SECCIÓN 1: IDENTIFICACIÓN DE LA SUSTANCIA O LA MEZCLA Y DE LA SOCIEDAD O LA EMPRESA.

1.1 Identificador de producto.

Nombre del producto:	pH MINUS
Código del producto:	0010
Nombre químico:	hidrogenosulfato de sodio
N. Indice:	016-046-00-X
N. CAS:	7681-38-1
N. CE:	231-665-7
N. registro:	01-2119552465-36-XXXX

1.2 Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados.

Regulador de pH

Usos desaconsejados:
Usos distintos a los aconsejados.
Los escenarios de exposición que cubren los usos se pueden encontrar en el Anexo.

1.3 Datos del proveedor de la ficha de datos de seguridad.
Identificación de la empresa:

Empresa:	**Fluidra Switzerland SA**
Dirección:	via Industria 10
Población:	6930 BEDANO
Provincia:	Barcelona
Teléfono:	Tel 091 9354080
Fax:	+34 93 713 41 11
E-mail:	info@fluidra.ch

Responsable de la puesta en el mercado:

Empresa:	**Fluidra Deutschland GmbH**
Dirección:	Bauhofstraße 18
Población:	D - 63762 Großostheim
Provincia:	Deutschland
Teléfono:	+49 6026 9795 0
E-mail:	info@fluidra.de

1.4 Teléfono de emergencia: (Disponible 24h)
Servicio de Información Toxicológica (Instituto Nacional de Toxicología y Ciencias Forenses) Teléfono: +34 91 5620420.
Información en español (24h/365 días). Únicamente con la finalidad de proporcionar respuesta sanitaria en caso de urgencia.

SECCIÓN 2: IDENTIFICACIÓN DE LOS PELIGROS.

2.1 Clasificación de la sustancia o de la mezcla.
Según el Reglamento (EU) No 1272/2008:
Eye Dam. 1 : Provoca lesiones oculares graves.

2.2 Elementos de la etiqueta.
Etiquetado conforme al Reglamento (EU) No 1272/2008:
Pictogramas:



Palabra de advertencia:
Peligro
Indicaciones de peligro:

-Continúa en la página siguiente.-

H318 Provoca lesiones oculares graves.

Consejos de prudencia:
P101 Si se necesita consejo médico, tener a mano el envase o la etiqueta.
P102 Mantener fuera del alcance de los niños.
P103 Leer atentamente y seguir todas las instrucciones.
P280 Llevar gafas de protección.
P305+P351+P338 EN CASO DE CONTACTO CON LOS OJOS: Enjuagar con agua cuidadosamente durante varios minutos. Quitar las lentes de contacto cuando estén presentes y pueda hacerse con facilidad. Proseguir con el lavado.
P301+P310 EN CASO DE INGESTIÓN: Llamar inmediatamente a un CENTRO DE INFORMACIÓN TOXICOLÓGICA o a un médico.
P501 Elimínese el contenido y/o su recipiente de acuerdo con la normativa sobre residuos peligrosos.

Contiene:
hidrogenosulfato de sodio

2.3 Otros peligros.

La sustancia no es PBT
La sustancia no es mPmB
La sustancia no tiene propiedades de alteración endocrina.

En condiciones de uso normal y en su forma original, el producto no tiene ningún otro efecto negativo para la salud y el medio ambiente.

SECCIÓN 3: COMPOSICIÓN/INFORMACIÓN SOBRE LOS COMPONENTES.

3.1 Sustancias.

Identificadores	Nombre	Concentración	(*)Clasificación - Reglamento 1272/2008	
			Clasificación	Límites de concentración específicos y Estimación de Toxicidad Aguda
N. Indice: 016-046-00-X N. CAS: 7681-38-1 N. CE: 231-665-7	hidrogenosulfato de sodio	3 - 100 %	Eye Dam. 1, H318	-

3.2 Mezclas.
No Aplicable.

SECCIÓN 4: PRIMEROS AUXILIOS.

La información de la composición actualizada del producto ha sido remitida al Servicio de información Toxicológica (Instituto Nacional de Toxicología y Ciencias Forenses). En caso de intoxicación llamar al Servicio de Información Toxicológica:
Tfno (24 horas) 91 562 04 20

4.1 Descripción de los primeros auxilios.
En los casos de duda, o cuando persistan los síntomas de malestar, solicitar atención médica. No administrar nunca nada por vía oral a personas que se encuentren inconscientes.

Inhalación.
Situar al accidentado al aire libre, mantenerle caliente y en reposo, si la respiración es irregular o se detiene, practicar respiración artificial.

Contacto con los ojos.
Lavar abundantemente los ojos con agua limpia y fresca durante, por lo menos, 10 minutos, tirando hacia arriba de los párpados y buscar asistencia médica. No permita que la persona se frote el ojo afectado.

Contacto con la piel.

-Continúa en la página siguiente.-

Quitar la ropa contaminada. Lavar la piel vigorosamente con agua y jabón o un limpiador de piel adecuado. NUNCA utilizar disolventes o diluyentes.

Ingestión.
Si accidentalmente se ha ingerido, buscar inmediatamente atención médica. Mantenerle en reposo. NUNCA provocar el vómito.

4.2 Principales síntomas y efectos, agudos y retardados.
Producto Corrosivo, el contacto con los ojos o con la piel puede producir quemaduras, la ingestión o la inhalación puede producir daños internos, en el caso de producirse se requiere asistencia médica inmediata.
El contacto con los ojos puede producir daños irreversibles.

4.3 Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente.
Solicite ayuda médica de inmediato. No administrar nunca nada por vía oral a personas que se encuentren inconscientes. No inducir el vómito. Si la persona vomita, despeje las vías respiratorias. Cubra la zona afectada con un apósito estéril seco. Proteja la zona afectada de presión o fricción.

SECCIÓN 5: MEDIDAS DE LUCHA CONTRA INCENDIOS.

El producto NO está clasificado como inflamable, en caso de incendio se deben seguir las medidas expuestas a continuación:

5.1 Medios de extinción.
Medios de extinción apropiados:
Polvo extintor o CO2. En caso de incendios más graves también espuma resistente al alcohol y agua pulverizada.

Medios de extinción no apropiados:
No usar para la extinción chorro directo de agua. En presencia de tensión eléctrica no es aceptable utilizar agua o espuma como medio de extinción.

5.2 Peligros específicos derivados de la sustancia o la mezcla.
Riesgos especiales.
La exposición a los productos de combustión o descomposición puede ser perjudicial para la salud.

5.3 Recomendaciones para el personal de lucha contra incendios.
Refrigerar con agua los tanques, cisternas o recipientes próximos a la fuente de calor o fuego. Tener en cuenta la dirección del viento. Evitar que los productos utilizados en la lucha contra incendio pasen a desagües, alcantarillas o cursos de agua.

Equipo de protección contra incendios.
Según la magnitud del incendio, puede ser necesario el uso de trajes de protección contra el calor, equipo respiratorio autónomo, guantes, gafas protectoras o máscaras faciales y botas.

SECCIÓN 6: MEDIDAS EN CASO DE VERTIDO ACCIDENTAL.

6.1 Precauciones personales, equipo de protección y procedimientos de emergencia.
Para control de exposición y medidas de protección individual, ver sección 8.

6.2 Precauciones relativas al medio ambiente.
Producto no clasificado como peligroso para el medio ambiente, evitar en la medida de lo posible cualquier vertido.

6.3 Métodos y material de contención y de limpieza.
Contener y recoger el vertido con material absorbente inerte (tierra, arena, vermiculita, tierra de diatomeas...) y limpiar la zona inmediatamente con un descontaminante adecuado.
Depositar los residuos en envases cerrados y adecuados para su eliminación, de conformidad con las normativas locales y nacionales (ver sección 13).

6.4 Referencia a otras secciones.
Para control de exposición y medidas de protección individual, ver sección 8.
Para la eliminación de los residuos, seguir las recomendaciones de la sección 13.

SECCIÓN 7: MANIPULACIÓN Y ALMACENAMIENTO.

-Continúa en la página siguiente.-

7.1 Precauciones para una manipulación segura.
Para la protección personal, ver sección 8.
En la zona de aplicación debe estar prohibido fumar, comer y beber.
Cumplir con la legislación sobre seguridad e higiene en el trabajo.
No emplear nunca presión para vaciar los envases, no son recipientes resistentes a la presión. Conservar el producto en envases de un material idéntico al original.

7.2 Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades.
Almacenar según la legislación local. Observar las indicaciones de la etiqueta. Almacenar los envases entre 5 y 25 ºC, en un lugar seco y bien ventilado, lejos de fuentes de calor y de la luz solar directa. Mantener lejos de puntos de ignición. Mantener lejos de agentes oxidantes y de materiales fuertemente ácidos o alcalinos. No fumar. Evitar la entrada a personas no autorizadas. Una vez abiertos los envases, han de volverse a cerrar cuidadosamente y colocarlos verticalmente para evitar derrames.

El producto no se encuentra afectado por la Directiva 2012/18/UE (SEVESO III).

7.3 Usos específicos finales.
Ningún uso particular.

SECCIÓN 8: CONTROLES DE EXPOSICIÓN/PROTECCIÓN INDIVIDUAL.

8.1 Parámetros de control.

El producto NO contiene sustancias con Valores Límite Ambientales de Exposición Profesional.El producto NO contiene sustancias con Valores Límite Biológicos.
8.2 Controles de la exposición.

Medidas de orden técnico:
Proveer una ventilación adecuada, lo cual puede conseguirse mediante una buena extracción-ventilación local y un buen sistema general de extracción.

Concentración:	**100 %**
Usos:	**Regulador de pH**
Protección respiratoria:	
Si se cumplen las medidas técnicas recomendadas no es necesario ningún equipo de protección individual.	
Protección de las manos:	
Si el producto se manipula correctamente no es necesario ningún equipo de protección individual.	
Protección de los ojos:	
Si el producto se manipula correctamente no es necesario ningún equipo de protección individual.	
Protección de la piel:	
EPI:	Calzado de trabajo
Características:	Marcado «CE» Categoría II.
Normas CEN:	EN ISO 13287, EN 20347
Mantenimiento:	Estos artículos se adaptan a la forma del pie del primer usuario. Por este motivo, al igual que por cuestiones de higiene, debe evitarse su reutilización por otra persona.
Observaciones:	El calzado de trabajo para uso profesional es el que incorpora elementos de protección destinados a proteger al usuario de las lesiones que pudieran provocar los accidentes, se debe revisar los trabajor para los cuales es apto este calzado.

SECCIÓN 9: PROPIEDADES FÍSICAS Y QUÍMICAS.

9.1 Información sobre propiedades físicas y químicas básicas.
Estado físico: Sólido
Color: Blanco / amarillo
Olor: Inodoro
Umbral olfativo: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Punto de fusión: 180 ºC
Punto de congelación: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Punto/Punto inicial/intervalo de ebullición: >200 ºC
Inflamabilidad: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.

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Límite inferior de explosión: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Límite superior de explosión: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Punto de inflamación: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Temperatura de auto-inflamación: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Temperatura de descomposición: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
pH: 1 - 1,2 (20%)
Viscosidad cinemática: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Solubilidad: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Hidrosolubilidad: 1080 g/l (20 ºC)
Liposolubilidad: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Coeficiente de reparto (n-octanol/agua)(valor logaritmico): No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Presión de vapor: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Densidad absoluta: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Densidad relativa: 1.4 - 1.45
Densidad de vapor: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Características de las partículas: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.

9.2 Otros datos.
Viscosidad: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Propiedades explosivas: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Propiedades comburentes: No
Punto de gota: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
Centelleo: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.
% Sólidos: No aplicable/No disponible debido a la naturaleza/las propiedades del producto.

SECCIÓN 10: ESTABILIDAD Y REACTIVIDAD.

10.1 Reactividad.
El producto no presenta peligros debido a su reactividad.

10.2 Estabilidad química.
Inestable en contacto con:
- Bases.

10.3 Posibilidad de reacciones peligrosas.
Puede producirse una neutralización en contacto con bases.

10.4 Condiciones que deben evitarse.
- Evitar el contacto con bases.

10.5 Materiales incompatibles.
Evitar los siguientes materiales:
- Bases.

10.6 Productos de descomposición peligrosos.
Dependiendo de las condiciones de uso, pueden generarse los siguientes productos:
- Vapores o gases corrosivos.

SECCIÓN 11: INFORMACIÓN TOXICOLÓGICA.

11.1 Información sobre las clases de peligro definidas en el Reglamento (CE) nº 1272/2008.
Las salpicaduras en los ojos pueden causar irritación y daños reversibles.

Información Toxicológica.

Nombre	Toxicidad aguda			
	Tipo	Ensayo	Especie	Valor
hidrogenosulfato de sodio	Oral	LD50	Rata	2140 mg/kg
	Cutánea			

-Continúa en la página siguiente.-

N. CAS: 7681-38-1 N. CE: 231-665-7	Inhalación	LD50	Rata	>2.4 mg/l (4 h)

a) toxicidad aguda;
Datos no concluyentes para la clasificación.

b) corrosión o irritación cutáneas;
Datos no concluyentes para la clasificación.

c) lesiones oculares graves o irritación ocular;
Producto clasificado:
Lesión ocular grave, Categoría 1: Provoca lesiones oculares graves.

d) sensibilización respiratoria o cutánea;
Datos no concluyentes para la clasificación.

e) mutagenicidad en células germinales;
Datos no concluyentes para la clasificación.

f) carcinogenicidad;
Datos no concluyentes para la clasificación.

g) toxicidad para la reproducción;
Datos no concluyentes para la clasificación.

h) toxicidad específica en determinados órganos (STOT) - exposición única;
Datos no concluyentes para la clasificación.

i) toxicidad específica en determinados órganos (STOT) - exposición repetida;
Datos no concluyentes para la clasificación.

j) peligro por aspiración;
Datos no concluyentes para la clasificación.

11.2 Información relativa a otros peligros.

Propiedades de alteración endocrina.
Este producto no contiene componentes con propiedades de alteración endocrina con efectos sobre la salud humana.
Otros datos.
No existe información disponible sobre otros efectos adversos para la salud.

SECCIÓN 12: INFORMACIÓN ECOLÓGICA.

12.1 Toxicidad.

Nombre	Ecotoxicidad			
	Tipo	Ensayo	Especie	Valor
hidrogenosulfato de sodio N. CAS: 7681-38-1 N. CE: 231-665-7	Peces	LC50	Pez	7960 mg/l (96h)
	Invertebrados acuáticos	LC50	Dafnia	1766 mg/l (48 h)
	Plantas acuáticas	LC50	Algas	1900 mg/l (120 h)

12.2 Persistencia y degradabilidad.
No se dispone de información relativa a la biodegradabilidad.
No se dispone de información relativa a la degradabilidad.
No existe información disponible sobre la persistencia y degradabilidad del producto.

12.3 Potencial de bioacumulación.
No se dispone de información relativa a la Bioacumulación.

-Continúa en la página siguiente.-

12.4 Movilidad en el suelo.
No existe información disponible sobre la movilidad en el suelo.
No se debe permitir que el producto pase a las alcantarillas o a cursos de agua.
Evitar la penetración en el terreno.

12.5 Resultados de la valoración PBT y mPmB.
No existe información disponible sobre la valoración PBT y mPmB del producto.

12.6 Propiedades de alteración endocrina.
Este producto no contiene componentes con propiedades de alteración endocrina sobre el medio ambiente.

12.7 Otros efectos adversos.
No existe información disponible sobre otros efectos adversos para el medio ambiente.

SECCIÓN 13: CONSIDERACIONES RELATIVAS A LA ELIMINACIÓN.

13.1 Métodos para el tratamiento de residuos.
No se permite su vertido en alcantarillas o cursos de agua. Los residuos y envases vacíos deben manipularse y eliminarse de acuerdo con las legislaciones local/nacional vigentes.
Seguir las disposiciones de la Directiva 2008/98/CE respecto a la gestión de residuos.

SECCIÓN 14: INFORMACIÓN RELATIVA AL TRANSPORTE.

No es peligroso en el transporte. En caso de accidente y vertido del producto actuar según el punto 6.

14.1 Número ONU o número ID.
No es peligroso en el transporte.

14.2 Designación oficial de transporte de las Naciones Unidas.
Descripción:
ADR/RID: No es peligroso en el transporte.
IMDG: No es peligroso en el transporte.
ICAO/IATA: No es peligroso en el transporte.

14.3 Clase(s) de peligro para el transporte.
No es peligroso en el transporte.

14.4 Grupo de embalaje.
No es peligroso en el transporte.

14.5 Peligros para el medio ambiente.
No es peligroso en el transporte.
Transporte por barco, FEm - Fichas de emergencia (F – Incendio, S – Derrames): No aplicable.

14.6 Precauciones particulares para los usuarios.
No es peligroso en el transporte.

14.7 Transporte marítimo a granel con arreglo a los instrumentos de la OMI.
No es peligroso en el transporte.

SECCIÓN 15: INFORMACIÓN REGLAMENTARIA.

15.1 Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla.
El producto no está afectado por el Reglamento (CE) nº 1005/2009 del Parlamento Europeo y del Consejo, de 16 de septiembre de 2009, sobre las sustancias que agotan la capa de ozono.

Compuesto orgánico volátil (COV)
Contenido de COV (p/p): 0 %
Contenido de COV: 0 g/l

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Clasificación del producto de acuerdo con el Anexo I de la Directiva 2012/18/UE (SEVESO III): N/A

El producto no está afectado por el Reglamento (UE) No 528/2012 relativo a la comercialización y el uso de los biocidas.
El producto no se encuentra afectado por el procedimiento establecido en el Reglamento (UE) No 649/2012, relativo a la exportación e importación de productos químicos peligrosos.

Clase de contaminante para el agua (Alemania): WGK 1: Poco peligroso para el agua. (Autoclasificado según Reglamento AwSV)

15.2 Evaluación de la seguridad química.
No se ha llevado a cabo una evaluación de la seguridad química del producto.
Se dispone de Escenario de Exposición del producto.

SECCIÓN 16: OTRA INFORMACIÓN.

Códigos de clasificación:

Eye Dam. 1 : Lesión ocular grave, Categoría 1

Clasificación y procedimiento utilizado para determinar la clasificación de las mezclas con arreglo al Reglamento (CE) nº 1272/2008 [CLP]:

Peligros físicos	Conforme a datos obtenidos de los ensayos
Peligros para la salud	Método de cálculo
Peligros para el medio ambiente	Método de cálculo

Se aconseja realizar formación básica con respecto a seguridad e higiene laboral para realizar una correcta manipulación del producto.

Se dispone de Escenario de Exposición del producto.

Abreviaturas y acrónimos utilizados:
AwSV: Reglamento de Instalaciones para la manipulación de sustancias peligrosas para el agua.
CEN: Comité Europeo de Normalización.
EC50: Concentración efectiva media.
EPI: Equipo de protección personal.
LC50: Concentración Letal, 50%.
LD50: Dosis Letal, 50%.
WGK: Clases de peligros para el agua.

Principales referencias bibliográficas y fuentes de datos:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/
Reglamento (UE) 2020/878.
Reglamento (CE) No 1907/2006.
Reglamento (EU) No 1272/2008.

La información facilitada en esta ficha de Datos de Seguridad ha sido redactada de acuerdo con el REGLAMENTO (UE) 2020/878 DE LA COMISIÓN de 18 de junio de 2020 por el que se modifica el anexo II del Reglamento (CE) n.o 1907/2006 del Parlamento Europeo y del Consejo, relativo al registro, la evaluación, la autorización y la restricción de las sustancias y mezclas químicas (REACH).

La información de esta Ficha de Datos de Seguridad del Producto está basada en los conocimientos actuales y en las leyes vigentes de la CE y nacionales, en cuanto que las condiciones de trabajo de los usuarios están fuera de nuestro conocimiento y control. El producto no debe utilizarse para fines distintos a aquellos que se especifican, sin tener primero una instrucción por escrito, de su manejo. Es siempre responsabilidad del usuario tomar las medidas oportunas con el fin de cumplir con las exigencias establecidas en las legislaciones.

-Fin de la ficha de datos de seguridad.-

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.