SICHERHEITSDATENBLATT
(gemäß der (EU-)Verordnung 2020/878)

0010-0010

ABSCHNITT 1: BEZEICHNUNG DES STOFFS BEZIEHUNGSWEISE DES GEMISCHS UND DES UNTERNEHMENS.

1.1 Produktidentifikator.

Produktbezeichnung:	0010
Produktcode:	0010
Chemischer Name:	natriumhydrogensulfat
Index-Nr.:	016-046-00-X
CAS-Nr.:	7681-38-1
EG-Nr.:	231-665-7
Registrierungsnummer:	01-2119552465-36-XXXX

1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird.

pH-Regulierer

Verwendungen, von denen abgeraten wird:
Andere Verwendungen als empfohlen.
Expositionsszenarien abdeckt Verwendungen sind im Anhang zu finden.

1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt.

Firma:	**FLUIDRA COMERCIAL PORTUGAL**
Anschrift:	Rua Alfredo Silva nº41
Ort:	2786-656 São Domingos de Rana
Provinz:	PORTUGAL
Telefon:	Tef. +351 214 444 720
Telefax:	+34 93 713 41 11
E-mail:	fds@inquide.com
Webseite:	www.astralpool.com

1.4 Notrufnummer: (Nur zu Geschäftszeiten verfügbar; Montag-Freitag; 08:00-18:00)
Giftnotrufzentrale Berlin : Telefon: +49 (0) 30 / 30 686 790
Anti poisoning centre:
FRANCE (Paris): 01 40 05 48 48
FRANCE (Tolousse): 05 61 77 74 47
FRANCE (Marseille): 04 91 75 25 25
ORFILA (INRS) : + 33 (0)1 45 42 59 59
BELGIQUE (Brussel): (+32) 070 245 245
NVIC: +31 (0)88 755 8000

ABSCHNITT 2: MÖGLICHE GEFAHREN.

2.1 Einstufung des Stoffs oder Gemischs.
Gemäß (EU)-Verordnung Nr. 1272/2008:
Eye Dam. 1 : Verursacht schwere Augenschäden.

2.2 Kennzeichnungselemente.

Etikettierung entsprechend der (EU-)Verordnung Nr. 1272/2008:
Piktogramme:



Signalwort:
Gefahr

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Gefahrenhinweise:
H318 Verursacht schwere Augenschäden.

Sicherheitshinweise:
P101 Ist ärztlicher Rat erforderlich, Verpackung oder Kennzeichnungsetikett bereithalten.
P102 Darf nicht in die Hände von Kindern gelangen.
P103 Lesen Sie sämtliche Anweisungen aufmerksam und befolgen Sie diese.
P280 Schutzhandschuhe/Gesichtsschutz tragen.
P305+P351+P338 BEI KONTAKT MIT DEN AUGEN: Einige Minuten lang behutsam mit Wasser spülen. Eventuell vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter spülen.
P301+P310 BEI VERSCHLUCKEN: Sofort GIFTINFORMATIONSZENTRUM oder Arzt anrufen.
P501 Inhalt und/oder Behälter gemäß den Vorschriften für gefährliche Abfälle entsorgen.

Beinhaltet:
natriumhydrogensulfat

2.3 Sonstige Gefahren.

Der Stoff ist kein PBT
Der Stoff ist kein vPvB
Der Stoff hat keine endokrin wirksamen Eigenschaften.

Bei normalen Nutzungsbedingungen und in seiner Originalform hat das Produkt keinerlei andere negativen Auswirkungen auf die Gesundheit und die Umwelt.

ABSCHNITT 3: ZUSAMMENSETZUNG/ANGABEN ZU BESTANDTEILEN.

3.1 Stoffe.

Identifizierungen	Name	Konzentration	(*)Einstufung - Verordnung 1272/2008	
			Einstufung	Spezifische Konzentrationsgrenzwert und der Schätzwert für die akute Toxizität
Index-Nr.: 016-046-00-X CAS-Nr.: 7681-38-1 EG-Nr.: 231-665-7	natriumhydrogensulfat	3 - 100 %	Eye Dam. 1, H318	-

3.2 Gemische.
Nicht Anwendbar.

ABSCHNITT 4: ERSTE-HILFE-MAßNAHMEN.

4.1 Beschreibung der Erste-Hilfe-Maßnahmen.
Im Zweifelsfall oder bei Symptomen von Unwohlsein ärztliche Hilfe rufen. Niemals bewusstlosen Personen Stoffe oder Flüssigkeiten irgendwelcher Art einflößen.

Einatmung.
Verletzte Personen sind an die frische Luft zu bringen, warm und in Ruhestellung zu halten. Bei unregelmäßiger Atmung bzw. Ausfall derselben Mund-zu-Mund-Beatmung durchführen.

Kontakt mit den Augen.
Augen mit reichlich sauberem und frischem Wasser während mindestens 10 Minuten spülen, dabei die Lider nach oben ziehen und bei erster Gelegenheit ärztliche Hilfe suchen. Vermeiden Sie, dass die Person sich das betroffene Auge reibt.

Kontakt mit der Haut.
Kontaminierte Kleidungsstücke ausziehen. Haut kräftig und gründlich mit Wasser und Seife bzw. einem geeigneten Hautreiniger waschen. UNTER KEINEN UMSTÄNDEN Lösungsmittel oder Verdünner einsetzen.

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Einnahme.
Bei ungewollter Einnahme umgehend ärztliche Hilfe suchen. Verletzten in Ruhestellung halten. UNTER KEINEN UMSTÄNDEN Brechen hervorrufen.

4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen.
Ätzendes Produkt, der Kontakt mit Augen oder Haut kann Verbrennungen hervorrufen, die Einnahme oder das Einatmen können innere Verletzungen verursachen, in diesem Fall ist sofortige ärztliche Hilfe vonnöten.
Der Kontakt mit den Augen kann zu irreversiblen Verletzungen führen.

4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung.
Suchen Sie sofort ärztliche Hilfe. Niemals bewusstlosen Personen Stoffe oder Flüssigkeiten irgendwelcher Art einflößen. Kein Erbrechen auslösen. Sollte die Person erbrechen, die Atemwege freimachen. Decken Sie die betroffene Zone mit einem sterilen Gazeverband ab. Schützen Sie den betroffenen Bereich vor Druck oder Reibung.

ABSCHNITT 5: MAßNAHMEN ZUR BRANDBEKÄMPFUNG.

Das Produkt ist NICHT als feuergefährlich eingestuft, im Brandfall müssen folgende Anweisungen befolgt werden:

5.1 Löschmittel.
Geeignete Löschmittel:
Löschpulver bzw. CO2. Bei schwereren Bränden auch alkoholbeständiger Schaum und Sprühwasser.

Ungeeignete Löschmittel:
Zum Löschen keinen direkten Wasserstrahl einsetzen. Im Beisein elektrischer Spannung darf weder Wasser noch Schaum als Löschmittel verwendet werden.

5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren.
Besondere Risiken.
Die Exposition der Verbrennungs- bzw. Zersetzungsprodukte ist schädlich für die Gesundheit.

5.3 Hinweise für die Brandbekämpfung.
Tanks, Vorratsbehälter oder sonstige im direkten Umfeld der Wärmequelle oder des Feuers befindliche Behälter mit Wasser kühlen. Dabei die Windrichtung berücksichtigen. Es ist dafür Sorge zu tragen, daß die eingesetzten Löschmittel nicht ins Grundwasser oder in die Wasserwege abfließen können.

Feuerschutz-Ausrüstung.
Je nach den Ausmaßen des Feuers kann es erforderlich sein, Wärmeschutzanzüge, geeignete Atemgeräte, Handschuhe, Schutzbrille bzw. Gesichtsmaske und Stiefel zu tragen.

ABSCHNITT 6: MAßNAHMEN BEI UNBEABSICHTIGTER FREISETZUNG.

6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren.
Für die Kontrolle der Exposition und den Personenschutz siehe den Abschnitt 8.

6.2 Umweltschutzmaßnahmen.
Nicht als umweltschädlich eingestuftes Produkt, jegliches Auslaufen ist nach Möglichkeit zu vermeiden.

6.3 Methoden und Material für Rückhaltung und Reinigung.
Das verschüttete Produkt mit inertem Bindemittel (Erde, Sand, Vermiculit, Kieselgur u.ä.) binden und aufnehmen. Den Bereich sofort mit einem entsprechenden Dekontaminationsmittel reinigen.
Den Abfall in geschlossenen Behältern ablegen, die zur Entsorgung gemäß den örtlichen und nationalen Vorschriften geeignet sind (siehe Abschnitt 13).

6.4 Verweis auf andere Abschnitte.
Aussetzungskontrolle und persönliche Schutzmaßnahmen siehe Abschnitt 8.
Für die Entsorgung von Reststoffen sind die Empfehlungen gemäß Abschnitt 13 zu befolgen.

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ABSCHNITT 7: HANDHABUNG UND LAGERUNG.

7.1 Schutzmaßnahmen zur sicheren Handhabung.
Für den persönlichen Schutz siehe die Abschnitt 8.
In den Bereichen, in denen das Produkt eingesetzt wird, darf nicht geraucht, gegessen oder getrunken werden.
Den einschlägigen Bestimmungen über die Sicherheit und Hygiene am Arbeitsplatz ist Folge zu leisten.
Zum Entleeren der Behältnisse in keinem Fall Druck verwenden. Die Behälter sind keine Druckbehälter. Das Produkt ist immer Originalbehälter aufzubewahren.

7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten.
Lagerung gemäß einschlägigen Bestimmungen vor Ort. Die auf dem Etikett gegebenen Hinweise sind unbedingt zu beachten. Die Behälter können in Temperaturbereichen von 5 bis 25 ºC in trockenen und gut belüfteten Räumlichkeiten in ausreichender Entfernung von Wärmequellen und der direkten Sonnenbestrahlung gelagert werden. Ebenfalls ist eine ausreichende Entfernung von allen Zündpunkten, Treibgas und stark sauren oder alkalischen Materialien sicher zu stellen. Nicht rauchen. Der Zugang von unbefugten Personen zum Lagerbereich ist zu verbieten. Geöffnete Behältnisse sind wieder sorgfältig zu verschließen und zur Vermeidung des Auslaufens senkrecht aufzustellen.

Das Produkt wird nicht durch die EU-Richtlinie 2012/18/EU (SEVESO III) beeinflusst.

7.3 Spezifische Endanwendungen.
Kein besonderer Verwendungszweck

ABSCHNITT 8: BEGRENZUNG UND ÜBERWACHUNG DER EXPOSITION/PERSÖNLICHE SCHUTZAUSRÜSTUNGEN.

8.1 Zu überwachende Parameter.

Das Produkt enthält keine Stoffe OEL Occupational Exposure.Das Produkt enthält keine Substanzen mit biologischen Grenzwerten.

8.2 Begrenzung und Überwachung der Exposition.

Technische Maßnahmen:
Für eine angemessene Belüftung sorgen. Hierfür kann eine wirksame Absaugung/Belüftung vor Ort und ein wirksames allgemeines Absaugsystem eingesetzt werden.

Konzentration:	**100 %**
Verwendungen:	**pH-Regulierer**
Atemschutz:	
Bei Treffen der empfohlenen technischen Vorkehrungen ist keinerlei persönliche Schutzausrüstung erforderlich.	
Handschutz:	
Bei korrekter Handhabung des Produkts ist keinerlei persönliche Schutzausrüstung erforderlich.	
Schutzmaßnahmen für die Augen:	
Bei korrekter Handhabung des Produkts ist keinerlei persönliche Schutzausrüstung erforderlich.	
Schutzmaßnahmen für die Haut:	
PPE:	Arbeitsschuhe
Eigenschaften:	«CE» Kennzeichen Kategorie II.
CEN-Normen:	EN ISO 13287, EN 20347
Aufbewahrung:	Dieser Artikel passt sich an die Fußform des Erstbenutzers an. Aus diesem Grund und aus hygienischen Gründen muss ihre Wiederbenutzung durch eine andere Person vermieden werden.
Bemerkungen:	Professionelle Arbeitsschuhe enthalten Schutzelemente, die den Träger bei Unfällen vor Verletzungen schützen sollen. Es muss überprüft werden, für welche Arbeiten diese Schuhe geeignet sind.

ABSCHNITT 9: PHYSIKALISCHE UND CHEMISCHE EIGENSCHAFTEN.

9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften.
Aggregatzustand: Solid
Farbe: weiß / gelb
Geruch: geruchlos
Geruchsschwelle: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.

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Schmelzpunkt: 180 ºC
Gefrierpunkt: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Siedepunkt oder Siedebeginn und Siedebereich: >200 ºC
Entzündbarkeit: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Untere Explosionsgrenze: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Obere Explosionsgrenze: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Flammpunkt: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Zündtemperatur: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Zersetzungstemperatur: FF ºC
pH-Wert: 1 - 1,2 (20%)
Kinematische Viskosität: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Löslichkeit: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Wasserlöslichkeit: 1080 g/l (20 ºC)
Fettlöslichkeit: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Verteilungskoeffizient n-Oktanol/Wasser (log-Wert): Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Dampfdruck: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Absolute Dichte: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Relative Dichte: 1.4 - 1.45
Relative Dampfdichte: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Partikeleigenschaften: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.

9.2 Sonstige Angaben.
Viskosität: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Explosionseigenschaften: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Verbrennungsfördernde Eigenschaften: No
Tropfpunkt: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.
Szintillationszähler: Nicht anwendbar/Nicht verfügbar aufgrund der Art des Produkts.

ABSCHNITT 10: STABILITÄT UND REAKTIVITÄT.

10.1 Reaktivität.
Das Produkt birgt keine durch Reaktivität resultierenden Gefahren.

10.2 Chemische Stabilität.
Instabil bei Kontakt mit:
- Basen

10.3 Möglichkeit gefährlicher Reaktionen.
Bei Kontakt mit Basen kann es zur Neutralisierung kommen.

10.4 Zu vermeidende Bedingungen.
- Vermeiden Sie den Kontakt mit Basen.

10.5 Unverträgliche Materialien.
Vermeiden Sie die folgenden Materialien:
- Basen

10.6 Gefährliche Zersetzungsprodukte.
Je nach Nutzungsbedingungen, können die folgenden Produkte entstehen:
- Ätzende Dämpfe oder Gase

ABSCHNITT 11: TOXIKOLOGISCHE ANGABEN.

11.1 Angaben zu den Gefahrenklassen im Sinne der Verordnung (EG) Nr. 1272/2008.
In die Augen gelangene Spritzer des Produktes können zu Reizerscheinungen und reparablen Schäden führen.

Toxikologische Information.

Name	Akute Toxizität			
	Typ	Versuch	Art	Wert
natriumhydrogensulfat	Oral	LD50	Rat	2140 mg/kg

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	Dermal			
CAS-Nr.: 7681-38-1 EG-Nr.: 231-665-7	Inhalativ	LD50	Rat	>2.4 mg/l (4 h)

a) akute Toxizität,
Keine schlüssigen Daten für die Klassifizierung.

b) Ätz-/Reizwirkung auf die Haut,
Keine schlüssigen Daten für die Klassifizierung.

c) schwere Augenschädigung/-reizung,
Klassifiziertes Produkt:
Schwere Augenschädigung, Kategorie 1: Verursacht schwere Augenschäden.

d) Sensibilisierung der Atemwege/Haut,
Keine schlüssigen Daten für die Klassifizierung.

e) Keimzell-Mutagenität,
Keine schlüssigen Daten für die Klassifizierung.

f) Karzinogenität,
Keine schlüssigen Daten für die Klassifizierung.

g) Reproduktionstoxizität,
Keine schlüssigen Daten für die Klassifizierung.

h) spezifische Zielorgan-Toxizität bei einmaliger Exposition,
Keine schlüssigen Daten für die Klassifizierung.

i) spezifische Zielorgan-Toxizität bei wiederholter Exposition,
Keine schlüssigen Daten für die Klassifizierung.

j) Aspirationsgefahr.
Keine schlüssigen Daten für die Klassifizierung.

11.2 Angaben über sonstige Gefahren.
Endokrinschädliche Eigenschaften
Dieses Produkt enthält keine Bestandteile mit endokrin wirksamen Eigenschaften, die sich auf die menschliche Gesundheit auswirken.
Sonstige Angaben
Es liegen keine Informationen über andere gesundheitsschädliche Wirkungen vor.

ABSCHNITT 12: UMWELTBEZOGENE ANGABEN.

12.1 Toxizität.

Name	Ökotoxizität			
	Typ	Versuch	Art	Wert
natriumhydrogensulfat	Fische	LC50	Fish	7960 mg/l (96h)
	Aquatische Wirbellose	LC50	Daphnia	1766 mg/l (48 h)
CAS-Nr.: 7681-38-1 EG-Nr.: 231-665-7	Wasserpflanzen	LC50	Algae	1900 mg/l (120 h)

12.2 Persistenz und Abbaubarkeit.
Es gibt keine Informationen über die biologische Abbaubarkeit.
Es gibt keine Informationen über die Abbaubarkeit.
Zur Persistenz und Abbaubarkeit des Produkts stehen keine Informationen zur Verfügung.

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12.3 Bioakkumulationspotenzial.
Zur Bioakkumulation.

12.4 Mobilität im Boden.
Es stehen keine Informationen zur Mobilität im Boden zur Verfügung.
Die Substanz darf nicht in die Kanalisation oder in Wasserwege gelangen.
Das Eindringen ins Erdreich ist zu vermeiden

12.5 Ergebnisse der PBT- und vPvB-Beurteilung.
Zur PBT- und vPvB-Bewertung des Produkts stehen keine Informationen zur Verfügung.

12.6 Endokrinschädliche Eigenschaften.
Dieses Produkt enthält keine Bestandteile mit endokrin wirksamen Eigenschaften, die sich auf die Umwelt auswirken.

12.7 Andere schädliche Wirkungen.
Zu umweltschädlichen Wirkungen stehen keine Informationen zur Verfügung.

ABSCHNITT 13: HINWEISE ZUR ENTSORGUNG.

13.1 Verfahren der Abfallbehandlung.
Eine Entsorgung in die Kanalisation oder in die Wasserwege ist nicht zulässig. Abfallprodukte und kontaminierte Behältnisse sind nach Maßgabe der einschlägigen lokalen/nationalen Vorschriften zu entsorgen.
Für den Umgang mit Reststoffen sind die Anordnungen der Richtlinie 2008/98/EG zu befolgen.

ABSCHNITT 14: ANGABEN ZUM TRANSPORT.

Nicht transportgefährlich. Im Falle eines Unfalls oder Auslaufens des Produkts, gemäß Punkt 6 vorgehen.

14.1 UN-Nummer oder ID-Nummer.
Nicht transportgefährlich.

14.2 Ordnungsgemäße UN-Versandbezeichnung.
Beschreibung:
ADR/RID: Nicht transportgefährlich.
IMDG: Nicht transportgefährlich.
ICAO/IATA: Nicht transportgefährlich.

14.3 Transportgefahrenklassen.
Nicht transportgefährlich.

14.4 Verpackungsgruppe.
Nicht transportgefährlich.

14.5 Umweltgefahren.
Nicht transportgefährlich.
Schiffstransport, FEm – Notfallschilder (F – Feuer, S – Verschütten): Nicht Anwendbar.

14.6 Besondere Vorsichtsmaßnahmen für den Verwender.
Nicht transportgefährlich.

14.7 Massengutbeförderung auf dem Seeweg gemäß IMO-Instrumenten.
Nicht transportgefährlich.

ABSCHNITT 15: RECHTSVORSCHRIFTEN.

15.1 Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch.
Das Produkt ist nicht von der Verordnung (EG) Nr. 1005/2009 des Europäischen Parlaments und des Rates vom 16. September 2009 über Stoffe, die zum Abbau der Ozonschicht führen, betroffen.

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Flüchtige organische Verbindung (VOC)
VOC-Gehalt (w/w): 0 %
VOC-Gehalt: 0 g/l

Produktklassifizierung laut Anhang I der EU-Richtlinie 2012/18/EU (SEVESO III): N/A
Das Produkt wird nicht durch die EU-Verordnung Nr. 528/2012 zur Bereitstellung auf dem Markt sowie der Nutzung biologischer Produkte beeinflusst.
Das Produkt wird nicht durch die von der EU-Verordnung Nr. 649/2012 etablierten Verfahren zum Export und Import von gefährlichen Chemikalien beeinflusst.

Schadstoffklasse für das Wasser (Deutschland): WGK 1: Schwach wassergefährend. (Selbstbeurteilung nach der Verordnung AwSV)

15.2 Stoffsicherheitsbeurteilung.
Für dieses Produkt wurde keine Stoffsicherheitsbeurteilung durchgeführt.
Verfügbares Szenario zur Produkteinführung.

ABSCHNITT 16: SONSTIGE ANGABEN.

Einstufungscodes:

Eye Dam. 1 : Schwere Augenschädigung, Kategorie 1

Änderungen in Bezug auf die vorherige Version:

- Änderung der Werte der physikalisch-chemischen Eigenschaften (ABSCHNITT 9).
- Änderung der Informationen zu Stabilitäts- und Reaktivitätsbedingungen (ABSCHNITT 10.2).
- Änderung der Informationen zu Stabilitäts- und Reaktivitätsbedingungen (ABSCHNITT 10.3).
- Änderung der Informationen zu Stabilitäts- und Reaktivitätsbedingungen (ABSCHNITT 10.4).
- Änderung der Informationen zu Stabilitäts- und Reaktivitätsbedingungen (ABSCHNITT 10.5).
- Änderung der Informationen zu Stabilitäts- und Reaktivitätsbedingungen (ABSCHNITT 10.6).
- Nationale Gesetzesänderungen (ABSCHNITT 15.1).

Einstufung und Verfahren, das zum Ableiten der Einstufung von Gemischen gemäß Verordnung (EG) 1272/2008 [CLP] verwendet wurde:

Physikalische gefahren	Auf der Basis von Prüfdaten
Gesundheitsgefahren	Berechnungsmethode
Umweltgefahren	Berechnungsmethode

Für die korrekte Handhabung des Produktes wird empfohlen, eine Grundlagenschulung über Sicherheit und Hygiene am Arbeitsplatz durchzuführen.

Verfügbares Szenario zur Produkteinführung.

Verwendete Abkürzungen und Akronyme:
AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen.
CEN: Europäisches Komitee für Normung.
EC50: Mittlere effektive Konzentration.
PPE: Personensicherheitseinrichtungen.
LC50: Letale Konzentration, 50 %.
LD50: Letale Dosis, 50 %.
WGK: Wassergefährdungsklassen.

Wichtige Literaturangaben und Datenquellen:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/

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Verordnung (EU) 2020/878.
Verordnung (EG) Nr. 1907/2006.
Verordnung (EU) Nr. 1272/2008.

Die in diesem Sicherheitsdatenblatt bereitgestellte Information wurde in Übereinstimmung mit VERORDNUNG (EU) 2020/878 DER KOMMISSION vom 18. Juni 2020 zur Änderung des Anhangs II (EG) Nr. 1907/2006 des Europäischen Parlaments und des Rates zur Registrierung, Bewertung, Zulassung und Beschränkung chemische Stoffe und Gemische(REACH).

Die Informationen in diesem Sicherheitsdatenblatt basieren auf den aktuell vorhandenen Wissensstand und die zum Zeitpunkt der Drucklegung geltenden EU- und nationalen Gesetzgebung, während sich die Arbeitsbedingungen am Einsatzort unserer Kenntnisse und unseres Einflussbereichs entziehen. Das Produkt darf ohne vorherige und schriftliche Anweisungen über seine Handhabung nicht für andere Zwecke als die ausdrücklich angegebenen eingesetzt werden. Das Ergreifen von Maßnahmen zur Erfüllung der gesetzlich vorgeschriebenen Anforderungen liegt folglich allein im Verantwortungsbereich des Anwenders. Die in diesem Sicherheitsdatenblatt gemachten Angaben gelten nur für das Produkt und stellen keine Zusicherung von Eigenschaften dar.

-Ende des Sicherheitsdatenblatts.-

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

ES number	Exposure scenario title	Volume (tonnes)	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)
			Manufacture	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

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 scares 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 $NaHSO_4$ on the resulting pH. Shall the pH be bellow 6 and predominantly dependent by the $NaHSO_4$, than 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 then 6. If the measures are not available, the pH in the river can be calculated as follows:

$$pHriver = Log\left[\frac{Qeffluent * 10^{pHeffluent} + Qriverupstream * 10^{pHupstream}}{Qriverupstream + Qeffluent}\right]$$

(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 $NaHSO_4$ 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 $NaHSO_4$ 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 $NaHSO_4$.

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 $NaHSO_4$ 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 scares 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-neutrual.
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 [cm²]**
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% $NaHSO_4$). 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 1m³ 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)	1task/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) 90th 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 reduces 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 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.	

10 Risk Characterisation

10.1 Industrial uses of $NaHSO_4$

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 $NaHSO_4$ 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 $NaHSO_4$ in the different life-cycle stages (production and use) mainly apply to (waste) water.
Discharges of $NaHSO_4$ 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 $NaHSO_4$ containing wastewaters and effluents applies.
Therefore, the aquatic compartment is adequately protected with respect to pH changes.

10.2 Wide dispersive uses of $NaHSO_4$

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 $NaHSO_4$ in the different life-cycle stages mainly apply to (waste) water.
Discharges of $NaHSO_4$ 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 $NaHSO_4$ containing wastewaters applies.
Therefore, the aquatic compartment is adequately protected with respect to pH changes.

10.3 Consumer uses of $NaHSO_4$

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.