

# FICHE DE DONNÉES DE SÉCURITÉ

(conformément au RÈGLEMENT (UE) 2020/878)



pH-

Version 1 Date d'établissement: 26/09/2018  
Version 8 (sustituye la version 7) Date de révision: 09/03/2022

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## RUBRIQUE 1: IDENTIFICATION DE LA SUBSTANCE/DU MÉLANGE ET DE LA SOCIÉTÉ/L'ENTREPRISE.

### 1.1 Identificateur de produit.

Nom du produit: pH-  
Nom chimique: hydrogénosulfate de sodium  
N. Index: 016-046-00-X  
N. CAS: 7681-38-1  
N. CE: 231-665-7  
N. d'enregistrement: 01-2119552465-36-XXXX

### 1.2 Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées.

régulateur de pH

#### Usages non recommandés:

Usages différents de ceux recommandés.

Les scénarios d'exposition couvrant les utilisations se trouvent dans l'annexe.

### 1.3 Renseignements concernant le fournisseur de la fiche de données de sécurité.

Entreprise: **FLUIDRA COMMERCIAL FRANCE**  
Adresse: Avenue Maurice Bellonte,  
Ville: 66 000 PERPIGNAN ( FRANCE )  
Province ou région: FRANCE  
Numéro de Téléphone: Tel: 04 11 300 200  
Fax: Fax: 04 68 52 48 50  
E-mail: fds@inquide.com

### 1.4 Numéro d'appel d'urgence: (Disponible 24 heures)

Giftnotrufzentrale Berlin : Telefon: +49 (0) 30 / 30 686 790

Anti poisoning centre:

FRANCE (Paris): 01 40 05 48 48

FRANCE (Toulouse): 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

## RUBRIQUE 2: IDENTIFICATION DES DANGERS.

### 2.1 Classification de la substance ou du mélange.

Conformément au Règlement (CE) No 1272/2008:

Eye Dam. 1 : Provoque de graves lésions des yeux.

### 2.2 Éléments d'étiquetage.

#### Étiquetage conformément au Règlement (CE) No 1272/2008:

Pictogrammes:



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## Danger

Mentions de danger:

H318 Provoque de graves lésions des yeux.

Conseils de prudence:

P101 En cas de consultation d'un médecin, garder à disposition le récipient ou l'étiquette.  
P102 Tenir hors de portée des enfants.  
P103 Lire attentivement et bien respecter toutes les instructions.  
P280 Porter des gants de protection/des vêtements de protection/un équipement de protection des yeux/du visage.  
P305+P351+P338 EN CAS DE CONTACT AVEC LES YEUX: Rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.  
P301+P310 EN CAS D'INGESTION: appeler immédiatement un CENTRE ANTIPOISON ou un médecin.  
P501 Éliminer le contenu/récipient conformément à la réglementation.

Contient:

hydrogénosulfate de sodium

## 2.3 Autres dangers.

La substance n'est pas PBT

La substance n'est pas vPvB

La substance ne possède pas de propriété d'altération endocrinienne.

En conditions normales d'utilisation et dans sa forme originale, le produit ne présente pas d'autres dangers pour la santé et pour l'environnement.

## RUBRIQUE 3: COMPOSITION/INFORMATIONS SUR LES COMPOSANTS.

### 3.1 Substances.

Identifiants	Nom	Concentration	(*)Classification Règlement (CE) No 1272/2008	
			Classification	Limites de concentration spécifiques et Estimation de la toxicité aiguë
Index No: 016-046-00-X CAS No: 7681-38-1 CE No: 231-665-7	hydrogénosulfate de sodium	3 - 100 %	Eye Dam. 1, H318	-

### 3.2 Mélanges.

Pas Applicable.

## RUBRIQUE 4: PREMIERS SECOURS.

### 4.1 Description des mesures de premiers secours.

En cas de doute ou si les symptômes persistent, demander l'assistance d'un médecin. Ne rien administrer par voie orale à une personne inconsciente.

#### En cas d'inhalation.

Mettre la victime de l'accident à l'air libre, la maintenir au chaud et en position de repos, si sa respiration est irrégulière ou s'interrompt, pratiquer sur cette dernière la technique de la respiration artificielle.

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## **En cas de contact avec les yeux.**

Rincer abondamment les yeux à l'eau claire et fraîche, pendant au moins 10 minutes, tout en écartant régulièrement les paupières vers le haut et demander l'aide d'un médecin. Ne pas permettre à la personne de se frotter l'œil affecté.

## **En cas de contact avec la peau.**

Retirer les vêtements souillés. Nettoyer vigoureusement la peau avec de l'eau et du savon ou tout produit nettoyant adapté. NE JAMAIS utiliser de solvants ou diluants.

## **En cas d'ingestion.**

En cas d'ingestion, consulter immédiatement un médecin. Maintenir la victime en position de repos. NE JAMAIS provoquer le vomissement.

## **4.2 Principaux symptômes et effets, aigus et différés.**

Produit corrosif, tout contact avec les yeux ou avec la peau peut provoquer des brûlures, l'ingestion ou l'inhalation peuvent provoquer des blessures internes. Si cela se produit, consulter immédiatement un médecin. Le contact avec les yeux peut causer des dommages irréversibles.

## **4.3 Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires.**

Consultez immédiatement un médecin. Ne rien administrer par voie orale à une personne inconsciente. Ne pas se faire vomir. Si la personne vomit, libérez les voies aériennes. Couvrir avec un pansement stérile sec. Protéger la zone affectée de la friction ou pression.

## **RUBRIQUE 5: MESURES DE LUTTE CONTRE L'INCENDIE.**

Le produit N'EST PAS classé comme inflammable, en cas d'incendie il est recommandé d'appliquer les mesures suivantes:

### **5.1 Moyens d'extinction.**

#### **Moyens d'extinction appropriés:**

Extincteur de type poudre ou CO<sub>2</sub>. En cas d'incendies plus importants il est aussi possible d'utiliser de la mousse résistante à l'alcool ou pulvériser de l'eau.

#### **Moyens d'extinction inappropriés:**

Pour l'extinction ne jamais utiliser un jet direct d'eau. En présence de tension électrique ne pas utiliser de l'eau ou de la mousse comme moyen d'extinction.

### **5.2 Dangers particuliers résultant de la substance ou du mélange.**

#### **Risques particuliers.**

L'exposition aux substances produites suite à la combustion ou à la décomposition peut être dangereuse pour la santé.

### **5.3 Conseils aux pompiers.**

Rafraîchir par pulvérisation d'eau tout réservoir, citerne ou récipient proche du feu ou de toute autre source de chaleur. Tenir compte de la direction du vent. Veiller à ce que les produits utilisés lors de l'extinction d'un incendie ne se déversent pas dans les systèmes d'évacuation d'eau, les égouts ou dans un cours d'eau.

#### **Équipement de protection anti-incendies.**

En fonction de la magnitude ou de l'importance de l'incendie, l'utilisation de combinaisons de protection thermique, d'appareils de respiration individuels, de gants, de lunettes de protection ou de masques anatomiques faciaux et de bottes peut s'avérer nécessaire.

## **RUBRIQUE 6: MESURES À PRENDRE EN CAS DE DISPERSION ACCIDENTELLE.**

### **6.1 Précautions individuelles, équipement de protection et procédures d'urgence.**

Pour tout contrôle d'exposition et mesures de protection individuelle, voir rubrique 8.

### **6.2 Précautions pour la protection de l'environnement.**

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Le produit n'est pas classé comme dangereux pour l'environnement, éviter dans la mesure du possible de le déverser.

### 6.3 Méthodes et matériel de confinement et de nettoyage.

Retenir et récupérer le produit déversé avec un matériau absorbant inerte (terre, sable, vermiculite, terre de diatomée...) et nettoyer immédiatement la zone avec un décontaminant approprié.

Déposer les déchets dans des récipients fermés et adaptés en vue de leur élimination, conformément aux normes locales et nationales (voir rubrique 13).

### 6.4 Référence à d'autres rubriques.

Pour tout contrôle d'exposition et mesures de protection individuelle, voir rubrique 8.

Pour l'ultérieure élimination des résidus, se reporter aux recommandations décrites dans la rubrique 13.

## RUBRIQUE 7: MANIPULATION ET STOCKAGE.

### 7.1 Précautions à prendre pour une manipulation sans danger.

Pour la protection personnelle se reporter à la section 8.

Il est formellement interdit de fumer, manger ou boire dans la zone d'application du produit.

Respecter la législation relative à la Sécurité et à l'Hygiène dans le cadre du travail.

Ne jamais utiliser la pression pour vider les containers, ces derniers n'ayant pas été conçus pour résister à la pression. Conserver le produit dans un récipient de même matériau que le récipient ou container original.

### 7.2 Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités.

Magasiner le produit en accord avec la législation locale correspondante. Tenir compte des indications portées sur l'étiquette. Conserver les containers entre 5 et 25 °C, dans un endroit sec et bien aéré, à l'écart de toute source de chaleur et protégé de la lumière du soleil. Garder à l'écart de toute flamme. Éloigner de tout agent oxydant ou matériau hautement acide ou alcalin. Ne pas fumer. Refuser l'accès au personnel non autorisé. Une fois ouvert, tout container doit être précautionnement refermé et positionné verticalement afin d'éviter toute chute ou renversement.

Le produit n'est pas affecté par la Directive 2012/18/UE (SEVESO III).

### 7.3 Utilisation(s) finale(s) particulière(s).

Aucune utilisation particulière

## RUBRIQUE 8: CONTRÔLES DE L'EXPOSITION/PROTECTION INDIVIDUELLE.

### 8.1 Paramètres de contrôle.

Le produit NE contient PAS de substances avec des Valeurs Limites Environnementale d'Exposition Professionnelle. Le produit ne contient pas de substances avec des Valeurs Limites Biologiques.

### 8.2 Contrôles de l'exposition.

#### Mesures d'ordre technique:

Prévoir un système d'aération adapté, au moyen de l'installation d'une unité d'extraction- ventilation locale ainsi que d'un système général d'extraction.

<b>Concentration:</b>	<b>100 %</b>
<b>Utilisation(s):</b>	<b>régulateur de pH</b>
<b>Protection respiratoire:</b>	Si l'on applique les mesures techniques recommandées, il n'est pas nécessaire de porter un équipement de protection individuelle.
<b>Protection des mains:</b>	Si le produit est manipulé correctement, il n'est pas nécessaire de porter un équipement de protection individuelle.
<b>Protection des yeux:</b>	Si le produit est manipulé correctement, il n'est pas nécessaire de porter un équipement de protection individuelle.

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## Protection de la peau:

PPE:	Chaussures de travail
Caractéristiques:	Marquage «CE» Catégorie II.
Normes CEN:	EN ISO 13287, EN 20347
Maintenance:	Ces articles s'adaptent à la forme du pied du premier utilisateur. C'est pour cette raison, mais aussi pour des questions d'hygiène qu'il faut éviter qu'une autre personne les réutilise.
Observations:	Les chaussures de travail à usage professionnel incorporent des éléments de protection destinés à protéger l'utilisateur contre des blessures qui peuvent provoquer des accidents. Il faut contrôler quelles tâches et quelles activités sont adaptées à ces chaussures.

## RUBRIQUE 9: PROPRIÉTÉS PHYSIQUES ET CHIMIQUES.

### 9.1 Informations sur les propriétés physiques et chimiques essentielles.

État physique: Solid

Couleur: Blanc / jaune

Odeur: Inodore

Seuil olfactif: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Point de fusion: 180 °C

Point de congélation: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Point d'ébullition ou point initial d'ébullition et intervalle d'ébullition: >200 °C

Inflammabilité: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Limites inférieure d'explosion: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Limites supérieure d'explosion: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Point d'éclair: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Température d'auto-inflammation: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Température de décomposition: ES °C

pH: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Viscosité cinématique: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Solubilité: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Hydro solubilité: 1080 g/l (20 °C)

Liposolubilité: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Coefficient de partage n-octanol/eau (valeur log): Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Pression de vapeur: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Densité absolue: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Densité relative: 1.4 - 1.45

Densité de vapeur relative: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Caractéristiques des particules: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

### 9.2 Autres informations.

Viscosité: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Propriétés explosives: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Propriétés comburantes: No

Point de goutte: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

Scintillation: Non applicable/Non disponible en raison de la nature/des propriétés du produit.

## RUBRIQUE 10: STABILITÉ ET RÉACTIVITÉ.

### 10.1 Réactivité.

Le produit ne présente pas de danger par leur réactivité.

### 10.2 Stabilité chimique.

Stable dans les conditions de manipulation et de conservation recommandées (voir épigraphe 7).

### 10.3 Possibilité de réactions dangereuses.

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Le produit ne présentent possibilité de réactions dangereuses.

#### 10.4 Conditions à éviter.

Eviter tout type de manipulation incorrecte

#### 10.5 Matières incompatibles.

Maintenir éloigné tout agent oxydant ou matériau hautement alcalin ou acide, afin d'éviter une réaction exothermique.

#### 10.6 Produits de décomposition dangereux.

Aucune décomposition se présente, si c'est utilisé dans les conditions recommandées

## RUBRIQUE 11: INFORMATIONS TOXICOLOGIQUES.

### 11.1 Informations sur les classes de danger telles que définies dans le règlement (CE) no 1272/2008.

Les projections du produit dans les yeux peuvent provoquer des irritations et causer des dommages réversibles.

#### Information Toxicologique.

Nom	Toxicité aiguë			
	Type	Essai	Espèce	Valeur
hydrogénosulfate de sodium CAS No: 7681-38-1 EC No: 231-665-7	Oral	LD50	Rat	2140 mg/kg
	Cutané			
	Inhalation	LD50	Rat	>2.4 mg/l (4 h)

a) toxicité aiguë;

Données non concluantes pour la classification.

b) corrosion cutanée/irritation cutanée;

Données non concluantes pour la classification.

c) lésions oculaires graves/irritation oculaire;

Produit classé:

Lésions oculaires graves, Catégorie 1: Provoque de graves lésions des yeux.

d) sensibilisation respiratoire ou cutanée;

Données non concluantes pour la classification.

e) mutagénicité sur les cellules germinales;

Données non concluantes pour la classification.

f) cancérogénicité;

Données non concluantes pour la classification.

g) toxicité pour la reproduction;

Données non concluantes pour la classification.

h) toxicité spécifique pour certains organes cibles - exposition unique;

Données non concluantes pour la classification.

i) toxicité spécifique pour certains organes cibles – exposition répétée;

Données non concluantes pour la classification.

j) danger par aspiration.

Données non concluantes pour la classification.

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## 11.2 Informations sur les autres dangers.

### **Propriétés perturbant le système endocrinien**

Ce produit ne contient pas de composants ayant des propriétés perturbant le système endocrinien avec des effets sur la santé humaine.

### **Autres informations**

Il n'existe pas d'information disponible sur d'autres effets indésirables sur la santé.

## RUBRIQUE 12: INFORMATIONS ÉCOLOGIQUES.

### 12.1 Toxicité.

Nom	Écotoxicité			
	Type	Essai	Espèce	Valeur
hydrogénosulfate de sodium CAS No: 7681-38-1 EC No: 231-665-7	Poissons	LC50	Fish	7960 mg/l (96h)
	Invertébrés aquatiques	LC50	Daphnia	1766 mg/l (48 h)
	Plantes aquatiques	LC50	Algae	1900 mg/l (120 h)

### 12.2 Persistance et dégradabilité.

Il n'y a pas d'information sur la biodégradabilité.

Il n'y a pas d'information sur la dégradabilité.

Aucune information n'est disponible sur la persistance et la dégradabilité du produit.

### 12.3 Potentiel de bioaccumulation.

Aucune information n'est disponible sur la bioaccumulation.

### 12.4 Mobilité dans le sol.

Aucune information n'est disponible sur la mobilité dans le sol.

Éviter tout déversement dans les égouts ou les cours d'eau.

Éviter qu'il ne pénètre dans le sol.

### 12.5 Résultats des évaluations PBT et vPvB.

Aucune information n'est disponible sur les résultats de l'évaluation PBT et vPvB du produit.

### 12.6 Propriétés perturbant le système endocrinien.

Ce produit ne contient pas de composants avec des propriétés perturbant le système endocrinien dans l'environnement.

### 12.7 Autres effets néfastes.

Aucune information n'est disponible sur d'autres effets néfastes pour l'environnement.

## RUBRIQUE 13: CONSIDÉRATIONS RELATIVES À L'ÉLIMINATION.

### 13.1 Méthodes de traitement des déchets.

Il est interdit de le déverser dans les égouts ou cours d'eau. Les résidus et containers vides doivent être manipulés et éliminés en accord avec la législation locale / nationale correspondante en vigueur.

Suivre les dispositions de la Directive 2008/98/CE relative à la gestion des déchets.

## RUBRIQUE 14: INFORMATIONS RELATIVES AU TRANSPORT.

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Transport non-dangereux. En cas d'accident et de renversement du produit, procéder conformément au point 6.

#### **14.1 Numéro ONU ou numéro d'identification.**

Transport non-dangereux.

#### **14.2 Désignation officielle de transport de l'ONU.**

Description:

ADR/RID: Transport non-dangereux.

IMDG: Transport non-dangereux.

OACI/IATA: Transport non-dangereux.

#### **14.3 Classe(s) de danger pour le transport.**

Transport non-dangereux.

#### **14.4 Groupe d'emballage.**

Transport non-dangereux.

#### **14.5 Dangers pour l'environnement.**

Transport non-dangereux.

Transport par bateau, FEm – Fiches d'urgence (F – Incendie, S – Dispersions): Pas Applicable.

#### **14.6 Précautions particulières à prendre par l'utilisateur.**

Transport non-dangereux.

#### **14.7 Transport maritime en vrac conformément aux instruments de l'OMI.**

Transport non-dangereux.

### **RUBRIQUE 15: INFORMATIONS RELATIVES À LA RÉGLEMENTATION.**

#### **15.1 Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement.**

Le produit n'est pas affecté par le Règlement (CE) no 1005/2009 du Parlement européen et du Conseil du 16 septembre 2009 relatif à des substances qui appauvrissent la couche d'ozone.

Classification du produit en accord avec l'Annexe I de la Directive 2012/18/UE (SEVESO III): N/A

Le produit n'est pas affecté par le Règlement (UE) No 528/2012 relatif à la commercialisation et à l'utilisation des biocides.

Le produit ne se trouve pas affecté par le processus établi dans le Règlement (UE) No 649/2012, relatif à l'exportation et à l'importation de produits chimiques dangereux.

Classe de contamination de l'eau (Allemagne): WGK 1: Peu dangereux pour l'eau. (Auto classé selon le Règlement AwSV)

#### **15.2 Évaluation de la sécurité chimique.**

Il n'a pas procédé à une évaluation de la sécurité chimique du produit.

Est disponible un Scénario d'Exposition du produit.

### **RUBRIQUE 16: AUTRES INFORMATIONS.**

Codes de classification:

Eye Dam. 1 : Lésions oculaires graves, Catégorie 1

Modifications par rapport à la version précédente:

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- Modification de dangers spécifiques (SECTION 2.3).
- Modification des mesures de lutte contre les incendies (SECTION 5.2).
- Modifications des mesures en cas de déversement accidentel (SECTION 6.1).
- Modification des valeurs des propriétés physico-chimiques (SECTION 9).
- Changement de classification de dangerosité (SECTION 11.1).
- Modification de la classification ADR/IMDG/ICAO/IATA/RID (SECTION 14).

## **Classification et procédure utilisées pour établir la classification des mélanges conformément au règlement (CE) 1272/2008 [CLP]:**

Dangers physiques	D'après les données d'essais
Dangers pour la santé	Méthode de calcul
Dangers pour l'environnement	Méthode de calcul

Il est recommandé de suivre une formation basique sur la sécurité et l'hygiène au travail, pour pouvoir manipuler correctement le produit.

Est disponible un Scénario d'Exposition du produit.

### Abréviations et acronymes utilisés:

AwSV:	Règlement d'Installations pour la manipulation de substances dangereuses pour l'eau.
CEN:	Comité européen de normalisation.
EC50:	Concentration efficace moyenne.
PPE:	Équipements de protection individuelle.
LC50:	Concentration létale, 50%.
LD50:	Dose létale, 50%.
WGK:	Classes de danger lié à l'eau.

### Principales références de la littérature et sources de données:

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

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

Règlement (UE) 2020/878.

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Les informations contenues dans cette fiche de Sécurité ont été rédigées conformément au RÈGLEMENT (UE) 2020/878 DE LA COMMISSION du 18 juin 2020 modifiant l'Annexe II du règlement (CE) no 1907/2006 du Parlement européen et du Conseil concernant l'enregistrement, l'évaluation et l'autorisation des substances et mélanges chimiques (REACH).

L'information contenue dans cette Fiche de Données de Sécurité du Produit se base sur les connaissances actuelles relatives à ce produit ainsi que sur les lois nationales et européennes en vigueur, sachant que les conditions de travail de ses utilisateurs ne nous sont pas connues et échappent ainsi à notre contrôle. Le produit doit en aucun cas être utilisé à des fins autres que celles pour lesquelles il a été conçu et préparé, il ne peut être utilisé sans connaissance préalable et écrite des instructions relatives à son maniement. Il incombe à l'utilisateur de prendre toutes les mesures nécessaires afin de suivre et respecter les exigences prévues par la loi.

**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				
<b>1. Title</b>				
<b>Free short title</b>	Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings			
<b>Systematic title based on use descriptor</b>	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			
<b>Processes, tasks and/or activities covered</b>	Processes, tasks and/or activities covered are described in Section 2 below.			
<b>Assessment Method</b>	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.			
<b>2. Operational conditions and risk management measures</b>				
<b>2.1 Control of workers exposure</b>				
<b>Product characteristic</b>				
<p>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.</p> <p>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.</p> <p>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.</p>				
<b>PROC</b>	<b>Use in preparation</b>	<b>Content in preparation</b>	<b>Physical form</b>	<b>Emission potential</b>
<b>PROC 7</b>	not restricted		powder	medium
<b>PROC 21, 24</b>			(wear) dust	low – high
<b>All other applicable PROCs</b>			pearls, granules	very low – low
<b>Amounts used</b>				
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.				
<b>Frequency and duration of use/exposure</b>				
<b>PROC</b>	<b>Duration of exposure</b>			
<b>PROC 7</b>	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).			
<b>All other applicable PROCs</b>	not restricted			
<b>Human factors not influenced by risk management</b>				
The shift breathing volume during all process steps reflected in the PROCs is assumed to be 10 m <sup>3</sup> /shift (8 hours).				
<b>Other given operational conditions affecting workers exposure</b>				
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				
<p>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.</p>				
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	<p>If ventilation is insufficient and/or formation of relevant dust levels cannot be excluded, use RPE according to EN143 and EN149.</p> <p>An FFP2 mask should be worn for safety reasons when packaging/unpacking sodium hydrogensulfate since high abrasion may occur.</p>	(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.	<p>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).</p> <p>Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.</p>
<p>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.</p> <p>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.</p> <p>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.</p> <p>An overview of the APFs of different RPE (according to BS EN 529:2005) can be found in the glossary of MEASE.</p>				

2.2 Control of environmental exposure				
<b>Amounts used</b>				
The daily and annual amount per site (for point sources) is not considered to be the main determinant for environmental exposure.				
<b>Frequency and duration of use</b>				
Intermittent (< 12 time per year) or continuous use/release				
<b>Environment factors not influenced by risk management</b>				
Flow rate of receiving surface water: 18000 m3/day				
<b>Other given operational conditions affecting environmental exposure</b>				
Effluent discharge rate: 2000 m3/day				
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>				
Risk management measures related to the environment aim to avoid discharging NaHSO <sub>4</sub> 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).				
<b>Conditions and measures related to waste</b>				
Solid industrial waste of NaHSO <sub>4</sub> should be reused or discharged to the industrial wastewater and further neutralized if needed.				
3. Exposure estimation and reference to its source				
<b>Occupational exposure</b>				
PROC	Method used for inhalation exposure assessment (refer to introduction)	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
<b>All applicable PROCs</b>	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.	

<b>Environmental emissions</b>	
<p>The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTPs, as emissions of NaHSO<sub>4</sub> 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<sup>+</sup> discharges, being the toxicity of Na<sup>+</sup> and SO<sub>4</sub><sup>2-</sup> 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<sub>4</sub> will be found predominantly in water. Significant emissions or exposure to air are not expected due to the low vapour pressure of NaHSO<sub>4</sub>. Significant emissions or exposure to the terrestrial environment are not expected either for this exposure scenario.</p>	
<b>Environmental emissions</b>	<p>The production or use of NaHSO<sub>4</sub> can potentially result in an aquatic emission and locally increase the NaHSO<sub>4</sub> concentration and affect the pH in the aquatic environment. When the pH is not neutralised, the discharge of effluent from NaHSO<sub>4</sub> 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.</p>
<b>Exposure concentration in waste water treatment plant (WWTP)</b>	<p>Waste water from NaHSO<sub>4</sub> production or use is an inorganic wastewater stream and therefore there is no biological treatment. Therefore, wastewater streams from NaHSO<sub>4</sub> production sites will normally not be treated in biological waste water treatment plants (WWTPs).</p>
<b>Exposure concentration in aquatic pelagic compartment</b>	<p>When NaHSO<sub>4</sub> is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO<sub>4</sub> 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<sub>2</sub>), the bicarbonate ion (HCO<sub>3</sub><sup>-</sup>) and the carbonate ion (CO<sub>3</sub><sup>2-</sup>).</p>
<b>Exposure concentration in sediments</b>	<p>The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO<sub>4</sub>; when NaHSO<sub>4</sub> is emitted to the aquatic compartment, sorption of to sediment particles is negligible.</p>
<b>Exposure concentrations in soil and groundwater</b>	<p>The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.</p>
<b>Exposure concentration in atmospheric compartment</b>	<p>The air compartment is not included in this CSA because it is considered not relevant for NaHSO<sub>4</sub>.</p>
<b>Exposure concentration relevant for the food chain (secondary poisoning)</b>	<p>Bioaccumulation in organisms is not relevant for NaHSO<sub>4</sub>; a risk assessment for secondary poisoning is therefore not required.</p>
<b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
<b>Occupational exposure</b>	
<p>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 (<a href="http://www.ebrc.de/mease.html">www.ebrc.de/mease.html</a>) 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".</p>	

**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<sub>4</sub> on the resulting pH. Shall the pH be below 6 and predominantly dependent by the NaHSO<sub>4</sub>, 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<sup>+</sup> concentrations are all dependent on NaHSO<sub>4</sub> 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<sub>4</sub> that can be annually rejected without negatively affecting the pH of the receiving water is calculated assuming chemical equilibrium. H<sup>+</sup> expressed as moles/litre is multiplied by average flow of the effluent and then divided by the molar mass of NaHSO<sub>4</sub>.

**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<sub>4</sub> 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				
<b>Free short title</b>	Use of sodium hydrogensulfate as such or in preparation in professional settings			
<b>Systematic title based on use descriptor</b>	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			
<b>Processes, tasks and/or activities covered</b>	Processes, tasks and/or activities covered are described in Section 2 below.			
<b>Assessment Method</b>	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				
<p>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.</p> <p>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.</p> <p>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.</p>				
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 m <sup>3</sup> /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.				

## Exposure scenario addendum for sodium hydrogensulfate

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				
<b>Amounts used</b>				
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 <sub>4</sub> are considered in lower amounts and on a larger scale due to professional and/or consumer use.				
<b>Frequency and duration of use</b>				
Due to the wide dispersive aspect of the scenario a continuous release is assumed.				
<b>Environment factors not influenced by risk management</b>				
Flow rate of receiving surface water: 18000 m <sup>3</sup> /day				
<b>Other given operational conditions affecting environmental exposure</b>				
Effluent discharge rate of the STP: 2000 m <sup>3</sup> /day				
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>				
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 <sub>4</sub> is assumed to be directed to a municipal STP (default setting according to ECHA guidance R16).				
<b>Conditions and measures related to waste</b>				
Not relevant				
3. Exposure estimation and reference to its source				
<b>Occupational exposure</b>				
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.	
<b>Environmental emissions</b>				
<b>Environmental emissions</b>	Wide dispersive uses of NaHSO <sub>4</sub> usually use diluted products. The small amounts of NaHSO <sub>4</sub> 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.			
<b>Exposure concentration in waste water treatment plant</b>	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.			
<b>Exposure concentration in aquatic pelagic compartment</b>	When NaHSO <sub>4</sub> is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO <sub>4</sub> 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 <sub>2</sub> ), the bicarbonate ion (HCO <sub>3</sub> <sup>-</sup> ) and the carbonate ion (CO <sub>3</sub> <sup>2-</sup> ).			
<b>Exposure concentration in sediments</b>	The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO <sub>4</sub> : when NaHSO <sub>4</sub> is emitted to the aquatic compartment, sorption of to sediment particles is negligible.			
<b>Exposure concentrations in soil and groundwater</b>	The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.			
<b>Exposure concentration in atmospheric compartment</b>	The air compartment is not included in this CSA because it is considered not relevant for NaHSO <sub>4</sub> .			
<b>Exposure concentration relevant for the food chain (secondary poisoning)</b>	Bioaccumulation in organisms is not relevant for NaHSO <sub>4</sub> : 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](http://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				
<b>Free short title</b>		Consumer use of cleaning products containing sodium hydrogensulfate		
<b>Systematic title based on use descriptor</b>		SU21, PC35, ERC 8a		
<b>Processes, tasks activities covered</b>		Tasks and activities covered are described in section 2 below.		
<b>Assessment Method*</b>		<p>Human health</p> <p>No exposure estimation was performed for the dermal route.</p> <p>A quantitative assessment was performed for inhalation and the oral route using the HERA guidance document as a guide.</p> <p>Environment:</p> <p>A qualitative justification is provided.</p>		
2. Operational conditions and risk management measures				
<b>RMM</b>	The solid products will be in form of pearls or granules as manufactured, having a low-very low dust formation potential.			
<b>PC/ERC</b>	<b>Description</b>			
<b>PC 35</b>	Cleaners (all purpose cleaners, sanitary products): <ul style="list-style-type: none"> <li>• Surface cleaning.</li> <li>• Pouring of liquid concentrate or solid granules.</li> </ul> Toilet cleaner: <ul style="list-style-type: none"> <li>• Pouring of solid granules</li> </ul>			
<b>ERC 8a</b>	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 <sup>2</sup> ]	
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					
<p>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.</p>					
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				

<b>Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers</b>	
	there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.
Eye	<p>Qualitative assessment</p> <p>Exposure to the eyes is not expected as part of the intended product use.</p> <p>Solid: As the product is of low-very low dustiness no dust formation is expected.</p> <p>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 (&lt;1% NaHSO<sub>4</sub>). Therefore mild irritation can easily be avoided by immediate rinsing of the eyes with water.</p>
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.
<b>Environmental exposure</b>	
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.	
<b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
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				
<b>Free short title</b>	Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools			
<b>Systematic title based on use descriptor</b>	SU21, PC20, 37, ERC 8			
<b>Processes, tasks activities covered</b>	Tasks and activities covered are described in section 2 below.			
<b>Assessment Method*</b>	<p>Human health</p> <p>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.</p> <p>Environment:</p> <p>A qualitative justification is provided.</p>			
2. Operational conditions and risk management measures				
<b>PC/ERC</b>	<b>Description</b>			
PC 20, 37	<p><b>Applying of pH-regulator to swimming pools:</b></p> <p>Manual filling/pouring of sodium hydrogensulfate into swimming pool (large amount).</p> <p>Preparation of sodium hydrogensulfate solution for further application/pouring of sodium hydrogensulfate into water (small amount).</p> <p>Dropwise application of sodium hydrogensulfate solution to water.</p>			
ERC 8	Wide dispersive use			
2.1 Control of consumers exposure				
Product characteristic				
<b>Description of the preparation</b>	<b>Concentration of the substance in the preparation</b>	<b>Physical state of the preparation</b>	<b>Dustiness (if relevant)</b>	<b>Packaging design</b>
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				
<b>Description of the preparation</b>	<b>Amount used per event</b>		<b>Source of information</b>	
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 <sup>3</sup> 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				
<b>Description of task</b>	<b>Duration of exposure per event</b>		<b>frequency of events</b>	
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				
<b>solution</b>				
<b>Post-application ingestion</b>	5h (child of 6 years) 6h (adults) 90 <sup>th</sup> 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 [cm <sup>2</sup> ]
<b>Pouring of granules</b>	adult	60	Half of both hands	430
<b>Dropwise application of solution</b>	Adult		Hands	860
<b>Post-application ingestion</b>	Child (6 years)	22	-	-
	Adult	60	-	-
Other given operational conditions affecting consumers exposure				
<b>Film thickness on skin</b>	0.01cm (HERA, 2005, Appendix G)			
Conditions and measures related to information and behavioural advice to consumers				
<p>Do not get in eyes.</p> <p>Keep container closed and out of reach of children.</p> <p>In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</p> <p>Wash thoroughly after handling.</p> <p>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.</p>				
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				

<b>Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers</b>	
to the eye.	
<b>Human exposure</b>	
<b>Use of pH-regulator for swimming pools</b>	
<b>Route of exposure</b>	<b>Method used, comments</b>
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.
<b>Post-application ingestion:</b>	
<b>Route of exposure</b>	<b>Method used, comments</b>
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.
<b>Environmental exposure</b>	
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.	
<b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
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<sub>4</sub>**

#### **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<sub>4</sub> 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<sub>4</sub> in the different life-cycle stages (production and use) mainly apply to (waste) water.

Discharges of NaHSO<sub>4</sub> 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<sub>4</sub> containing wastewaters and effluents applies.

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

### **10.2 Wide dispersive uses of NaHSO<sub>4</sub>**

#### **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<sub>4</sub> in the different life-cycle stages mainly apply to (waste) water.

Discharges of NaHSO<sub>4</sub> 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<sub>4</sub> containing wastewaters applies.

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

## **10.3 Consumer uses of NaHSO<sub>4</sub>**

### **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.