'occhio colpito.

Contatto con la pelle.

Togliere gli indumenti contaminati. Lavare la pelle vigorosamente con acqua e sapone o un detergente adeguato alla pelle. MAI utilizzare dissolventi o diluenti.

Ingestione.

Se accidentalmente si è ingerito, chiedere immediatamente attenzione medica. Mantenerla a riposo. MAI provocare il vomito.

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

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Prodotto corrosivo, il contatto con gli occhi o con la pelle può procurare bruciature; l'ingestione o inalazione può produrre danni interni. In quel caso è richiesta l'immediata attenzione medica.
Il contatto con gli occhi può causare danni irreversibili.

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

Richiedere supporto medico immediato. Non dare mai niente per bocca a persone incoscienti. Non indurre il vomito. Se la persona vomita, liberare le vie respiratorie. Coprire la zona colpita con materiale da medicazione sterile asciutto. Proteggere dalla pressione o dalla frizione la zona colpita.

SECTION 5: FIREFIGHTING MEASURES.

Il prodotto NON è classificato come infiammabile, in caso di incendio dovrebbe seguire la procedura descritta di seguito:

5.1 Extinguishing media.

Mezzi di estinzione idonei:

Estintore a polvere o CO₂. In caso d'incendi più gravi anche schiuma resistente all'alcol e acqua polverizzata.

Mezzi di estinzione non idonei:

Non usare per l'estinzione spruzzo diretto d'acqua. In presenza di tensione elettrica non è accettabile l'utilizzo di acqua o schiuma come mezzo di estinzione.

5.2 Special hazards arising from the substance or mixture.

Rischi speciali.

L'esposizione ai prodotti di combustione o decomposizione può essere pregiudiziale per la salute.

5.3 Advice for firefighters.

Raffreddare con acqua i depositi, cisterne o recipienti prossimi alla fonte di calore o fuoco. Tenere in conto la direzione del vento. Evitare che i prodotti utilizzati nella lotta contro l'incendio, passino a condotti, fognature o corsi d'acqua.

Equipaggiamento di protezione contro incendi.

Secondo la magnitudine dell'incendio, può essere necessario l'uso d'indumenti di protezione contro il calore, equipaggiamento respiratorio autonomo, guanti, occhiali protettivi o maschere facciali e stivali.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.

Per il controllo d'esposizione e misure di protezione individuale, vedere sezione 8.

6.2 Environmental precautions.

Non classificato come pericoloso per l'ambiente, evitare per quanto possibile, qualsiasi scarico.

6.3 Methods and material for containment and cleaning up.

Contenere e raccogliere il prodotto eventualmente fuoriuscito con materiale assorbente inerte (terra, sabbia, vermiculite, terra diomacee...) e pulire immediatamente la zona con un adeguato decontaminante.

Smaltire i resti di prodotto in contenitori chiusi e adatti allo smaltimento in conformità con le normative locali e nazionali (vedi sezione 13).

6.4 Reference to other sections.

Per il controllo d'esposizione e misure di protezione individuale, vedere sezione 8.

Per la successiva eliminazione dei residui, seguire le raccomandazioni della sezione 13.

SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.

Per la protezione personale, vedere sezione 8.

Nella zona d'applicazione deve essere proibito fumare, mangiare e bere.

Rispettare la legislazione sulla sicurezza e l'igiene nel lavoro.

Attenzione: i recipienti non sono resistenti alla pressione, non impiegare mai la pressione per svuotare i contenitori. Conservare il prodotto in recipienti di un materiale identico all'originale.

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7.2 Conditions for safe storage, including any incompatibilities.

Immagazzinare secondo la legislazione locale. Osservare le indicazioni dell'etichetta. Immagazzinare i recipienti tra 5 e 25 °C, in un luogo secco e ben ventilato, lontano dal calore e dai raggi diretti del sole. Mantenere lontano da punti d'ignizione. Mantenere lontano da agenti ossidanti e da materiali fortemente acidi o alcalini. Non fumare. Evitare l'entrata a persone non autorizzate. Una volta aperti i recipienti, devono essere richiusi attentamente e collocati verticalmente per evitare spargimenti.

The product is not affected by Directive 2012/18/EU (SEVESO III).

7.3 Specific end use(s).

Nessun uso particolare.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.

The product does NOT contain substances with Professional Exposure Environmental Limit Values. The product does NOT contain substances with Biological Limit Values.

8.2 Exposure controls.

Measures of a technical nature:

Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

Concentration:	100 %
Uses:	Regolatore di pH
Breathing protection:	
If the recommended technical measures are observed, no individual protection equipment is necessary.	
Hand protection:	
If the product is handled correctly, no individual protection equipment is necessary.	
Eye protection:	
If the product is handled correctly, no individual protection equipment is necessary.	
Skin protection:	
PPE:	Calzature di lavoro.
Characteristics:	Marchio «CE» Categoria II.
CEN standards:	EN ISO 13287, EN 20347
Maintenance:	Questi articoli si adattano alla forma del piede del primo utente. Per questo motivo, oltre ad una questione di igiene, è da evitare il riutilizzo da parte di altra persona.
Observations:	La calzatura di lavoro per uso professionale è quella che aggiunge elementi di protezione destinati a proteggere l'utente dalle lesioni che potessero provocare gli incidenti. Deve verificarsi per quali lavori queste calzature sono adeguate.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.

Physical state: Solid

Colour: bianco / giallo

Odour: Inodore

Odour threshold: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Melting point: 180 °C

Freezing point: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Boiling point or initial boiling point and boiling range: >200 °C

Flammability: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Lower explosion limit: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Upper explosion limit: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Flash point: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Auto-ignition temperature: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Decomposition temperature: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

pH: 1 - 1,2 (20%)

Kinematic viscosity: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Solubility: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

Hydrosolubility: 1080 g/l (20 °C)

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Liposolubility: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Partition coefficient n-octanol/water (log value): Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Vapour pressure: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Absolute density: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Relative density: 1.4 - 1.45
Relative vapour density: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Particle characteristics: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

9.2 Other information

Viscosity: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Explosive properties: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Oxidizing properties: No
Dropping point: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.
Blink: Non pertinente/Non disponibile a causa della natura/proprietà del prodotto.

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.

Il prodotto non comporta pericoli per la sua reattività.

10.2 Chemical stability.

Instabile in contatto con:

- Basi.

10.3 Possibility of hazardous reactions.

Può prodursi una neutralizzazione in contatto con basi.

10.4 Conditions to avoid.

- Evitare el contatto con basi.

10.5 Incompatible materials.

Evitare i seguenti materiali:

- Basi.

10.6 Hazardous decomposition products.

Dipendendo dalle condizioni di impiego, possono generarsi i seguenti prodotti:

- Vapori o gas corrosivi.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on hazard classes as defined in Regulation (EC) N° 1272/2008.

Splatters in the eyes can cause irritation and reversible damage.

Toxicological information.

Name	Acute toxicity			
	Type	Test	Kind	Value
idrogenosolfato di sodio	Oral	LD50	Rat	2140 mg/kg
	Dermal			
	Inhalation	LD50	Rat	>2.4 mg/l (4 h)

N. CAS: 7681-38-1 N. CE: 231-665-7

a) tossicità acuta;

Dati non concludenti per la classificazione.

b) corrosione/irritazione cutanea;

Dati non concludenti per la classificazione.

c) lesioni oculari gravi/irritazioni oculari gravi;

Prodotto classificato:

Lesioni oculari gravi, Categoria 1: Provoca gravi lesioni oculari.

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d) sensibilizzazione respiratoria o cutanea;
Dati non concludenti per la classificazione.

e) mutagenicità delle cellule germinali;
Dati non concludenti per la classificazione.

f) cancerogenicità;
Dati non concludenti per la classificazione.

g) tossicità per la riproduzione;
Dati non concludenti per la classificazione.

h) tossicità specifica per organi bersaglio (STOT) - esposizione singola;
Dati non concludenti per la classificazione.

i) tossicità specifica per organi bersaglio (STOT) - esposizione ripetuta;
Dati non concludenti per la classificazione.

j) pericolo in caso di aspirazione.
Dati non concludenti per la classificazione.

11.2 Information on other hazards.

Proprietà di interferenza con il sistema endocrino

Questo prodotto non contiene componenti con proprietà che alterano il sistema endocrino e hanno un effetto sulla salute umana.

Altre informazioni

Non esistono informazioni disponibili su altri effetti avversi per la salute.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

Name	Ecotoxicity			
	Type	Test	Kind	Value
idrogenosolfato di sodio N. CAS: 7681-38-1 N. CE: 231-665-7	Fish	LC50	Fish	7960 mg/l (96h)
	Aquatic invertebrates	LC50	Daphnia	1766 mg/l (48 h)
	Aquatic plants	LC50	Algae	1900 mg/l (120 h)

12.2 Persistence and degradability.

Non si hanno a disposizione informazioni relative alla biodegradabilità.

Non si hanno a disposizione informazioni relative alla degradabilità.

Non sono disponibili informazioni sulla persistenza e degradabilità del prodotto.

12.3 Bioaccumulative potential.

Non si dispone d'informazione sul Bioaccumulo.

12.4 Mobility in soil.

Non sono disponibili informazioni sulla mobilità nel suolo

È vietato lo smaltimento in fognature o corsi d'acqua.

Evitare la penetrazione nel terreno.

12.5 Results of PBT and vPvB assessment.

Non sono disponibili informazioni sul prodotto PBT e vPvB.

12.6 Endocrine disrupting properties.

Questo prodotto non contiene componenti con proprietà che alterano il sistema endocrino e hanno un effetto sull'ambiente.

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12.7 Other adverse effects.

Non ci sono informazioni su altri effetti negativi per l'ambiente.

SECTION 13: DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.

Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

Follow the provisions of Directive 2008/98/EC regarding waste management.

SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product's spillage, proceed in accordance with point 6.

14.1 UN number or ID number.

Transportation is not dangerous.

14.2 UN proper shipping name.

Description:

ADR/RID: Non pericoloso ai fini del trasporto.

IMDG: Non pericoloso ai fini del trasporto.

ICAO/IATA: Non pericoloso ai fini del trasporto.

14.3 Transport hazard class(es).

Transportation is not dangerous.

14.4 Packing group.

Transportation is not dangerous.

14.5 Environmental hazards.

Transportation is not dangerous.

Transport by ship, FEm – Emergency sheets (F – Fire, S - Spills): Non Applicabile.

14.6 Special precautions for user.

Transportation is not dangerous.

14.7 Maritime transport in bulk according to IMO instruments.

Transportation is not dangerous.

SECTION 15: REGULATORY INFORMATION.

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

The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

Volatile organic compound (VOC)

VOC content (p/p): 0 %

VOC content: 0 g/l

Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): N/A

The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.

The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

Categoria di inquinante per l'acqua (Germania): WGK 1: Poco pericoloso per l'acqua. (Autoclassificato in base al regolamento AwSV)

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15.2 Chemical safety assessment.

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

Available Product Exposure Scenario.

SECTION 16: OTHER INFORMATION.

Classification codes:

Eye Dam. 1 : Lesioni oculari gravi, Categoria 1

Cambiare riguardanti la versione precedente:

- Modifica degli informazioni sulle proprietà fisiche e chimiche (SEZIONE 9).
- Modifica degli informazioni della condizioni per stabilità e reattività (SEZIONE 10.2).
- Modifica degli informazioni della condizioni per stabilità e reattività (SEZIONE 10.3).
- Modifica degli informazioni della condizioni per stabilità e reattività (SEZIONE 10.4).
- Modifica degli informazioni della condizioni per stabilità e reattività (SEZIONE 10.5).
- Modifica degli informazioni della condizioni per stabilità e reattività (SEZIONE 10.6).
- Modifiche delle leggi nazionali (SEZIONE 15.1).

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

Physical hazards	On basis of test data
Health hazards	Calculation method
Environmental hazards	Calculation method

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Available Product Exposure Scenario.

Abbreviature ed acronimi utilizzati:

AwSV: Regolamento relativo agli Impianti per la manipolazione di sostanze pericolose per l'acqua.
CEN: Comitato Europeo di Normalizzazione.
EC50: Concentrazione media effettiva.
DPI: Squadra di protezione personale.
LC50: Concentrazione letale, 50%.
LD50: Dose letale, 50%.
WGK: Classi di pericolo per l'ambiente acquatico.

Key literature references and sources for data:

<http://eur-lex.europa.eu/homepage.html>

<http://echa.europa.eu/>

Regulation (EU) 2020/878.

Regulation (EC) No 1907/2006.

Regulation (EU) No 1272/2008.

The information given in this Safety Data Sheet has been drafted in accordance with COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemical substances and mixtures (REACH).

The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.

-End of safety data sheet.-

Table 1: Overview on exposure scenarios and coverage of substance life cycle

ES number	Exposure scenario title	Volume (tonnes)	Manufacture	Identified uses			Resulting life cycle stage		Linked to Identified Use	Sector of use category (SU)	Chemical product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
				Formulation	End use	Consumer use	Service life (for articles)	Waste stage						
9.1	Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings	not relevant for exposure assessment	X	X	X				1, 2, 3, 4, 5, 6, 7	2a, 2b, 3, 4, 5, 6b, 7, 8, 9, 10, 11, 13, 15, 16, 17, 19, 20, 23	14, 15, 19, 20, 21, 25, 35, 36, 37	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 17, 19, 21, 24		1 – 7, 12
9.2	Use of sodium hydrogensulfate as such or in preparation in professional settings	not relevant for exposure assessment			X				8, 9	22	14, 15, 20, 35, 37	2, 3, 4, 5, 8a, 8b, 9, 10, 11, 12, 13, 14, 15, 17, 19, 21, 24		8 – 11
9.3	Consumer use of cleaning products containing sodium hydrogensulfate	not relevant for exposure assessment				X			10	21	35			8

Exposure scenario addendum for sodium hydrogensulfate

ES number	Exposure scenario title	Volume (tonnes)	Manufacture	Identified uses			Resulting life cycle stage		Linked to Identified Use	Sector of use category (SU)	Chemical product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
				Formulation	End use	Consumer use	Service life (for articles)	Waste stage						
9.4	Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools	not relevant for exposure assessment				X			11	21	20, 37			8

9.1 Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings

Exposure Scenario Format (1) addressing uses carried out by workers				
1. Title				
Free short title	Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings			
Systematic title based on use descriptor	SU2a, SU2b, SU3, SU4, SU5, SU6b, SU7, SU8, SU9, SU10, SU11, SU13, SU15, SU16, SU17, SU19, SU20, SU23 PC1PC14, PC15, PC19, PC20, PC21, PC25, PC35, PC36, PC37 PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24 ERC1-7, 12			
Processes, tasks and/or activities covered	Processes, tasks and/or activities covered are described in Section 2 below.			
Assessment Method	Occupational exposure: A qualitative assessment of inhalation and dermal exposure was conducted in the absence of any DNELs (derived no-effect levels) for inhalation and dermal exposure. Environmental exposure: A qualitative assessment was conducted.			
2. Operational conditions and risk management measures				
2.1 Control of workers exposure				
Product characteristic				
Sodium hydrogensulfate is produced and placed on the market as a pearled/granular product or in preparations having the same physical form. The rotating drum method (RDM) according to Heubach was used to determine the particle size distribution of the airborne fraction of dust generated during mechanical agitation simulating workplace conditions. This method provides a "total dustiness" value indicating the propensity of a material to become airborne, and thus serving as an indicator of the emission potential of the material under workplace conditions. The test resulted in a total dustiness of sodium hydrogensulfate of 0.8 % when simulating mechanical agitation (e.g. bagging, filling and mixing operations). According to the MEASE approach, the substance intrinsic emission potential could be assessed as very low – low. Thus, inhalation exposure to sodium hydrogensulfate is assumed to be negligible during all process steps in industrial and/or professional settings and the inhalation route is not a relevant exposure route for this substance. Under the prerequisite that all available (i.e. purchasable) forms of sodium hydrogensulfate are in accordance with the dustiness as documented above, human health is thereby considered to be sufficiently protected. It is noted that the substance intrinsic emission potential may be overwritten for specific processes by the process intrinsic emission potential. PROC 7 and PROC 11 as being spray applications in industrial and non-industrial settings, respectively, are assumed to result in a higher emission potential (it is also assumed that the physical form has to be modified to powder prior to spraying). Since PROC 21 and PROC 24 are considered as potential abrasive tasks, the emission potential is accordingly higher and the physical form is assumed to be wear dust during these tasks.				
PROC	Use in preparation	Content in preparation	Physical form	Emission potential
PROC 7	not restricted		powder	medium
PROC 21, 24			(wear) dust	low – high
All other applicable PROCs			pearls, granules	very low – low
Amounts used				
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation (industrial vs. professional) and level of containment/automation (as reflected in the PROC) is the main determinant of the process intrinsic emission potential.				
Frequency and duration of use/exposure				
PROC	Duration of exposure			
PROC 7	Due to the high level of automation and measures at the process level (please see below), inhalation exposure is negligible and the exposure duration is consequently short (< 60 minutes).			
All other applicable PROCs	not restricted			
Human factors not influenced by risk management				
The shift breathing volume during all process steps reflected in the PROCs is assumed to be 10 m³/shift (8 hours).				
Other given operational conditions affecting workers exposure				
Other operational conditions such as room volume, indoor or outdoor use, process temperature and process pressure are not considered relevant for the occupational exposure assessment of the conducted processes.				

Technical conditions and measures at process level (source) to prevent release				
PROC	Level of containment		Level of segregation	
PROC 1, 2, 3	closed process		not required	
PROC 7	closed process		spraying of sodium hydrogensulfate in a segregated spray tower where direct exposure of the worker is excluded	
All other applicable PROCs	Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in these processes since any potential inhalation exposure is assumed to be negligible due to the low dusty nature of sodium hydrogensulfate.			
Technical conditions and measures to control dispersion from source towards the worker				
PROC	Level of separation	Localised controls (LC)	Efficiency of LC (according to MEASE)	Further information
PROC 7	Any potentially required separation of workers from the emission source is indicated above under "Frequency and duration of exposure". A reduction of exposure duration can be achieved, for example, by the installation of ventilated (positive pressure) control rooms or by removing the worker from workplaces involved with relevant exposure.	Efficient ventilation of the area (e.g. local exhaust ventilation) is recommended to minimise any potential emission of wear dust into workplace air.	78 %	-
All other applicable PROCs	Separation of workers from the emission source is generally not required in the conducted processes.			
Organisational measures to prevent /limit releases, dispersion and exposure				
Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure safe handling of the substance. Good occupational hygiene practices have to be followed (e.g. shower and change clothes at end of work shift) to avoid any contamination of private households via the work-home-interface. Do not eat and smoke in the workplace. Unless otherwise stated below, wear standard working clothes and shoes. Do not wear contaminated clothing at home. Do not blow dust off with compressed air. Regular training in workplace hygiene practice and proper use of personal protective equipment is required.				
Conditions and measures related to personal protection, hygiene and health evaluation				
PROC	Specification of respiratory protective equipment (RPE)	RPE efficiency (assigned protection factor, APF)	Specification of gloves	Further personal protective equipment (PPE)
All applicable PROCs	If ventilation is insufficient and/or formation of relevant dust levels cannot be excluded, use RPE according to EN143 and EN149. An FFP2 mask should be worn for safety reasons when packaging/unpacking sodium hydrogensulfate since high abrasion may occur.	(APF=10, for safety reasons during processes where relevant dust levels and high abrasion may occur)	In cases where extensive direct contact with sodium hydrogensulfate cannot be avoided, wear suitable protective gloves according to EN374.	Eye protection equipment (e.g. goggles or visors) conforming to EN166 must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.
Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE. For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers. An overview of the APFs of different RPE (according to BS EN 529:2005) can be found in the glossary of MEASE.				

2.2 Control of environmental exposure				
Amounts used				
The daily and annual amount per site (for point sources) is not considered to be the main determinant for environmental exposure.				
Frequency and duration of use				
Intermittent (< 12 time per year) or continuous use/release				
Environment factors not influenced by risk management				
Flow rate of receiving surface water: 18000 m3/day				
Other given operational conditions affecting environmental exposure				
Effluent discharge rate: 2000 m3/day				
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil				
Risk management measures related to the environment aim to avoid discharging NaHSO ₄ solutions into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised (e.g. through neutralisation). In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. Neutralisation of waste waters and effluent should be widespread (often it is also required by national legislation).				
Conditions and measures related to waste				
Solid industrial waste of NaHSO ₄ should be reused or discharged to the industrial wastewater and further neutralized if needed.				
3. Exposure estimation and reference to its source				
Occupational exposure				
PROC	Method used for inhalation exposure assessment (refer to introduction)	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
All applicable PROCs	Since sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), inhalation exposure during all process steps is assumed to be negligible if the proposed risk management measures as described above are met.		Due to the negligible dermal absorption of sodium hydrogensulfate, the dermal route is not a relevant exposure path for sodium hydrogensulfate and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.	

Environmental emissions	
The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTPs, as emissions of NaHSO ₄ in the different life-cycle stages (production and use) mainly apply to (waste) water. The aquatic effect and risk assessment only deal with the effect on organisms/ecosystems due to possible pH changes related to H ⁺ discharges, being the toxicity of Na ⁺ and SO ₄ ²⁻ are expected to be negligible compared to the (potential) pH effect. Only the local scale is addressed, including municipal sewage treatment plants (STPs) or industrial waste water treatment plants (WWTPs) when applicable, both for production and industrial use as any effects that might occur would be expected to take place on a local scale. The high water solubility and very low vapour pressure indicate that NaHSO ₄ will be found predominantly in water. Significant emissions or exposure to air are not expected due to the low vapour pressure of NaHSO ₄ . Significant emissions or exposure to the terrestrial environment are not expected either for this exposure scenario.	
Environmental emissions	The production or use of NaHSO ₄ can potentially result in an aquatic emission and locally increase the NaHSO ₄ concentration and affect the pH in the aquatic environment. When the pH is not neutralised, the discharge of effluent from NaHSO ₄ production or use sites may impact the pH in the receiving water. The pH of effluents is normally measured very frequently and can be neutralised easily as often required by national laws.
Exposure concentration in waste water treatment plant (WWTP)	Waste water from NaHSO ₄ production or use is an inorganic wastewater stream and therefore there is no biological treatment. Therefore, wastewater streams from NaHSO ₄ production sites will normally not be treated in biological waste water treatment plants (WWTPs).
Exposure concentration in aquatic pelagic compartment	When NaHSO ₄ is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO ₄ is rejected to surface water, the pH may decrease, depending on the buffer capacity of the water. The higher the buffer capacity of the water, the lower the effect on pH will be. In general the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (CO ₂), the bicarbonate ion (HCO ₃ ⁻) and the carbonate ion (CO ₃ ²⁻).
Exposure concentration in sediments	The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO ₄ : when NaHSO ₄ is emitted to the aquatic compartment, sorption of to sediment particles is negligible.
Exposure concentrations in soil and groundwater	The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.
Exposure concentration in atmospheric compartment	The air compartment is not included in this CSA because it is considered not relevant for NaHSO ₄ .
Exposure concentration relevant for the food chain (secondary poisoning)	Bioaccumulation in organisms is not relevant for NaHSO ₄ : a risk assessment for secondary poisoning is therefore not required.
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Occupational exposure	
The DU works inside the boundaries set by the ES if he handles sodium hydrogensulfate having the same properties with regard to dustiness as described in this ES and if the proposed risk management measures as described above are met. A dustiness assessment can be made either on a qualitative or on a quantitative basis. For a qualitative assessment the MEASE glossary (www.ebrc.de/mease.html) can be consulted, which provides guidance on this topic. A quantitative assessment can be done by conducting a dustiness test with the specific material according to the rotating drum method. It is however noted that also other dustiness tests exist, which may be used instead. For further details please refer to the European Standard EN 15051 titled "Workplace atmospheres – Measurement of the dustiness of bulk materials – Requirements and reference test methods".	

Environmental emissions

If a site does not comply with the conditions stipulated in the safe use ES, it is recommended to apply a tiered approach to perform a more site-specific assessment. For that assessment, the following tiered approach is recommended.

Tier 1: retrieve information on effluent pH and the contribution of NaHSO₄ on the resulting pH. Shall the pH be below 6 and predominantly dependent by the NaHSO₄, then further actions are required to demonstrate safe use.

Tier 2a: retrieve information on receiving water pH after the discharge point. The pH of the receiving water shall not be lower than 6. If the measures are not available, the pH in the river can be calculated as follows:

$$pH_{river} = \text{Log} \left[\frac{Q_{effluent} * 10^{pH_{effluent}} + Q_{riverupstream} * 10^{pH_{upstream}}}{Q_{riverupstream} + Q_{effluent}} \right]$$

(Eq 1)

Where:

Q effluent refers to the effluent flow (in m³/day)

Q river upstream refers to the upstream river flow (in m³/day)

pH effluent refers to the pH of the effluent

pH upstream river refers to the pH of the river upstream of the discharge point

Please note that initially, default values can be used:

- Q river upstream flows: use the 10th of existing measurements distribution or use default value of 18000 m³/day
- Q effluent: use default value of 2000 m³/day
- The upstream pH is preferably a measured value. If not available, one can assume a neutral pH of 7 if this can be justified.

Such equation has to be seen as a worst case scenario, where water conditions are standard and not case specific.

Tier 2b: Equation 1 can be used to identify which effluent pH causes an acceptable pH level in the receiving body. In order to do so, pH of the river is set at value 6 and pH of the effluent is calculated accordingly (using default values as reported previously, if necessary). As temperature influences solubility, pH effluent might require to be adjusted on a case-by-case basis. Once the maximum admissible pH value in the effluent is established, it is assumed that the H⁺ concentrations are all dependent on NaHSO₄ discharge and that there is no buffer capacity conditions to consider (this is a unrealistic worst case scenario, which can be modified where information is available). Maximum load of NaHSO₄ that can be annually rejected without negatively affecting the pH of the receiving water is calculated assuming chemical equilibrium. H⁺ expressed as moles/litre is multiplied by average flow of the effluent and then divided by the molar mass of NaHSO₄.

Tier 3: measure the pH in the receiving water after the discharge point. If pH is between 6 and 9, safe use is reasonably demonstrated and the ES ends here. If pH is found to be below 6, risk management measures have to be implemented: the effluent has to undergo neutralisation, thus ensuring safe use of NaHSO₄ during production or use phase.

9.2 Use of sodium hydrogensulfate as such or in preparation in professional settings

Exposure Scenario Format (1) addressing uses carried out by workers				
1. Title				
Free short title	Use of sodium hydrogensulfate as such or in preparation in professional settings			
Systematic title based on use descriptor	SU22 PC14, PC15, PC20, PC35, PC37 PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24 ERC8-11			
Processes, tasks and/or activities covered	Processes, tasks and/or activities covered are described in Section 2 below.			
Assessment Method	Occupational exposure: A qualitative assessment of inhalation and dermal exposure was conducted in the absence of any DNELs (derived no-effect levels) for inhalation and dermal exposure. Environmental exposure: A qualitative assessment was conducted.			
2. Operational conditions and risk management measures				
2.1 Control of workers exposure				
Product characteristic				
Sodium hydrogensulfate is produced and placed on the market as a pearled/granular product or in preparations having the same physical form. The rotating drum method (RDM) according to Heubach was used to determine the particle size distribution of the airborne fraction of dust generated during mechanical agitation simulating workplace conditions. This method provides a "total dustiness" value indicating the propensity of a material to become airborne, and thus serving as an indicator of the emission potential of the material under workplace conditions. The test resulted in a total dustiness of sodium hydrogensulfate of 0.8 % when simulating mechanical agitation (e.g. bagging, filling and mixing operations). According to the MEASE approach, the substance intrinsic emission potential could be assessed as very low – low. Thus, inhalation exposure to sodium hydrogensulfate is assumed to be negligible during all process steps in industrial and/or professional settings and the inhalation route is not a relevant exposure route for this substance. Under the prerequisite that all available (i.e. purchasable) forms of sodium hydrogensulfate are in accordance with the dustiness as documented above, human health is thereby considered to be sufficiently protected. It is noted that the substance intrinsic emission potential may be overwritten for specific processes by the process intrinsic emission potential. PROC 7 and PROC 11 as being spray applications in industrial and non-industrial settings, respectively, are assumed to result in a higher emission potential (it is also assumed that the physical form has to be modified to powder prior to spraying). Since PROC 21 and PROC 24 are considered as potential abrasive tasks, the emission potential is accordingly higher and the physical form is assumed to be wear dust during these tasks.				
PROC	Use in preparation	Content in preparation	Physical form	Emission potential
PROC 11	not restricted		powder	medium
PROC 21, 24			(wear) dust	low – high
All other applicable PROCs			pearls, granules	very low – low
Amounts used				
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation (industrial vs. professional) and level of containment/automation (as reflected in the PROC) is the main determinant of the process intrinsic emission potential.				
Frequency and duration of use/exposure				
PROC	Duration of exposure			
PROC 11	Due to the high level of automation and measures at the process level (please see below), inhalation exposure is negligible and the exposure duration is consequently short (< 60 minutes).			
All other applicable PROCs	not restricted			
Human factors not influenced by risk management				
The shift breathing volume during all process steps reflected in the PROCs is assumed to be 10 m³/shift (8 hours).				
Other given operational conditions affecting workers exposure				
Other operational conditions such as room volume, indoor or outdoor use, process temperature and process pressure are not considered relevant for the occupational exposure assessment of the conducted processes.				

Technical conditions and measures at process level (source) to prevent release				
PROC	Level of containment		Level of segregation	
PROC 2, 3	closed process		not required	
PROC 11	closed process		spraying in non-industrial settings has to be performed in segregated areas where direct exposure of the worker is excluded	
All other applicable PROCs	Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in these processes since any potential inhalation exposure is assumed to be negligible due to the low dusty nature of sodium hydrogensulfate.			
Technical conditions and measures to control dispersion from source towards the worker				
PROC	Level of separation	Localised controls (LC)	Efficiency of LC (according to MEASE)	Further information
PROC 11	Any potentially required separation of workers from the emission source is indicated above under "Frequency and duration of exposure". A reduction of exposure duration can be achieved, for example, by the installation of ventilated (positive pressure) control rooms or by removing the worker from workplaces involved with relevant exposure.	Efficient ventilation of the area (e.g. local exhaust ventilation) is recommended to minimise any potential emission of wear dust into workplace air.	78 %	-
All other applicable PROCs	Separation of workers from the emission source is generally not required in the conducted processes.			
Organisational measures to prevent /limit releases, dispersion and exposure				
Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure safe handling of the substance. Good occupational hygiene practices have to be followed (e.g. shower and change clothes at end of work shift) to avoid any contamination of private households via the work-home-interface. Do not eat and smoke in the workplace. Unless otherwise stated below, wear standard working clothes and shoes. Do not wear contaminated clothing at home. Do not blow dust off with compressed air. Regular training in workplace hygiene practice and proper use of personal protective equipment is required.				
Conditions and measures related to personal protection, hygiene and health evaluation				
PROC	Specification of respiratory protective equipment (RPE)	RPE efficiency (assigned protection factor, APF)	Specification of gloves	Further personal protective equipment (PPE)
All applicable PROCs	If ventilation is insufficient and/or formation of relevant dust levels cannot be excluded, use RPE according to EN143 and EN149. An FFP2 mask should be worn for safety reasons when packaging/unpacking sodium hydrogensulfate since high abrasion may occur.	(APF=10, for safety reasons during processes where relevant dust levels and high abrasion may occur)	In cases where extensive direct contact with sodium hydrogensulfate cannot be avoided, wear suitable protective gloves according to EN374.	Eye protection equipment (e.g. goggles or visors) conforming to EN166 must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.
Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE. For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers. An overview of the APFs of different RPE (according to BS EN 529:2005) can be found in the glossary of MEASE.				

2.2 Control of environmental exposure				
Amounts used				
The daily and annual amount per site (for point sources) is not considered to be the main determinant for environmental exposure. In this scenario the emissions of NaHSO ₄ are considered in lower amounts and on a larger scale due to professional and/or consumer use.				
Frequency and duration of use				
Due to the wide dispersive aspect of the scenario a continuous release is assumed.				
Environment factors not influenced by risk management				
Flow rate of receiving surface water: 18000 m3/day				
Other given operational conditions affecting environmental exposure				
Effluent discharge rate of the STP: 2000 m3/day				
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil				
No risk management measure can be assumed for professional and/or consumer uses. All waste water resulting from use (cleaning, pH-regulator in swimming pools) of NaHSO ₄ is assumed to be directed to a municipal STP (default setting according to ECHA guidance R16).				
Conditions and measures related to waste				
Not relevant				
3. Exposure estimation and reference to its source				
Occupational exposure				
PROC	Method used for inhalation exposure assessment (refer to introduction)	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
All applicable PROCs	Since sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), inhalation exposure during all process steps is assumed to be negligible if the proposed risk management measures as described above are met.		Due to the negligible dermal absorption of sodium hydrogensulfate, the dermal route is not a relevant exposure path for sodium hydrogensulfate and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.	
Environmental emissions				
Environmental emissions	Wide dispersive uses of NaHSO ₄ usually use diluted products. The small amounts of NaHSO ₄ will entirely end up in the sewer where they will further be neutralized quickly by the buffer capacity of the wastewater before reaching a STP or surface water. The influent of a municipal STP is typically tested for pH and, if needed, adjusted before entering the biological step. The effluent of a municipal STP is usually circum-neutral.			
Exposure concentration in waste water treatment plant	Since the municipal STP usually monitors the pH of the influent and neutralize accordingly if needed, there is no pH impact expected on the microbiological activity in the municipal STP.			
Exposure concentration in aquatic pelagic compartment	When NaHSO ₄ is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO ₄ is rejected to surface water, the pH may decrease, depending on the buffer capacity of the water. The higher the buffer capacity of the water, the lower the effect on pH will be. In general the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (CO ₂), the bicarbonate ion (HCO ₃ ⁻) and the carbonate ion (CO ₃ ²⁻).			
Exposure concentration in sediments	The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO ₄ : when NaHSO ₄ is emitted to the aquatic compartment, sorption of to sediment particles is negligible.			
Exposure concentrations in soil and groundwater	The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.			
Exposure concentration in atmospheric compartment	The air compartment is not included in this CSA because it is considered not relevant for NaHSO ₄ .			
Exposure concentration relevant for the food chain (secondary poisoning)	Bioaccumulation in organisms is not relevant for NaHSO ₄ : a risk assessment for secondary poisoning is therefore not required.			

4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Occupational exposure

The DU works inside the boundaries set by the ES if he handles sodium hydrogensulfate having the same properties with regard to dustiness as described in this ES and if the proposed risk management measures as described above are met. A dustiness assessment can be made either on a qualitative or on a quantitative basis. For a qualitative assessment the MEASE glossary (www.ebrc.de/mease.html) can be consulted, which provides guidance on this topic. A quantitative assessment can be done by conducting a dustiness test with the specific material according to the rotating drum method. It is however noted that also other dustiness tests exist, which may be used instead. For further details please refer to the European Standard EN 15051 titled "Workplace atmospheres – Measurement of the dustiness of bulk materials – Requirements and reference test methods".

Environmental emissions

not relevant for consumers/professionals

9.3 Consumer use of cleaning products containing sodium hydrogensulfate

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers				
1. Title				
Free short title		Consumer use of cleaning products containing sodium hydrogensulfate		
Systematic title based on use descriptor		SU21, PC35, ERC 8a		
Processes, tasks activities covered		Tasks and activities covered are described in section 2 below.		
Assessment Method*		Human health No exposure estimation was performed for the dermal route. A quantitative assessment was performed for inhalation and the oral route using the HERA guidance document as a guide. Environment: A qualitative justification is provided.		
2. Operational conditions and risk management measures				
RMM	The solid products will be in form of pearls or granules as manufactured, having a low-very low dust formation potential.			
PC/ERC	Description			
PC 35	Cleaners (all purpose cleaners, sanitary products): • Surface cleaning. • Pouring of liquid concentrate or solid granules. Toilet cleaner: • Pouring of solid granules			
ERC 8a	Wide dispersive indoor use of processing aids in open systems			
2.1 Control of consumers exposure				
Product characteristic				
Description of the preparation	Concentration of the substance in the preparation	Physical state of the preparation	Dustiness (if relevant)	Packaging design
Acid surface cleaner (l)	6%	liquid	NR	0.75 – 1L
Acid surface cleaner (s)	10%	Solid, pearls	Very low	0.75 – 1L
Toilet cleaner (s)	80%	Solid, pearls	Very low	0.75 – 1L
Amounts used				
Description of the preparation	Amount used per event		Source of information	
Acid surface cleaner (l)	Typical: 60g per 5L = 12g/L Max: 110g per 5L = 22g/L		(HERA, 2005, Appendix F)	
Acid surface cleaner (s)	Max: 40g per 5L = 8g/L		(HERA, 2005, Appendix F)	
Toilet cleaner (s)	Typical: 20g Max: 30g		(HERA, 2005, Appendix F)	
Frequency and duration of use/exposure				
Description of the preparation	Duration of exposure per event	frequency of events	Source of information	
Acid surface cleaner (l)	20 min (max)	Up to 7 tasks per week (max)	(HERA, 2005, Appendix F)	
Acid surface cleaner (s)	20 min (max)	Up to 7 tasks per week (max)	(HERA, 2005, Appendix F)	
Toilet cleaner (s)	< 1min	Up to 2 tasks per week (max)	(HERA, 2005, Appendix F)	

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers				
Human factors not influenced by risk management				
Description of the preparation	Population exposed	Body weight (BW) [kg]	Exposed body part	Corresponding skin area [cm ²]
Acid surface cleaner (l)	adult	60 (HERA, 2005, Appendix G)	Hands	857.5
Acid surface cleaner (s)	Adult		Hands	857.5
Toilet cleaner (s)	adult		Only splashes	-
Other given operational conditions affecting consumers exposure				
Film thickness on skin	0.01cm (HERA, 2005, Appendix G)			
Conditions and measures related to information and behavioural advice to consumers				
Do not get in eyes. Keep container closed and out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wash thoroughly after handling.				
Conditions and measures related to personal protection and hygiene				
Wear suitable goggles.				
2.2 Control of environmental exposure				
Product characteristics				
Not relevant for exposure assessment				
Amounts used*				
Not relevant for exposure assessment				
Frequency and duration of use				
Not relevant for exposure assessment				
Environment factors not influenced by risk management				
Default river flow and dilution				
Other given operational conditions affecting environmental exposure				
Indoor and outdoor				
Conditions and measures related to municipal sewage treatment plant				
Default size of municipal sewage system/treatment plant and sludge treatment technique				
Conditions and measures related to external treatment of waste for disposal				
Not relevant for exposure assessment				
Conditions and measures related to external recovery of waste				
Not relevant for exposure assessment				
3. Exposure estimation and reference to its source				
Since sodium hydrogensulfate is classified as irritating to eyes (eye dam.1) a qualitative assessment has been performed for exposure to the eye.				
Human exposure				
Acid surface cleaner (l), Acid surface cleaner (s), Toilet cleaner (s)				
Route of exposure	Method used, comments			
Oral	Qualitative assessment Oral uptake of sodium hydrogensulfate via the use of household cleaning products is considered negligible under normal handling conditions.			
Dermal	No local effects are known after dermal exposure. Furthermore, dermal absorption is considered negligible and			

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers	
	there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.
Eye	Qualitative assessment Exposure to the eyes is not expected as part of the intended product use. Solid: As the product is of low-very low dustiness no dust formation is expected. Liquid: Splashes into the eyes cannot be excluded if no protective goggles are worn during the application. However, this will mainly be to the diluted application solution (<1% NaHSO₄). Therefore mild irritation can easily be avoided by immediate rinsing of the eyes with water.
Inhalation	Sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), therefore inhalation exposure during use of solid sodium hydrogensulfate pearls is assumed to be negligible. Thus, inhalation exposure is not assessed in this exposure scenario.
Environmental exposure	
The pH impact due to use of sodium hydrogensulfate in household cleaning products is expected to be negligible. The influent of a municipal wastewater treatment plant is often neutralized anyway and sodium hydrogensulfate may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs. Since the pH of the influent of the municipal treatment plant is circum neutral, the pH impact is negligible on the receiving environmental compartments, such as surface water, sediment and terrestrial compartment.	
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
The DU works inside the boundaries set by the ES if sodium hydrogensulfate is either marked as a liquid preparation or in case of a solid preparation sodium hydrogensulfate is used as manufactured and not further processed to get smaller particles.	

9.4 Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers				
1. Title				
Free short title	Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools			
Systematic title based on use descriptor	SU21, PC20, 37, ERC 8			
Processes, tasks activities covered	Tasks and activities covered are described in section 2 below.			
Assessment Method*	Human health Human exposure has been assessed on a qualitative basis. Nevertheless the US EPA Standard operating procedures (SOPs) for residential exposure assessment – swimming pools (US EPA, 1997) has been used as a guide. Environment: A qualitative justification is provided.			
2. Operational conditions and risk management measures				
PC/ERC	Description			
PC 20, 37	Applying of pH-regulator to swimming pools: Manual filling/pouring of sodium hydrogensulfate into swimming pool (large amount). Preparation of sodium hydrogensulfate solution for further application/pouring of sodium hydrogensulfate into water (small amount). Dropwise application of sodium hydrogensulfate solution to water.			
ERC 8	Wide dispersive use			
2.1 Control of consumers exposure				
Product characteristic				
Description of the preparation	Concentration of the substance in the preparation	Physical state of the preparation	Dustiness (if relevant)	Packaging design
pH-regulator for swimming pools (solid)	100%	granular	Very low (beads)	1 – 5 kg
pH-regulator for swimming pools (liquid)	≤ 50%	liquid	NR	1 – 5 L
Amounts used				
Description of the preparation	Amount used per event	Source of information		
pH-regulator for swimming pools (solid)	depending on the pH of water and size of swimming pool : 10g to reduce the pH by 0.1 per 1m ³ swimmingpool water.	Instructions by producer.		
pH-regulator for swimming pools (liquid)	10% solution (1kg/10L water)	Instructions by producer.		
Post-application ingestion	0.05L/h	US EPA, SOPs for residential exposure assessments – swimming pools		
Frequency and duration of use/exposure				
Description of task	Duration of exposure per event	frequency of events		
Pouring of granules	1.33 min (DIY-fact sheet, RIVM, Chapter 2.4.2 Mixing and loading of powders)	1 task/week		
Dropwise application of	Several minutes - hours	1 task/ month		

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers				
solution				
Post-application ingestion	5h (child of 6 years) 6h (adults) 90 th percentile value for time spent at home in the pool (US EPA, 1996: Exposure factors handbook, EPA/600/P-95/002Ba)	daily		
Human factors not influenced by risk management				
Description of task	Population exposed	Body weight (BW) [kg]	Exposed body part	Corresponding skin area [cm²]
Pouring of granules	adult	60	Half of both hands	430
Dropwise application of solution	Adult		Hands	860
Post-application ingestion	Child (6 years) Adult	22 60	-	-
Other given operational conditions affecting consumers exposure				
Film thickness on skin	0.01cm (HERA, 2005, Appendix G)			
Conditions and measures related to information and behavioural advice to consumers				
Do not get in eyes. Keep container closed and out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wash thoroughly after handling. Assure an equal distribution of the salt by running the circulating pump for 4-6h and measure the pH to be in the desired range between 7.0-7.4 before swimming pool use.				
Conditions and measures related to personal protection and hygiene				
Wear suitable goggles.				
2.2 Control of environmental exposure				
Product characteristics				
Not relevant for exposure assessment				
Amounts used*				
Not relevant for exposure assessment				
Frequency and duration of use				
Not relevant for exposure assessment				
Environment factors not influenced by risk management				
Default river flow and dilution				
Other given operational conditions affecting environmental exposure				
Indoor and outdoor				
Conditions and measures related to municipal sewage treatment plant				
Default size of municipal sewage system/treatment plant and sludge treatment technique				
Conditions and measures related to external treatment of waste for disposal				
Not relevant for exposure assessment				
Conditions and measures related to external recovery of waste				
Not relevant for exposure assessment				
3. Exposure estimation and reference to its source				
Since sodium hydrogensulfate is classified as irritating to eyes (eye dam.1) a qualitative assessment has been performed for exposure				

Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers	
to the eye.	
Human exposure	
Use of pH-regulator for swimming pools	
Route of exposure	Method used, comments
Oral	Qualitative assessment Oral uptake of sodium hydrogensulfate as pH-regulator of swimming pools is not considered under normal handling conditions.
Dermal	No local effects are known after dermal exposure. Furthermore, dermal absorption is considered negligible and there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.
Inhalation	Sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), therefore inhalation exposure during use of solid sodium hydrogensulfate pearls is assumed to be negligible. Thus, inhalation exposure is not assessed in this exposure scenario.
Eye	Qualitative assessment Exposure to the eyes is not expected as part of the intended product use. Solid: As the product is of low-very low dustiness no dust formation is expected. Liquid: However, splashes into the eyes cannot be excluded if no protective goggles are worn during the task described. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.
Post-application ingestion:	
Route of exposure	Method used, comments
Oral	Qualitative assessment: Sodium hydrogensulfate will dissolve in water to sodium and sulphate ions and will reduce the pH of the swimming pool water. If an equal distribution of the salt has been secured and the pH was measured to be in the desired range between 7.0-7.4 no local effects need to be suspected. No systemic effects are expected from the oral uptake, as these ions are omnipresent in nature and normal constituent of the human body.
Environmental exposure	
The pH impact due to use of sodium hydrogensulfate as pH-regulator in residential swimming pools is expected to be negligible, as under normal use conditions the desired effect is to neutralize the pH of the swimming pool water. However, the influent of a municipal wastewater treatment plant is often neutralized anyway and sodium hydrogensulfate may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs. Since the pH of the influent of the municipal treatment plant is circumneutral, the pH impact is negligible on the receiving environmental compartments, such as surface water, sediment and terrestrial compartment.	
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
The DU works inside the boundaries set by the ES if sodium hydrogensulfate is either marked as a liquid preparation or in case of a solid preparation sodium hydrogensulfate is used as manufactured and not further processed to get smaller particles.	

10 Risk Characterisation

10.1 Industrial uses of NaHSO₄

10.1.1 Occupational exposure

Please refer to Section 3 of exposure scenario 9.1. Inhalation and dermal exposure have been addressed qualitatively in the absence of any DNELs (derived no-effect levels).

10.1.2 Environmental exposure

As shown in the exposure scenario 9.1, no exposure to NaHSO₄ is expected to occur in sediments, soil and groundwater or atmospheric compartment.

10.1.2.1 Aquatic compartment (including microbiological activity in STP)

The risk characterisation is only performed for the aquatic environment compartment, when applicable including STPs/WWTPs, as emissions of NaHSO₄ in the different life-cycle stages (production and use) mainly apply to (waste) water.

Discharges of NaHSO₄ from production and use to STPs/WWTPs and receiving waters are generally well controlled. Additionally, national regulations often require pH control of the wastewaters, to protect surface waters from pH changes. Where a significant pH change cannot be excluded, neutralisation of NaHSO₄ containing wastewaters and effluents applies.

Therefore, the aquatic compartment is adequately protected with respect to pH changes.

10.2 Wide dispersive uses of NaHSO₄

10.2.1 Occupational exposure

Please refer to Section 3 of exposure scenario 9.2. Inhalation and dermal exposure have been addressed qualitatively in the absence of any DNELs (derived no-effect levels).

10.2.2 Environmental exposure

10.2.2.1 Aquatic compartment (including microbiological activity in STP)

The risk characterisation is only performed for the aquatic environment compartment and the municipal STPs, as emissions of NaHSO₄ in the different life-cycle stages mainly apply to (waste) water.

Discharges of NaHSO₄ from wide dispersive use to the STPs are generally quickly neutralized in the sewer. Additionally, the municipal STP will analyse the pH of the influent and effluent to protect the biological step in the STP and the receiving water from pH changes. Where a significant pH change cannot be excluded, neutralisation of NaHSO₄ containing wastewaters applies.

Therefore, the aquatic compartment is adequately protected with respect to pH changes.

10.3 Consumer uses of NaHSO₄

10.3.1 Consumer exposure

No quantitative assessment has been performed; therefore no risk characterisation ratio (RCR) has been derived.

Regarding the irritant effect to the eyes sodium hydrogensulfate can be allocated to the severe hazard category on the basis that exposure to such irritant substances should be avoided. Exposure to the eyes is not expected as part of the intended product use. However, accidental splashes cannot be excluded. However, it can be assumed that this would be to the diluted form rather than the concentrate. Therefore, mild irritation can easily be avoided by immediate rinsing of the eyes with water.

10.3.2 Environmental exposure

Consumer uses relate to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water. The influent of municipal treatment plants is usually neutralized anyway. Therefore, consumer use of sodium hydrogensulfate is adequately under control for the environment.