

## Ficha de Datos de Seguridad

En conformidad con Anexo II del REACH - Reglamento 2015/830

### SECCIÓN 1. Identificación de la sustancia o la mezcla y de la sociedad o la empresa

#### 1.1. Identificador del producto

Código: **460T**  
Denominación: **SPECIAL WALL B550M**

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

Descripción/Usos: **Mortero monocomponente**

Usos Identificados	Industriales	Profesionales	Consumidores
Mortero que se utiliza mezclado con agua	-	✓	-

#### 1.3. Datos del proveedor de la ficha de datos de seguridad

Razón social: **FASSA S.r.l.**  
Dirección: **via Lazzaris, 3**  
Localidad y Estado: **31027 Spresiano (TV)**  
**ITALIA**  
Tel. **+39 (0)422 7222**  
Fax **+39 (0)422 887509**  
Responsable de la emisión en el mercado: **laboratorio.spresiano@fassabortolo.it**

#### 1.4. Teléfono de emergencia

Para informaciones urgentes dirigirse a **+34 91 562 04 20**

### SECCIÓN 2. Identificación de los peligros

#### 2.1. Clasificación de la sustancia o de la mezcla

El producto está clasificado como peligroso según las disposiciones del Reglamento (CE) 1272/2008 (CLP) (y sucesivas modificaciones y adaptaciones). Por lo tanto, el producto requiere una ficha de datos de seguridad conforme a las disposiciones del Reglamento (UE) 2015/830.

Eventual información adicional sobre los riesgos para la salud y/o el ambiente están disponibles en las secciones 11 y 12 de la presente ficha.

##### Clasificación e indicación de peligro:

Lesiones oculares graves, categoría 1	H318	Provoca lesiones oculares graves.
Irritación cutáneas, categoría 2	H315	Provoca irritación cutánea.
Toxicidad específica en determinados órganos - exposiciones única, categoría 3	H335	Puede irritar las vías respiratorias.
Sensibilización cutánea, categoría 1B	H317	Puede provocar una reacción alérgica en la piel.

#### 2.2. Elementos de la etiqueta

Etiquetas de peligro en conformidad con el Reglamento (CE) 1272/2008 (CLP) y sucesivas modificaciones y adaptaciones.

Pictogramas de peligro:



Palabras de advertencia: **Peligro**

Indicaciones de peligro:

<b>H318</b>	Provoca lesiones oculares graves.
<b>H315</b>	Provoca irritación cutánea.
<b>H335</b>	Puede irritar las vías respiratorias.
<b>H317</b>	Puede provocar una reacción alérgica en la piel.

### SECCIÓN 2. Identificación de los peligros ... / >>

Consejos de prudencia:

<b>P305+P351+P338</b>	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.
<b>P280</b>	Llevar guantes / gafas / máscara de protección.
<b>P310</b>	Llamar inmediatamente a un CENTRO DE TOXICOLOGÍA / médico
<b>P501</b>	Eliminar el contenido/contenedor conforme a las reglamentaciones nacionales
<b>P261</b>	Evitar respirar el polvo / el humo / el gas / la niebla / los vapores / el aerosol.
<b>P302+P352</b>	EN CASO DE CONTACTO CON LA PIEL: lavar con abundante agua

**Contiene:** Clinker de cemento Portland  
Cal hidratada  
Óxido de Calcio

#### 2.3. Otros peligros

Sobre la base de los datos disponibles, el producto no contiene sustancias PBT o vPvB en porcentaje superior al 0,1%.

La mezcla tiene un bajo contenido de cromados. En la forma lista al uso después de agregar agua el contenido de cromo (VI) soluble es al máximo de 2 mg/kg sobre el seco. Condición indispensable para un bajo contenido de cromados es de todas maneras un almacenamiento correcto, al seco, y respetando los plazos máximos de conservación previstos. El porcentaje de óxido de silicio cristalino respirable es inferior al 1%. Por lo tanto el producto no está sujeto a la identificación obligatoria. Sin embargo es aconsejable la utilización de una protección para las vías respiratorias.

### SECCIÓN 3. Composición/información sobre los componentes

#### 3.2. Mezclas

Contiene:

Identificación	x = Conc. %	Clasificación 1272/2008 (CLP)
<b>Clinker de cemento Portland</b>		
CAS	65997-15-1 20 ≤ x < 30	<b>Eye Dam. 1 H318, Skin Irrit. 2 H315, STOT SE 3 H335, Skin Sens. 1B H317</b>
CE	266-043-4	
INDEX		
Nº Reg.	Esente (Reg. 1907/2006 all. V.7)	
<b>Cal hidratada</b>		
CAS	1305-62-0 1 ≤ x < 3	<b>Eye Dam. 1 H318, Skin Irrit. 2 H315, STOT SE 3 H335</b>
CE	215-137-3	
INDEX		
Nº Reg.	01-2119475151-45	
<b>Óxido de Calcio</b>		
CAS	1305-78-8 1 ≤ x < 3	<b>Eye Dam. 1 H318, Skin Irrit. 2 H315, STOT SE 3 H335</b>
CE	215-138-9	
INDEX		
Nº Reg.	01-2119475325-36	

El texto completo de las indicaciones de peligro (H) se encuentra en la sección 16 de la ficha.

### SECCIÓN 4. Primeros auxilios

#### 4.1. Descripción de los primeros auxilios

**OJOS:** Quite las eventuales lentes de contacto. Lave inmediatamente con abundante agua durante al menos 30/60 minutos, abriendo bien los párpados. Consulte inmediatamente a un médico.

**PIEL:** Quítese la indumentaria contaminada. Dúchese inmediatamente. Consulte inmediatamente a un médico.

**INGESTIÓN:** Beba mayor cantidad de agua posible. Consulte inmediatamente a un médico. No provoque el vómito sin expresa autorización del médico.

**INHALACIÓN:** Llame mediatamente a un médico. Lleve al sujeto al aire libre, lejos del lugar del accidente. Si la respiración cesa, practique respiración artificial. Se deben tomar precauciones adecuadas para el socorrista.

#### 4.2. Principales síntomas y efectos, agudos y retardados

No hay información específica sobre síntomas y efectos provocados por el producto.

**SECCIÓN 4. Primeros auxilios ... / >>****4.3. Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente**

Información no disponible.

**SECCIÓN 5. Medidas de lucha contra incendios****5.1. Medios de extinción****MEDIOS DE EXTINCIÓN IDÓNEOS**

Los medios de extinción son los tradicionales: anhídrido carbónico, espuma, polvos y agua nebulizada.

**MEDIOS DE EXTINCIÓN NO IDÓNEOS**

Ninguno en particular.

**5.2. Peligros específicos derivados de la sustancia o la mezcla****PELIGROS DEBIDOS A LA EXPOSICIÓN EN CASO DE INCENDIO**

Evite respirar los productos de la combustión.

**5.3. Recomendaciones para el personal de lucha contra incendios****INFORMACIÓN GENERAL**

Enfríe los recipientes con chorros de agua para evitar la descomposición del producto y la formación de sustancias potencialmente peligrosas para la salud. Use siempre el equipo de protección antiincendio completo. Recoja las aguas usadas para la extinción, que no deben verterse en las alcantarillas. Elimine el agua contaminada usada para la extinción y los residuos del incendio siguiendo las normas vigentes.

**EQUIPO**

Elementos normales para la lucha contra el fuego, como un respirador autónomo de aire comprimido de circuito abierto (EN 137), traje ignífugo (EN469), guantes ignífugos (EN 659) y botas de bomberos (HO A29 o A30).

**SECCIÓN 6. Medidas en caso de vertido accidental****6.1. Precauciones personales, equipo de protección y procedimientos de emergencia**

Evite la formación de polvos rociando sobre el producto agua, si no hay contraindicaciones.

Utilizar adecuados dispositivos de protección (incluidos los equipos de protección individual indicados en la sección 8 de la ficha de datos de seguridad), para prevenir la contaminación de la piel, de los ojos y de las prendas personales. Estas indicaciones son válidas tanto para los encargados de las elaboraciones como para las intervenciones de emergencia.

**6.2. Precauciones relativas al medio ambiente**

Impida que el producto alcance el alcantarillado, las aguas superficiales y las capas freáticas.

**6.3. Métodos y material de contención y de limpieza**

Recoja el producto derramado e introdúzcalo en recipientes para su recuperación o eliminación. Elimine el residuo con chorros de agua, si no hay contraindicaciones.

Proceda a una suficiente ventilación del lugar afectado por la pérdida. Evalúe la compatibilidad del producto con el recipiente a utilizar, consultando la sección 10. La eliminación del material contaminado se debe realizar según las disposiciones del punto 13.

**6.4. Referencia a otras secciones**

Eventual información sobre la protección individual y la eliminación está disponible en las secciones 8 y 13.

**SECCIÓN 7. Manipulación y almacenamiento****7.1. Precauciones para una manipulación segura**

Manipule el producto después de consultar todas las demás secciones de esta ficha de seguridad. Evite la dispersión del producto en el ambiente. No coma, beba ni fume durante el uso. Quítese las prendas contaminadas y los dispositivos de protección antes de acceder a la zona destinada a comer.

**7.2. Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades**

Conserve el producto solamente en el envase original. Conserve los recipientes cerrados, en un lugar bien ventilado, protegidos de la acción directa de los rayos del sol. Conserve los recipientes alejados de eventuales materiales incompatibles, verificando la sección 10.

Control del cromo (VI) soluble:

Para los cementos tratados con un agente reductor del Cromo (VI), de acuerdo con los reglamentos indicados en la sección 15, la eficacia

### SECCIÓN 7. Manipulación y almacenamiento ... / >>

del agente reductor disminuye con el pasar del tiempo. Por consiguiente, los embalajes del material contienen informaciones sobre la fecha de producción, las condiciones de almacenamiento y el período de almacenamiento adecuado para el mantenimiento de la actividad del agente reductor y para mantener el contenido de cromo (VI) soluble por debajo de 2 ppm sobre el peso total seco referido al cemento, de conformidad con la Norma EN 196-10.

#### 7.3. Usos específicos finales

Información no disponible.

### SECCIÓN 8. Controles de exposición/protección individual

#### 8.1. Parámetros de control

Referencias Normativas:

País	Referencia	Descripción
ESP	España	LÍMITES DE EXPOSICIÓN PROFESIONAL PARA AGENTES QUÍMICOS EN ESPAÑA 2019 (INSST)
FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en France. ED 984 - INRS
GBR	United Kingdom	EH40/2005 Workplace exposure limits (Third edition,published 2018)
GRC	Ελλάδα	ΕΦΗΜΕΡΙΔΑ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ - ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 152 - 21 Αυγούστου 2018
HUN	Magyarország	A pénzügyminiszter 7/2018. (VIII. 29.) PM rendelete a munkahelyek kémiai biztonságáról szóló 25/2000. (IX. 30.) EüM–SZCSM együttes rendelet módosításáról
SVK	Slovensko	Nariadenie vlády č. 33/2018 Z. z. Nariadenie vlády Slovenskej republiky, ktorým sa mení a dopĺňa nariadenie vlády Slovenskej republiky č. 355/2006 Z. z. o ochrane zamestnancov pred rizikami súvisiacimi s expozíciou chemickým faktorom pri práci v znení neskorších predpisov
EU	OEL EU	Directiva (UE) 2017/2398; Directiva (UE) 2017/164; Directiva 2009/161/UE; Directiva 2006/15/CE; Directiva 2004/37/CE; Directiva 2000/39/CE; Directiva 91/322/CEE.
	TLV-ACGIH	ACGIH 2019

#### Clinker de cemento Portland

##### Valor límite de umbral

Tipo	Estado	TWA/8h		STEL/15min		Notas / Observaciones
		mg/m3	ppm	mg/m3	ppm	
TLV-ACGIH		1				RESPIR

#### Cal hidratada

##### Valor límite de umbral

Tipo	Estado	TWA/8h		STEL/15min		Notas / Observaciones
		mg/m3	ppm	mg/m3	ppm	
VLA	ESP	5				
VLEP	FRA	5				
WEL	GBR	5				
TLV	GRC	5				
AK	HUN	5				
NPPEL	SVK	5				
OEL	EU	1				
TLV-ACGIH		5				

##### Concentración prevista sin efectos sobre el ambiente - PNEC

Valor de referencia en agua dulce	0,49	mg/l
Valor de referencia en agua marina	0,32	mg/l
Valor de referencia para los microorganismos STP	3	mg/l
Valor de referencia para el medio terrestre	1080	mg/kg

##### Salud - Nivel sin efecto derivado - DNEL/DMEL

Vía de exposición	Efectos sobre los consumidores				Efectos sobre los trabajadores			
	Locales		Sistém		Locales		Sistém	
	agudos	agudos	crónicos	crónicos	agudos	agudos	crónicos	crónicos
Inhalación	4		1		4		1	
	mg/m3		mg/m3		mg/m3		mg/m3	

### SECCIÓN 8. Controles de exposición/protección individual ... / >>

#### Óxido de Calcio

##### Valor límite de umbral

Tipo	Estado	TWA/8h		STEL/15min		Notas / Observaciones
		mg/m3	ppm	mg/m3	ppm	
OEL	EU	1		4		RESPIR

##### Concentración prevista sin efectos sobre el ambiente - PNEC

Valor de referencia en agua dulce	0,49	mg/l
Valor de referencia en agua marina	0,32	mg/l
Valor de referencia para los microorganismos STP	3	mg/l
Valor de referencia para el medio terrestre	1080	mg/kg/d

##### Salud - Nivel sin efecto derivado - DNEL/DMEL

Vía de exposición	Efectos sobre los consumidores				Efectos sobre los trabajadores			
	Locales		Sistém		Locales		Sistém	
	agudos	crónicos	agudos	crónicos	agudos	crónicos	agudos	crónicos
Inhalación	4	1	4	1	4	1	4	1
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3

##### Leyenda:

(C) = CEILING ; INHAL = Fracción inhalable ; RESPIR = Fracción respirable ; TORAC = Fracción torácica.

VND = peligro identificado pero ningún DNEL/PNEC disponible ; NEA = ninguna exposición prevista ; NPI = ningún peligro identificado.

Se recomienda considerar en el proceso de evaluación del riesgo los valores límite de exposición profesional previstos por la ACGIH para las partículas no clasificadas de otra manera (PNOC fracción respirable: 3 mg/mc; PNOC fracción inhalable: 10 mg/mc). En caso de que se superen dichos límites, se aconseja la utilización de un filtro de tipo P cuya clase (1, 2 o 3) deberá elegirse en base al resultado de la evaluación del riesgo.

Se recomienda considerar en el proceso de evaluación del riesgo los valores límite de exposición profesional previstos por la ACGIH para las partículas no clasificadas de otra manera (PNOC fracción respirable: 3 mg/mc; PNOC fracción inhalable: 10 mg/mc). En caso de que se superen dichos límites, se aconseja la utilización de un filtro de tipo P cuya clase (1, 2 o 3) deberá elegirse en base al resultado de la evaluación del riesgo.

### 8.2. Controles de la exposición

Considerando que el uso de medidas técnicas adecuadas debería tener prioridad respecto a los equipos de protección personales, asegurar una buena ventilación en el lugar de trabajo a través de una eficaz aspiración local.

Durante la elección de los equipos protectores personales pedir consejo a los proveedores de sustancias químicas.

Los dispositivos de protección individual deben ser conformes a las normativas vigentes y deberán llevar el marcado CE.

Prever un sistema para el lavado ocular y una ducha de emergencia.

#### PROTECCIÓN DE LAS MANOS

En caso de que esté previsto un contacto prolongado con el producto, se aconseja proteger las manos con guantes de trabajo resistentes a la penetración (ref. norma EN 374).

El material de los guantes de trabajo deberá elegirse según el proceso de utilización y los productos que se puedan formar. Se recuerda asimismo que los guantes de látex pueden dar origen a fenómenos de sensibilización.

#### PROTECCIÓN DE LA PIEL

Usar indumentes de trabajo con mangas largas y calzado de protección para uso profesional de categoría II (ref. Reglamento 2016/425 y norma EN ISO 20344). Lavarse con agua y jabón después de haber extraído los indumentes de protección.

#### PROTECCIÓN DE LOS OJOS

Usar gafas de protección herméticas (ref. norma EN 166).

#### PROTECCIÓN RESPIRATORIA

Usar una mascarilla con filtro de tipo P. Elegid la clase (1, 2 o 3) y la necesidad efectiva de la misma según el resultado de la evaluación del riesgo (ref. norma EN 149).

#### CONTROLES DE LA EXPOSICIÓN AMBIENTAL

Las emisiones de los procesos productivos, incluidas las de los dispositivos de ventilación, deberían ser controladas para garantizar el respeto de la normativa de protección ambiental.

### SECCIÓN 9. Propiedades físicas y químicas

#### 9.1. Información sobre propiedades físicas y químicas básicas

Propiedades	Valor	Información
Estado físico	polvo	
Color	gris	
Olor	inodoro	
Umbral olfativo	No disponible	
pH	11,5-13	
Punto de fusión / punto de congelación	No disponible	
Punto inicial de ebullición	No aplicable	

**SECCIÓN 9. Propiedades físicas y químicas ... / >>**

Intervalo de ebullición	No disponible
Punto de inflamación	No aplicable
Velocidad de evaporación	No disponible
Inflamabilidad de sólidos y gases	no aplicable
Límites inferior de inflamabilidad	No disponible
Límites superior de inflamabilidad	No disponible
Límites inferior de explosividad	No disponible
Límites superior de explosividad	No disponible
Presión de vapor	No disponible
Densidad de vapor	No disponible
Densidad relativa	1,0-1,3
Solubilidad	No disponible
Coefficiente de repartición: n-octanol/agua	No disponible
Temperatura de auto-inflamación	No disponible
Temperatura de descomposición	No disponible
Viscosidad	No disponible
Propiedades explosivas	no aplicable
Propiedades comburentes	No disponible

**9.2. Otros datos**

Información no disponible.

**SECCIÓN 10. Estabilidad y reactividad****10.1. Reactividad**

En condiciones de uso normales, no hay particulares peligros de reacción con otras sustancias.

**10.2. Estabilidad química**

El producto es estable en las condiciones normales de uso y almacenamiento.

**10.3. Posibilidad de reacciones peligrosas**

En condiciones de uso y almacenamiento normales, no se prevén reacciones peligrosas.

**10.4. Condiciones que deben evitarse**

Ninguna en particular. De todos modos, atégase a las precauciones usuales para los productos químicos.

**10.5. Materiales incompatibles**

Información no disponible.

**10.6. Productos de descomposición peligrosos**

Información no disponible.

**SECCIÓN 11. Información toxicológica****11.1. Información sobre los efectos toxicológicos**Metabolismo, cinética, mecanismo de acción y otras informaciones

Información no disponible.

Información sobre posibles vías de exposición

Información no disponible.

Efectos retardados e inmediatos, así como efectos crónicos producidos por una exposición a corto y largo plazo

Información no disponible.

Efectos interactivos

Información no disponible.

**SECCIÓN 11. Información toxicológica ... / >>**TOXICIDAD AGUDA

LC50 (Inhalación) de la mezcla: No clasificado (ningún componente relevante)  
LD50 (Oral) de la mezcla: No clasificado (ningún componente relevante)  
LD50 (Cutánea) de la mezcla: No clasificado (ningún componente relevante)

Clinker de cemento Portland  
LD50 (Cutánea) > 2000 mg/kg (rabbit)

Cal hidratada  
LD50 (Oral) > 2000 mg/kg (Rat, OECD 425)  
LD50 (Cutánea) > 2500 mg/kg (Rabbit, OCSE 402)

Óxido de Calcio  
LD50 (Oral) > 2000 mg/kg Rat (Calcium Dihydroxide)  
LD50 (Cutánea) > 2500 mg/kg Rabbit (Calcium Dihydroxide)

CORROSIÓN O IRRITACIÓN CUTÁNEAS

Provoca irritación cutánea

LESIONES OCULARES GRAVES O IRRITACIÓN OCULAR

Provoca lesiones oculares graves

SENSIBILIZACIÓN RESPIRATORIA O CUTÁNEA

Sensibilizante para la piel

MUTAGENICIDAD EN CÉLULAS GERMINALES

No responde a los criterios de clasificación para esta clase de peligro

CARCINOGENICIDAD

No responde a los criterios de clasificación para esta clase de peligro

TOXICIDAD PARA LA REPRODUCCIÓN

No responde a los criterios de clasificación para esta clase de peligro

TOXICIDAD ESPECÍFICA EN DETERMINADOS ÓRGANOS (STOT) - EXPOSICIÓN ÚNICA

Puede irritar las vías respiratorias

TOXICIDAD ESPECÍFICA EN DETERMINADOS ÓRGANOS (STOT) - EXPOSICIÓN REPETIDA

No responde a los criterios de clasificación para esta clase de peligro

PELIGRO POR ASPIRACIÓN

No responde a los criterios de clasificación para esta clase de peligro

**SECCIÓN 12. Información ecológica****12.1. Toxicidad**

Cal hidratada  
LC50 - Marine water fish = 457 mg/l; NOEC = 2000 mg/kg; NOEC = 1080 mg/kg (21d)

Óxido de Calcio  
LC50 - Marine water fish = 457 mg/l; NOEC = 2000 mg/kg; NOEC = 1080 mg/kg (21d)

Cal hidratada  
LC50 - Peces 50,6 mg/l/96h (pesci d'acqua dolce)  
EC50 - Crustáceos 49,1 mg/l/48h  
EC50 - Algas / Plantas Acuáticas 184,57 mg/l/72h

**SECCIÓN 12. Información ecológica ... / >>**

NOEC crónica crustáceos	32 mg/l 14d
NOEC crónica algas / plantas acuáticas	48 mg/l 72h
Óxido de Calcio	
LC50 - Peces	50,6 mg/l/96h freshwater fish (Calcium Dihydroxide)
EC50 - Crustáceos	49,1 mg/l/48h (Calcium Dihydroxide)
EC50 - Algas / Plantas Acuáticas	184,57 mg/l/72h (Calcium Dihydroxide)
NOEC crónica crustáceos	32 mg/l 14d (Calcium Dihydroxide)
NOEC crónica algas / plantas acuáticas	48 mg/l 72h (Calcium Dihydroxide)

**12.2. Persistencia y degradabilidad**

Clinker de cemento Portland  
Degradabilidad: dato no disponible

**12.3. Potencial de bioacumulación**

Información no disponible.

**12.4. Movilidad en el suelo**

Información no disponible.

**12.5. Resultados de la valoración PBT y mPmB**

Sobre la base de los datos disponibles, el producto no contiene sustancias PBT o vPvB en porcentaje superior al 0,1%.

**12.6. Otros efectos adversos**

Información no disponible.

**SECCIÓN 13. Consideraciones relativas a la eliminación****13.1. Métodos para el tratamiento de residuos**

Reutilizar si es posible. Los deshechos del producto tienen que considerarse especialmente peligrosos. La peligrosidad de los residuos que contiene en parte este producto debe valorarse en función de las disposiciones legislativas vigentes.

La eliminación debe encargarse a una sociedad autorizada para la gestión de basuras, según cuanto dispuesto por la normativa nacional y eventualmente local.

EMBALAJES CONTAMINADOS

Los embalajes contaminados deben enviarse a la recuperación o eliminación según las normas nacionales sobre la gestión de residuos.

**SECCIÓN 14. Información relativa al transporte**

El producto no debe ser considerada peligrosa según las disposiciones vigentes en lo que concierne al transporte de mercancías peligrosas por carretera (A.D.R.), ferrocarril (RID), mar (IMDG Code) y vía aérea (IATA).

**14.1. Número ONU**

No aplicable

**14.2. Designación oficial de transporte de las Naciones Unidas**

No aplicable

**14.3. Clase(s) de peligro para el transporte**

No aplicable

**14.4. Grupo de embalaje**

No aplicable

**14.5. Peligros para el medio ambiente**

No aplicable

**14.6. Precauciones particulares para los usuarios**

No aplicable



**SECCIÓN 14. Información relativa al transporte ... / >>****14.7. Transporte a granel con arreglo al anexo II del Convenio MARPOL y el Código IBC**

Información no pertinente.

**SECCIÓN 15. Información reglamentaria****15.1. Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla**Categoría Seveso - Directivo 2012/18/CE: NingunaRestricciones relativas al producto o a las sustancias contenidas según el anexo XVII Reglamento (CE) 1907/2006Producto

Punto 40

Sustancias contenidasPunto 47 Clinker de cemento Portland  
Nº Reg.: Esente (Reg. 1907/2006 all. V.7)Sustancias en Candidate List (Art. 59 REACH)

Sobre la base de los datos disponibles, el producto no contiene sustancias SVHC en porcentaje superior al 0,1%.

Sustancias sujetas a autorización (Anexo XIV REACH)

Ninguna

Sustancias sujetas a obligación de notificación de exportación Reg. (CE) 649/2012:

Ninguna

Sustancias sujetas a la Convención de Rotterdam:

Ninguna

Sustancias sujetas a la Convención de Estocolmo:

Ninguna

Controles sanitarios

Los trabajadores expuestos a este agente químico no deben ser sometidos a la vigilancia sanitaria, siempre y cuando los resultados de la evaluación de los riesgos demuestren que existe sólo un moderado riesgo para la seguridad y la salud de los trabajadores y que las medidas previstas por la directiva 98/24/CE estén siendo respetadas y sean suficientes para reducir el riesgo.

La venta y el uso del cemento están sujetos a una restricción sobre el contenido del cromo (VI) soluble (REACH Anexo XVII, apartado 47, compuestos de cromo VI):

- 1) el cemento y las mezclas que contienen cemento no pueden ser comercializados ni utilizados si contienen, una vez hidratados, más de 2 mg/kg (0,0002 %) de Cromo (VI) soluble sobre el peso total seco del cemento.
- 2) Cuando se utilizan agentes reductores, sin perjuicio de la aplicación de otras disposiciones comunitarias sobre la clasificación, embalaje y etiquetado de sustancias y mezclas, los proveedores deberán garantizar, antes de la comercialización, que el embalaje del cemento o de las mezclas que contienen cemento estén marcados de manera visible, legible e indeleble con la información sobre la fecha de embalaje, así como las condiciones de almacenamiento y el período de almacenamiento adecuado para mantener la actividad del agente reductor y para mantener el contenido de Cromo (VI) soluble por debajo del límite indicado en el apartado 1.
- 3) No obstante lo dispuesto, los apartados 1 y 2 no se aplicarán para la comercialización y el uso en procesos totalmente automatizados, controlados de cerca, donde el cemento y las mezclas que contienen cemento sean manipulados exclusivamente con máquinas y donde exista la posibilidad de contacto con la piel.

**15.2. Evaluación de la seguridad química**

Ha sido realizada una evaluación de seguridad química para las siguientes sustancias contenidas:

Cal hidratada  
Óxido de Calcio**SECCIÓN 16. Otra información**

Texto de las indicaciones de peligro (H) citadas en la secciones 2-3 de la ficha:

<b>Eye Dam. 1</b>	Lesiones oculares graves, categoría 1
<b>Skin Irrit. 2</b>	Irritación cutáneas, categoría 2
<b>STOT SE 3</b>	Toxicidad específica en determinados órganos - exposiciones única, categoría 3
<b>Skin Sens. 1B</b>	Sensibilización cutánea, categoría 1B
<b>H318</b>	Provoca lesiones oculares graves.
<b>H315</b>	Provoca irritación cutánea.
<b>H335</b>	Puede irritar las vías respiratorias.
<b>H317</b>	Puede provocar una reacción alérgica en la piel.

**SECCIÓN 16. Otra información ... / >>**

- LEYENDA:- ADR: Acuerdo europeo para el transporte de las mercancías peligrosas por carretera
- CAS NUMBER: Número del Chemical Abstract Service
  - CE50: Concentración que tiene efecto sobre el 50 % de la población sometida a prueba
  - CE NUMBER: Número identificativo en ESIS (archivo europeo de las sustancias existentes)
  - CLP: Reglamento CE 1272/2008
  - DNEL: Nivel derivado sin efecto
  - EmS: Emergency Schedule
  - GHS: Sistema armonizado global para la clasificación y el etiquetado de los productos químicos
  - IATA DGR: Reglamento para el transporte de mercancías peligrosas de la Asociación internacional de transporte aéreo
  - IC50: Concentración de inmovilización del 50 % de la población sometida a prueba
  - IMDG: Código marítimo internacional para el transporte de mercancías peligrosas
  - IMO: International Maritime Organization
  - INDEX NUMBER: Número identificativo en el anexo VI del CLP
  - LC50: Concentración letal 50 %
  - LD50: Dosis letal 50 %
  - OEL: Nivel de exposición ocupacional
  - PBT: Persistente, bioacumulable y tóxico según el REACH
  - PEC: Concentración ambiental previsible
  - PEL: Nivel previsible de exposición
  - PNEC: Concentración previsible sin efectos
  - REACH: Reglamento CE 1907/2006
  - RID: Reglamento para el transporte internacional de mercancías peligrosas por ferrocarril
  - TLV: Valor límite de umbral
  - TLV VALOR MÁXIMO: Concentración que no se debe superar en ningún momento de la exposición laboral.
  - TWA STEL: Límite de exposición a corto plazo
  - TWA: Límite de exposición media ponderada
  - VOC: Compuesto orgánico volátil
  - vPvB: Muy persistente y muy bioacumulable según el REACH
  - WGK: Wassergefährdungsklassen (Deutschland).

**BIBLIOGRAFÍA GENERAL:**

1. Reglamento (CE) 1907/2006 del Parlamento Europeo (REACH)
  2. Reglamento (CE) 1272/2008 del Parlamento Europeo (CLP)
  3. Reglamento (UE) 790/2009 del Parlamento Europeo (I Atp. CLP)
  4. Reglamento (UE) 2015/830 del Parlamento Europeo
  5. Reglamento (UE) 286/2011 del Parlamento Europeo (II Atp. CLP)
  6. Reglamento (UE) 618/2012 del Parlamento Europeo (III Atp. CLP)
  7. Reglamento (UE) 487/2013 del Parlamento Europeo (IV Atp. CLP)
  8. Reglamento (UE) 944/2013 del Parlamento Europeo (V Atp. CLP)
  9. Reglamento (UE) 605/2014 del Parlamento Europeo (VI Atp. CLP)
  10. Reglamento (UE) 2015/1221 del Parlamento Europeo (VII Atp. CLP)
  11. Reglamento (UE) 2016/918 del Parlamento Europeo (VIII Atp. CLP)
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  15. Reglamento (UE) 2018/1480 (XIII Atp. CLP)
  16. Reglamento (UE) 2019/521 (XII Atp. CLP)
- The Merck Index. - 10th Edition
  - Handling Chemical Safety
  - INRS - Fiche Toxicologique (toxicological sheet)
  - Patty - Industrial Hygiene and Toxicology
  - N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
  - Sitio web IFA GESTIS
  - Sitio web Agencia ECHA
  - Banco de datos de modelos de SDS de sustancias químicas - Ministerio de Salud e Instituto Superior de Sanidad

**Nota para el usuario:**

La información contenida en esta ficha se basa en los conocimientos disponibles hasta la fecha de la última versión. El usuario debe cerciorarse de la idoneidad y completeza de la información en lo que se refiere al específico uso del producto.

Este documento no debe ser interpretado como garantía de alguna propiedad específica del producto.

Visto que la utilización del producto no puede ser controlada directamente por nosotros, será obligación del usuario respetar, bajo su responsabilidad, las leyes y las disposiciones vigentes en lo que se refiere a higiene y seguridad. No se asumen responsabilidades por usos inadecuados.

Ofrezca una adecuada formación al personal encargado del uso de productos químicos.

**SECCIÓN 16. Otra información ... / >>**

La clasificación del producto se basa en los métodos de cálculo previstos en el Anexo I de la CLP, a menos que se especifique lo contrario en las secciones 11 y 12. Los métodos de evaluación de las propiedades químico-físicas se indican en la sección 9.

Modificaciones con respecto a la revisión precedente:

Han sido realizadas variaciones en las siguientes secciones:

01 / 02 / 03 / 08 / 09 / 11 / 12 / 15.

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## EXPOSURE SCENARIOS

The current document includes all relevant occupational and environmental exposure scenarios (ES) for the production and use of calcium oxide as required under the REACH Regulation (Regulation (EC) No 1907/2006). For the development of the ES the Regulation and the relevant REACH Guidance have been considered. For the description of the covered uses and processes, the "R.12 – Use descriptor system" guidance (Version: 2, March 2010, ECHA-2010-G-05-EN), for the description and implementation of risk management measures (RMM) the "R.13 – Risk management measures" guidance (Version: 1.1, May 2008), for the occupational exposure estimation the "R.14 – Occupational exposure estimation" guidance (Version: 2, May 2010, ECHA-2010-G-09-EN) and for the actual environmental exposure assessment the "R.16 – Environmental Exposure Assessment" (Version: 2, May 2010, ECHA-10-G-06-EN) was used.

### **Methodology used for environmental exposure assessment**

The environmental exposure scenarios only address the assessment at the local scale, including municipal sewage treatment plants (STPs) or industrial waste water treatment plants (WWTPs) when applicable, for industrial and professional uses as any effects that might occur is expected to take place on a local scale.

#### 1) Professional uses (local scale)

The exposure and risk assessment is only relevant for the aquatic and terrestrial environment. The aquatic effect and risk assessment is determined by the pH effect. Nevertheless, the classical risk characterisation ratio (RCR), based on PEC (predicted environmental concentration) and PNEC (predicted no effect concentration) is calculated. The professional uses on a local scale refer to applications on agricultural or urban soil. The environmental exposure is assessed based on data and a modelling tool. The modelling FOCUS/ Exposit tool is used to assess terrestrial and aquatic exposure (typically conceived for biocidal applications).

Details and scaling approach indications are reported in the specific scenarios.

### **Methodology used for occupational exposure assessment**

By definition an exposure scenario (ES) has to describe under which operational conditions (OC) and risk management measure (RMMs) the substance can be handled safely. This is demonstrated if the estimated exposure level is below the respective derived no-effect level (DNEL), which is expressed in the risk characterisation ratio (RCR).

For workers, the repeated dose DNEL for inhalation as well as the acute DNEL for inhalation are based on the respective recommendations of the scientific committee on occupational exposure limits (SCOEL) being 1 mg/m<sup>3</sup> and 4 mg/m<sup>3</sup>, respectively.

In cases where neither measured data nor analogous data are available, occupational exposure is assessed with the aid of a modelling tool. At the first tier screening level, the MEASE tool (<http://www.ebrc.de/mease.html>) is used to assess inhalation exposure according to the ECHA guidance (R.14).

Since the SCOEL recommendation refers to respirable dust while the exposure estimates in MEASE reflect the inhalable fraction, an additional safety margin is inherently included in the exposure scenarios below when MEASE has been used to derive exposure estimates.

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**Methodology used for consumer exposure assessment**

By definition an ES has to describe under which conditions the substances, preparation or articles can be handled safely. In cases where neither measured data nor analogous data are available, exposure is assessed with the aid of a modelling tool.

For consumers, the repeated dose DNEL for inhalation as well as the acute DNEL for inhalation are based on the respective recommendations of the Scientific Committee on Occupational Exposure Limits (SCOEL), being 1 mg/m<sup>3</sup> and 4 mg/m<sup>3</sup>, respectively.

For inhalation exposure to powders the data, derived from van Hemmen (van Hemmen, 1992: Agricultural pesticide exposure data bases for risk assessment. Rev Environ Contam Toxicol. 126: 1-85.), has been used to calculate the inhalation exposure. The inhalation exposure for consumers is estimated at 15 µg/hr or 0.25 µg/min. For larger tasks the inhalation exposure is expected to be higher. A factor of 10 is suggested when the product amount exceeds 2.5 kg, resulting in the inhalation exposure of 150 µg/hr. To convert these values in mg/m<sup>3</sup> a default value of 1.25 m<sup>3</sup>/hr for the breathing volume under light working conditions will be assumed (van Hemmen, 1992) giving 12 µg/m<sup>3</sup> for small tasks and 120 µg/m<sup>3</sup> for larger tasks.

When the preparation or substance is applied in granular form or as tablets, reduced exposure to dust was assumed. To take this into account if data about particle size distribution and attrition of the granule are lacking, the model for powder formulations is used, assuming a reduction in dust formation by 10 % according to Becks and Falks (Manual for the authorisation of pesticides. Plant protection products. Chapter 4 Human toxicology; risk operator, worker and bystander, version 1.0., 2006).

For dermal exposure and exposure to the eye a qualitative approach has been followed, as no DNEL could be derived for this route due to the irritating properties of calcium oxide. Oral exposure was not assessed as this is not a foreseeable route of exposure regarding the uses addressed.

Since the SCOEL recommendation refers to respirable dust while the exposure estimates by the model from van Hemmen reflect the inhalable fraction, an additional safety margin is inherently included in the exposure scenarios below, i.e. the exposure estimates are very conservative.

The exposure assessment of calcium oxide professional and industrial and consumer use is performed and organized based on several scenarios. An overview of the scenarios and the coverage of substance life cycle is presented in Table 1.

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

ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.1	Manufacture and industrial uses of aqueous solutions of lime substances	X	X	X		X	1	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b
9.2	Manufacture and industrial uses of low dusty solids/powders of lime substances	X	X	X		X	2	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b
9.3	Manufacture and industrial uses of medium dusty solids/powders of lime substances	X	X	X		X	3	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.4	Manufacture and industrial uses of high dusty solids/powders of lime substances	X	X	X	X	4	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 11a	
9.5	Manufacture and industrial uses of massive objects containing lime substances	X	X	X	X	5	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	6, 14, 21, 22, 23, 24, 25	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b	
9.6	Professional uses of aqueous solutions of lime substances		X	X	X	6	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 12, 13, 15, 16, 17, 18, 19	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f	
9.7	Professional uses of low dusty solids/powders of lime substances		X	X	X	7	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 21, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f	

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.8	Professional uses of medium dusty solids/powders of lime substances		X	X		X	8	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b
9.9	Professional uses of high dusty solids/powders of lime substances		X	X		X	9	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f
9.10	Professional use of lime substances in soil treatment		X	X			10	22	9b	5, 8b, 11, 26		2, 8a, 8b, 8c, 8d, 8e, 8f



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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	Linked to Identified Use	Sector of use category (SU)	Chemical Category (PC) Product	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer							
9.11	Professional uses of articles/containers containing lime substances			X		X	11	22: 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24		0, 21, 24, 25	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	10a, 11a, 11b, 12a, 12b
9.12	Consumer use of building and construction material (DIY)				X		X	21	9b, 9a			8
9.13	Consumer use of CO <sub>2</sub> absorbent in breathing apparatuses				X		X	21	2			8
9.14	Consumer use of garden lime/fertilizer				X		X	21	20, 12			8e

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	Linked to Identified Use	Sector of use category (SU)	Chemical Category (PC) Product	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer							
9.15	Consumer use of lime substances as water treatment chemicals in aquaria				X	X	21	20, 37			8	
9.16	Consumer use of cosmetics containing lime substances				X	X	21	39			8	

## ES number 9.9: Professional uses of high dusty solids/powders of lime substances

Exposure Scenario Format (1) addressing uses carried out by workers		
1. Title		
<b>Free short title</b>	Professional uses of high dusty solids/powders of lime substances	
<b>Systematic title based on use descriptor</b>	SU22, SU1, SU5, SU6a, SU6b, SU7, SU10, SU11, SU12, SU13, SU16, SU17, SU18, SU19, SU20, SU23, SU24 PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC39, PC40 AC1, AC2, AC3, AC4, AC5, AC6, AC7, AC8, AC10, AC11, AC13 (appropriate PROCs and ERCs are given in Section 2 below)	
<b>Processes, tasks and/or activities covered</b>	Processes, tasks and/or activities covered are described in Section 2 below.	
<b>Assessment Method</b>	The assessment of inhalation exposure is based on the exposure estimation tool MEASE. The environmental assessment is based on FOCUS-Exposit.	
2. Operational conditions and risk management measures		
PROC/ERC	REACH definition	Involved tasks
PROC 2	Use in closed, continuous process with occasional controlled exposure	Further information is provided in the ECHA Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (ECHA-2010-G-05-EN).
PROC 3	Use in closed batch process (synthesis or formulation)	
PROC 4	Use in batch and other process (synthesis) where opportunity for exposure arises	
PROC 5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	
PROC 8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	
PROC 8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
PROC 9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
PROC 10	Roller application or brushing	
PROC 11	Non industrial spraying	
PROC 13	Treatment of articles by dipping and pouring	
PROC 15	Use as laboratory reagent	
PROC 16	Using material as fuel sources, limited exposure to unburned product to be expected	
PROC 17	Lubrication at high energy conditions and in partly open process	
PROC 18	Greasing at high energy conditions	
PROC 19	Hand-mixing with intimate contact and only PPE available	
PROC 25	Other hot work operations with metals	
PROC 26	Handling of solid inorganic substances at ambient temperature	
ERC2, ERC8b, ERC8d, ERC8f	ERC8a, ERC8c, ERC8e, Wide dispersive indoor and outdoor use of reactive substances or processing aids in open systems	

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2.1 Control of workers exposure					
<b>Product characteristic</b>					
According to the MEASE approach, the substance-intrinsic emission potential is one of the main exposure determinants. This is reflected by an assignment of a so-called fugacity class in the MEASE tool. For operations conducted with solid substances at ambient temperature the fugacity is based on the dustiness of that substance. Whereas in hot metal operations, fugacity is temperature based, taking into account the process temperature and the melting point of the substance. As a third group, high abrasive tasks are based on the level of abrasion instead of the substance intrinsic emission potential.					
<b>PROC</b>	<b>Use in preparation</b>	<b>Content preparation</b>	<b>in</b>	<b>Physical form</b>	<b>Emission potential</b>
<b>All applicable PROCs</b>	not restricted			solid/powder	high
<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 4, 5, 8a, 8b, 9, 10, 16, 17, 18, 19, 26</b>	≤ 240 minutes				
<b>PROC 11</b>	≤ 60 minutes				
<b>All other applicable PROCs</b>	480 minutes (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>					
Operational conditions like process temperature and process pressure are not considered relevant for occupational exposure assessment of the conducted processes. In process steps with considerably high temperatures (i.e. PROC 22, 23, 25), the exposure assessment in MEASE is however based on the ratio of process temperature and melting point. As the associated temperatures are expected to vary within the industry the highest ratio was taken as a worst case assumption for the exposure estimation. Thus all process temperatures are automatically covered in this exposure scenario for PROC 22, 23 and PROC 25.					
<b>Technical conditions and measures at process level (source) to prevent release</b>					
Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in the processes.					
<b>Technical conditions and measures to control dispersion from source towards the worker</b>					
<b>PROC</b>	<b>Level of separation</b>	<b>Localised controls (LC)</b>	<b>Efficiency of LC (according to MEASE)</b>	<b>Further information</b>	
<b>PROC 4, 5, 8a, 8b, 9, 11, 16, 26</b>	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.	generic local exhaust ventilation	72 %	-	
<b>PROC 17, 18</b>		integrated local exhaust ventilation	87 %	-	
<b>PROC 19</b>		not applicable	na	only in well ventilated rooms or outdoors (efficiency 50 %)-	
<b>All other applicable PROCs</b>		not required	na	-	
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>					
Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure a safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no eating and smoking at the workplace, the wearing of standard working clothes and shoes unless otherwise stated below. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home. Do not blow dust off with compressed air.					

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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)
PROC 9, 26	FFP1 mask	APF=4	Since calcium oxide is classified as irritating to skin, the use of protective gloves is mandatory for all process steps.	Eye protection equipment (e.g. goggles or visors) 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.
PROC 11, 17, 18, 19	FFP3 mask	APF=20		
PROC 25	FFP2 mask	APF=10		
All other applicable PROCs	FFP2 mask	APF=10		

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.

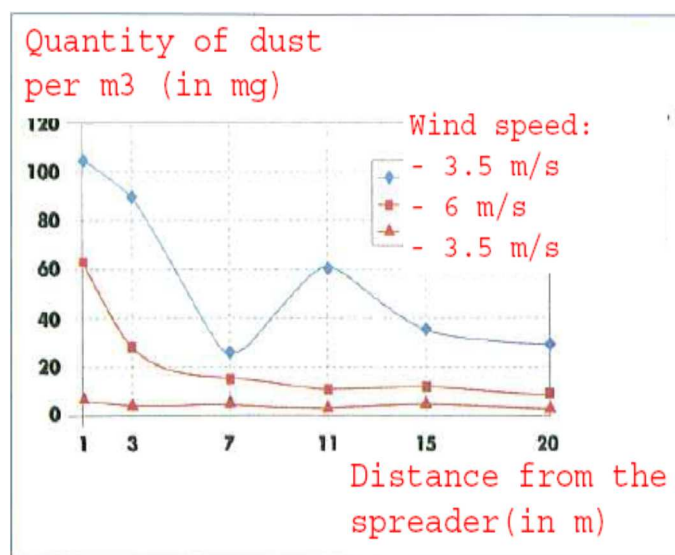
The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including 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 – only relevant for agricultural soil protection

### Product characteristics

Drift: 1% (very worst-case estimate based on data from dust measurements in air as a function of the distance from application)



(Figure taken from: Laudet, A. et al., 1999)

### Amounts used

CaO 1,700 kg/ha

### Frequency and duration of use

1 day/year (one application per year). Multiple applications during the year are allowed, provided the total yearly amount of 1,700 kg/ha is not exceeded (CaO)

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<b>Environment factors not influenced by risk management</b>																													
Volume of surface water: 300 L/m <sup>2</sup> Field surface area: 1 ha																													
<b>Other given operational conditions affecting environmental exposure</b>																													
Outdoor use of products Soil mixing depth: 20 cm																													
<b>Technical conditions and measures at process level (source) to prevent release</b>																													
There are no direct releases to adjacent surface waters.																													
<b>Technical conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>																													
Drift should be minimised.																													
<b>Organizational measures to prevent/limit release from site</b>																													
In line with the requirements for good agricultural practice, agricultural soil should be analysed prior to application of lime and the application rate should be adjusted according to the results of the analysis.																													
<b>2.2 Control of environmental exposure – only relevant for urban soil treatment</b>																													
<b>Product characteristics</b>																													
Drift: 1% (very worst-case estimate based on data from dust measurements in air as a function of the distance from application)																													
<table border="1"> <caption>Quantity of dust per m<sup>3</sup> (in mg)</caption> <thead> <tr> <th>Distance from the spreader (in m)</th> <th>3.5 m/s (top)</th> <th>6 m/s (middle)</th> <th>3.5 m/s (bottom)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>105</td> <td>65</td> <td>10</td> </tr> <tr> <td>3</td> <td>90</td> <td>30</td> <td>10</td> </tr> <tr> <td>7</td> <td>25</td> <td>15</td> <td>10</td> </tr> <tr> <td>11</td> <td>60</td> <td>10</td> <td>10</td> </tr> <tr> <td>15</td> <td>35</td> <td>10</td> <td>10</td> </tr> <tr> <td>20</td> <td>30</td> <td>10</td> <td>10</td> </tr> </tbody> </table>		Distance from the spreader (in m)	3.5 m/s (top)	6 m/s (middle)	3.5 m/s (bottom)	1	105	65	10	3	90	30	10	7	25	15	10	11	60	10	10	15	35	10	10	20	30	10	10
Distance from the spreader (in m)	3.5 m/s (top)	6 m/s (middle)	3.5 m/s (bottom)																										
1	105	65	10																										
3	90	30	10																										
7	25	15	10																										
11	60	10	10																										
15	35	10	10																										
20	30	10	10																										
(Figure taken from: Laudet, A. et al., 1999)																													
<b>Amounts used</b>																													
CaO	180,000 kg/ha																												
<b>Frequency and duration of use</b>																													
1 day/year and only once in a lifetime. Multiple applications during the year are allowed, provided the total yearly amount of 180,000 kg/ha is not exceeded (CaO)																													
<b>Environment factors not influenced by risk management</b>																													
Field surface area: 1 ha																													
<b>Other given operational conditions affecting environmental exposure</b>																													
Outdoor use of products Soil mixing depth: 20 cm																													
<b>Technical conditions and measures at process level (source) to prevent release</b>																													
Lime is only applied onto the soil in the technosphere zone before road construction. There are no direct releases to adjacent surface waters.																													

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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil				
Drift should be minimised.				
3. Exposure estimation and reference to its source				
Occupational exposure				
The exposure estimation tool MEASE was used for the assessment of inhalation exposure. The risk characterisation ratio (RCR) is the quotient of the refined exposure estimate and the respective DNEL (derived no-effect level) and has to be below 1 to demonstrate a safe use. For inhalation exposure, the RCR is based on the DNEL for calcium oxide of 1 mg/m <sup>3</sup> (as respirable dust) and the respective inhalation exposure estimate derived using MEASE (as inhalable dust). Thus, the RCR includes an additional safety margin since the respirable fraction being a sub-fraction of the inhalable fraction according to EN 481.				
PROC	Method used for inhalation exposure assessment	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
PROC 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15, 16, 17, 18, 19, 25, 26	MEASE	<1 mg/m <sup>3</sup> (0.5 – 0.825)	Since calcium oxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.	
Environmental exposure for agricultural soil protection				
The PEC calculation for soil and surface water was based on the FOCUS soil group (FOCUS, 1996) and on the "draft guidance on the calculation of predicted environmental concentration values (PEC) of plant protection products for soil, ground water, surface water and sediment (Kloskowksi et al., 1999). The FOCUS/EXPOSIT modelling tool is preferred to the EUSES as it is more appropriate for agricultural-like application as in this case where parameter as the drift needs to be included in the modelling. FOCUS is a model typically developed for biocidal applications and was further elaborated on the basis of the German EXPOSIT 1.0 model, where parameters such as drifts can be improved according to collected data: once applied on the soil, calcium oxide can indeed migrate then towards surface waters, via drift.				
Environmental emissions	See amounts used			
Exposure concentration in waste water treatment plant (WWTP)	Not relevant for agricultural soil protection			
Exposure concentration in aquatic pelagic compartment	Substance	PEC (ug/L)	PNEC (ug/L)	RCR
	CaO	5.66	370	0.015
Exposure concentration in sediments	As described above, no exposure of surface water nor sediment to lime is expected. Further, in natural waters the hydroxide ions react with HCO <sub>3</sub> <sup>-</sup> to form water and CO <sub>3</sub> <sup>2-</sup> . CO <sub>3</sub> <sup>2-</sup> forms CaCO <sub>3</sub> by reacting with Ca <sup>2+</sup> . The calcium carbonate precipitates and deposits on the sediment. Calcium carbonate is of low solubility and a constituent of natural soils.			
Exposure concentrations in soil and groundwater	Substance	PEC (mg/L)	PNEC (mg/L)	RCR
	CaO	500	816	0.61
Exposure concentration in atmospheric compartment	This point is not relevant. Calcium oxide is not volatile. The vapour pressures is below 10 <sup>-5</sup> Pa.			
Exposure concentration relevant for the food chain (secondary poisoning)	This point is not relevant because calcium can be considered to be omnipresent and essential in the environment. The uses covered do not significantly influence the distribution of the constituents (Ca <sup>2+</sup> and OH <sup>-</sup> ) in the environment.			

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<b>Environmental exposure for urban soil treatment</b>				
<p>The urban soil treatment scenario is based on a road border scenario. At the special road border technical meeting (Ispra, September 5, 2003), EU Member States and industry agreed on a definition for a "road technosphere". The road technosphere can be defined as "the engineered environment that carries the geotechnical functions of the road in connection with its structure, operation and maintenance including the installations to ensure road safety and manage run off. This technosphere, which includes the hard and soft shoulder at the edge of the carriageway, is vertically dictated by the groundwater watertable. The road authority has responsibility for this road technosphere including road safety, road support, prevention of pollution and water management". The road technosphere was therefore excluded as assessment endpoint for risk assessment for the purpose of the existing/new substances regulations. The target zone is the zone beyond the technosphere, to which the environmental risk assessment applies.</p> <p>The PEC calculation for soil was based on the FOCUS soil group (FOCUS, 1996) and on the "draft guidance on the calculation of predicted environmental concentration values (PEC) of plant protection products for soil, ground water, surface water and sediment (Kloskowski et al., 1999). The FOCUS/EXPOSIT modelling tool is preferred to the EUSES as it is more appropriate for agricultural-like application as in this case where parameter as the drift needs to be included in the modelling. FOCUS is a model typically developed for biocidal applications and was further elaborated on the basis of the German EXPOSIT 1.0 model, where parameters such as drifts can be improved according to collected data.</p>				
<b>Environmental emissions</b>	See amounts used			
<b>Exposure concentration in waste water treatment plant (WWTP)</b>	Not relevant for road border scenario			
<b>Exposure concentration in aquatic pelagic compartment</b>	Not relevant for road border scenario			
<b>Exposure concentration in sediments</b>	Not relevant for road border scenario			
<b>Exposure concentrations in soil and groundwater</b>	<b>Substance</b>	<b>PEC (mg/L)</b>	<b>PNEC (mg/L)</b>	<b>RCR</b>
	CaO	529	816	0.65
<b>Exposure concentration atmospheric compartment</b>	This point is not relevant. Calcium oxide is not volatile. The vapour pressures is below $10^{-5}$ Pa.			
<b>Exposure concentration relevant for the food chain (secondary poisoning)</b>	This point is not relevant because calcium can be considered to be omnipresent and essential in the environment. The uses covered do not significantly influence the distribution of the constituents ( $Ca^{2+}$ and OH <sup>-</sup> ) in the environment.			
<b>Environmental exposure for other uses</b>				
<p>For all other uses, no quantitative environmental exposure assessment is carried because</p> <ul style="list-style-type: none"> <li>• The operational conditions and risk management measures are less stringent than those outlined for agricultural soil protection or urban soil treatment</li> <li>• Lime is an ingredient and chemically bound into a matrix. Releases are negligible and insufficient to cause a pH-shift in soil, wastewater or surface water</li> <li>• Lime is specifically used to release CO<sub>2</sub>-free breathable air, upon reaction with CO<sub>2</sub>. Such applications only relates to the air compartment, where the lime properties are exploited</li> <li>• Neutralisation/pH-shift is the intended use and there are no additional impacts beyond those desired.</li> </ul>				



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**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 either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as MEASE ([www.ebrc.de/mease.html](http://www.ebrc.de/mease.html)) to estimate the associated exposure. The dustiness of the substance used can be determined according to the MEASE glossary. For example, substances with a dustiness less than 2.5 % according to the Rotating Drum Method (RDM) are defined as "low dusty", substances with a dustiness less than 10 % (RDM) are defined as "medium dusty" and substances with a dustiness  $\geq 10\%$  are defined as "high dusty".

DNEL<sub>inhalation</sub>: 1 mg/m<sup>3</sup> (as respirable dust)

Important note: The DU has to be aware of the fact that apart from the long-term DNEL given above, a DNEL for acute effects exists at a level of 4 mg/m<sup>3</sup>. By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2). When using MEASE for the derivation of exposure estimates, it is noted that the exposure duration should only be reduced to half-shift as a risk management measure (leading to an exposure reduction of 40 %).

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## ES number 9.12: Consumer use of building and construction material (DIY – do it yourself)

<b>Exposure Scenario Format (2) addressing uses carried out by consumers</b>				
<b>1. Title</b>				
<b>Free short title</b>	Consumer use of building and construction material			
<b>Systematic title based on use descriptor</b>	SU21, PC9a, PC9b, ERC8c, ERC8d, ERC8e, ERC8f			
<b>Processes, tasks activities covered</b>	Handling (mixing and filling) of powder formulations Application of liquid, pasty lime preparations.			
<b>Assessment Method*</b>	Human health: A qualitative assessment has been performed for oral and dermal exposure as well as exposure to the eye. Inhalation exposure to dust has been assessed by the Dutch model (van Hemmen, 1992). Environment: A qualitative justification assessment is provided.			
<b>2. Operational conditions and risk management measures</b>				
<b>RMM</b>	No product integrated risk management measures are in place.			
<b>PC/ERC</b>	<b>Description of activity referring to article categories (AC) and environmental release categories (ERC)</b>			
PC 9a, 9b	Mixing and loading of powder containing lime substances. Application of lime plaster, putty or slurry to the walls or ceiling. Post-application exposure.			
ERC 8c, 8d, 8e, 8f	Wide dispersive indoor use resulting in inclusion into or onto a matrix Wide dispersive outdoor use of processing aids in open systems Wide dispersive outdoor use of reactive substances in open systems Wide dispersive outdoor use resulting in inclusion into or onto a matrix			
<b>2.1 Control of consumers exposure</b>				
<b>Product characteristic</b>				
<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>
Lime substance	100 %	Solid, powder	High, medium and low, depending on the kind of lime substance (indicative value from DIY <sup>1</sup> fact sheet see section 9.0.3)	Bulk in bags of up to 35 kg.
Plaster, Mortar	20-40%	Solid, powder		
Plaster, Mortar	20-40%	Pasty	-	-
Putty, filler	30-55%	Pasty, highly viscous, thick liquid	-	In tubes or buckets
Pre-mixed lime wash paint	~30%	Solid, powder	High - low (indicative value from DIY <sup>1</sup> fact sheet see section 9.0.3)	Bulk in bags of up to 35 kg.
Lime wash paint/milk of lime preparation	~ 30 %	Milk of lime preparation	-	-
<b>Amounts used</b>				
<b>Description of the preparation</b>	<b>Amount used per event</b>			
Filler, putty	250 g – 1 kg powder (2:1 powder water) Difficult to determine, because the amount is heavily dependent on the depth and size of the holes to be filled.			
Plaster/lime wash paint	~ 25 kg depending on the size of the room, wall to be treated.			
Floor/wall equalizer	~ 25 kg depending on the size of the room, wall to be equalized.			
<b>Frequency and duration of use/exposure</b>				
<b>Description of task</b>	<b>Duration of exposure per event</b>		<b>frequency of events</b>	
Mixing and loading of lime containing powder.	1.33 min (DIY <sup>1</sup> -fact sheet, RIVM, Chapter 2.4.2 Mixing and loading of powders)		2/year (DIY <sup>1</sup> fact sheet)	
Application of lime plaster, putty or slurry to the walls or ceiling	Several minutes - hours		2/year (DIY <sup>1</sup> fact sheet)	

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<b>Human factors not influenced by risk management</b>				
Description of the task	Population exposed	Breathing rate	Exposed body part	Corresponding skin area [cm <sup>2</sup> ]
Handling of powder	Adult	1.25 m <sup>3</sup> /hr	Half of both hands	430 (DIY <sup>1</sup> fact sheet)
Application of liquid, pasty lime preparations.	Adult	NR	Hands and forearms	1900 (DIY <sup>1</sup> fact sheet)
<b>Other given operational conditions affecting consumers exposure</b>				
Description of the task	Indoor/outdoor	Room volume	Air exchange rate	
Handling of powder	indoor	1 m <sup>3</sup> (personal space, small area around the user)	0.6 hr <sup>-1</sup> (unspecified room)	
Application of liquid, pasty lime preparations.	indoor	NR	NR	
<b>Conditions and measures related to information and behavioural advice to consumers</b>				
In order to avoid health damage DIYers should comply with the same strict protective measures which apply to professional workplaces:				
<ul style="list-style-type: none"> <li>• Change wet clothing, shoes and gloves immediately.</li> <li>• Protect uncovered areas of skin (arms, legs, face): there are various effective skin protection products which should be used in accordance with a skin protection plan (skin protection, cleansing and care). Cleanse the skin thoroughly after the work and apply a care product.</li> </ul>				
<b>Conditions and measures related to personal protection and hygiene</b>				
In order to avoid health damage DIYers should comply with the same strict protective measures which apply to professional workplaces:				
<ul style="list-style-type: none"> <li>• When preparing or mixing building materials, during demolition or caulking and, above all, during overhead work, wear protective goggles as well as face masks during dusty work.</li> <li>• Choose work gloves carefully. Leather gloves become wet and can facilitate burns. When working in a wet environment, cotton gloves with plastic covering (nitrile) are better. Wear gauntlet gloves during overhead work because they can considerably reduce the amount of humidity which permeates the working clothes.</li> </ul>				
<b>2.2 Control of environmental exposure</b>				
<b>Product characteristics</b>				
Not relevant for exposure assessment				
<b>Amounts used*</b>				
Not relevant for exposure assessment				
<b>Frequency and duration of use</b>				
Not relevant for exposure assessment				
<b>Environment factors not influenced by risk management</b>				
Default river flow and dilution				
<b>Other given operational conditions affecting environmental exposure</b>				
Indoor Direct discharge to the wastewater is avoided.				
<b>Conditions and measures related to municipal sewage treatment plant</b>				
Default size of municipal sewage system/treatment plant and sludge treatment technique				
<b>Conditions and measures related to external treatment of waste for disposal</b>				
Not relevant for exposure assessment				
<b>Conditions and measures related to external recovery of waste</b>				
Not relevant for exposure assessment				
<b>3. Exposure estimation and reference to its source</b>				
The risk characterisation ratio (RCR) is the quotient of the refined exposure estimate and the respective DNEL (derived no-effect level) and is given in parentheses below. For inhalation exposure, the RCR is based on the acute DNEL for lime substances of 4 mg/m <sup>3</sup> (as respirable dust) and the respective inhalation exposure estimate (as inhalable dust). Thus, the RCR includes an additional safety margin since the respirable fraction is a sub-fraction of the inhalable fraction according to EN 481. Since limes are classified as irritating to skin and eyes a qualitative assessment has been performed for dermal exposure and exposure to the eye.				

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<b>Human exposure</b>		
<b>Handling of powder</b>		
<b>Route of exposure</b>	<b>Exposure estimate</b>	<b>Method used, comments</b>
Oral	-	Qualitative assessment Oral exposure does not occur as part of the intended product use.
Dermal	small task: 0.1 µg/cm <sup>2</sup> (-) large task: 1 µg/cm <sup>2</sup> (-)	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. However, dermal contact to dust from loading of lime substances or direct contact to the lime cannot be excluded if no protective gloves are worn during application. This may occasionally result in mild irritation easily avoided by prompt rinsing with water. Quantitative assessment The constant rate model of ConsExpo has been used. The contact rate to dust formed while pouring powder has been taken from the DIY <sup>1</sup> -fact sheet (RIVM report 320104007).
Eye	Dust	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. Dust from loading of the lime substances cannot be excluded if no protective goggles are used. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.
Inhalation	Small task: 12 µg/m <sup>3</sup> (0.003) Large task: 120 µg/m <sup>3</sup> (0.03)	Quantitative assessment Dust formation while pouring the powder is addressed by using the dutch model (van Hemmen, 1992, as described in section 9.0.3.1 above).
<b>Application of liquid, pasty lime preparations.</b>		
<b>Route of exposure</b>	<b>Exposure estimate</b>	<b>Method used, comments</b>
Oral	-	Qualitative assessment Oral exposure does not occur as part of the intended product use.
Dermal	Splashes	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. However, splashes on the skin cannot be excluded if no protective gloves are worn during the application. Splashes may occasionally result in mild irritation easily avoided by immediate rinsing of the hands with water.
Eye	Splashes	Qualitative assessment If appropriate goggles are worn no exposure to the eyes needs to be expected. However, splashes into the eyes cannot be excluded if no protective goggles are worn during the application of liquid or pasty lime preparations, especially during overhead work. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.
Inhalation	-	Qualitative assessment Not expected, as the vapour pressure of limes in water is low and generation of mists or aerosols does not take place.
<b>Post-application exposure</b>		
No relevant exposure will be assumed as the aqueous lime preparation will quickly convert to calcium carbonate with carbon dioxide from the atmosphere.		
<b>Environmental exposure</b>		
Referring to the OC/RMMs related to the environment to avoid discharging lime solutions directly into municipal wastewater, the pH of the influent of a municipal wastewater treatment plant is circum-neutral and therefore, there is no exposure to the biological activity. The influent of a municipal wastewater treatment plant is often neutralized anyway and lime may even be used beneficially for pH control of acid 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.		

End of the safety data sheet

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## EXPOSURE SCENARIOS

The current document includes all relevant occupational and environmental exposure scenarios (ES) for the production and use of calcium dihydroxide as required under the REACH Regulation (Regulation (EC) No 1907/2006). For the development of the ES the Regulation and the relevant REACH Guidance have been considered. For the description of the covered uses and processes, the "R.12 – Use descriptor system" guidance (Version: 2, March 2010, ECHA-2010-G-05-EN), for the description and implementation of risk management measures (RMM) the "R.13 – Risk management measures" guidance (Version: 1.1, May 2008), for the occupational exposure estimation the "R.14 – Occupational exposure estimation" guidance (Version: 2, May 2010, ECHA-2010-G-09-EN) and for the actual environmental exposure assessment the "R.16 – Environmental Exposure Assessment" (Version: 2, May 2010, ECHA-10-G-06-EN) was used.

### **Methodology used for environmental exposure assessment**

The environmental exposure scenarios only address the assessment at the local scale, including municipal sewage treatment plants (STPs) or industrial waste water treatment plants (WWTPs) when applicable, for industrial and professional uses as any effects that might occur is expected to take place on a local scale.

#### 1) Professional uses (local scale)

The exposure and risk assessment is only relevant for the aquatic and terrestrial environment. The aquatic effect and risk assessment is determined by the pH effect. Nevertheless, the classical risk characterisation ratio (RCR), based on PEC (predicted environmental concentration) and PNEC (predicted no effect concentration) is calculated. The professional uses on a local scale refer to applications on agricultural or urban soil. The environmental exposure is assessed based on data and a modelling tool. The modelling FOCUS/ Exposit tool is used to assess terrestrial and aquatic exposure (typically conceived for biocidal applications).

Details and scaling approach indications are reported in the specific scenarios.

### **Methodology used for occupational exposure assessment**

By definition an exposure scenario (ES) has to describe under which operational conditions (OC) and risk management measure (RMMs) the substance can be handled safely. This is demonstrated if the estimated exposure level is below the respective derived no-effect level (DNEL), which is expressed in the risk characterisation ratio (RCR). For workers, the repeated dose DNEL for inhalation as well as the acute DNEL for inhalation are based on the respective recommendations of the scientific committee on occupational exposure limits (SCOEL) being 1 mg/m<sup>3</sup> and 4 mg/m<sup>3</sup>, respectively.

In cases where neither measured data nor analogous data are available, human exposure is assessed with the aid of a modelling tool. At the first tier screening level, the MEASE tool (<http://www.ebrc.de/mease.html>) is used to assess inhalation exposure according to the ECHA guidance (R.14).

Since the SCOEL recommendation refers to respirable dust while the exposure estimates in MEASE reflect the inhalable fraction, an additional safety margin is inherently included in the exposure scenarios below when MEASE has been used to derive exposure estimates.

### **Methodology used for consumer exposure assessment**

By definition an ES has to describe under which conditions the substances, preparation or articles can be handled safely. In cases where neither measured data nor analogous data are available, exposure is assessed with the aid of a modelling tool.

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For consumers, the repeated dose DNEL for inhalation as well as the acute DNEL for inhalation are based on the respective recommendations of the Scientific Committee on Occupational Exposure Limits (SCOEL), being  $1 \text{ mg/m}^3$  and  $4 \text{ mg/m}^3$ , respectively.

For inhalation exposure to powders the data, derived from van Hemmen (van Hemmen, 1992: Agricultural pesticide exposure data bases for risk assessment. Rev Environ Contam Toxicol. 126: 1-85.), has been used to calculate the inhalation exposure. The inhalation exposure for consumers is estimated at  $15 \text{ } \mu\text{g/hr}$  or  $0.25 \text{ } \mu\text{g/min}$ . For larger tasks the inhalation exposure is expected to be higher. A factor of 10 is suggested when the product amount exceeds 2.5 kg, resulting in the inhalation exposure of  $150 \text{ } \mu\text{g/hr}$ . To convert these values in  $\text{mg/m}^3$  a default value of  $1.25 \text{ m}^3/\text{hr}$  for the breathing volume under light working conditions will be assumed (van Hemmen, 1992) giving  $12 \text{ } \mu\text{g/m}^3$  for small tasks and  $120 \text{ } \mu\text{g/m}^3$  for larger tasks.

When the preparation or substance is applied in granular form or as tablets, reduced exposure to dust was assumed. To take this into account if data about particle size distribution and attrition of the granule are lacking, the model for powder formulations is used, assuming a reduction in dust formation by 10 % according to Becks and Falks (Manual for the authorisation of pesticides. Plant protection products. Chapter 4 Human toxicology; risk operator, worker and bystander, version 1.0., 2006).

For dermal exposure and exposure to the eye a qualitative approach has been followed, as no DNEL could be derived for this route due to the irritating properties of calcium oxide. Oral exposure was not assessed as this is not a foreseeable route of exposure regarding the uses addressed.

Since the SCOEL recommendation refers to respirable dust while the exposure estimates by the model from van Hemmen reflect the inhalable fraction, an additional safety margin is inherently included in the exposure scenarios below, i.e. the exposure estimates are very conservative.

The exposure assessment of calcium dihydroxide professional and industrial and consumer use is performed and organized based on several scenarios. An overview of the scenarios and the coverage of substance life cycle is presented in Table 1.

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

ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.1	Manufacture and industrial uses of aqueous solutions of lime substances	X	X	X		X	1	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b
9.2	Manufacture and industrial uses of low dusty solids/powders of lime substances	X	X	X		X	2	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b
9.3	Manufacture and industrial uses of medium dusty solids/powders of lime substances	X	X	X		X	3	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.4	Manufacture and industrial uses of high dusty solids/powders of lime substances	X	X	X		X	4	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27a, 27b	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 11a
9.5	Manufacture and industrial uses of massive objects containing lime substances	X	X	X		X	5	3; 1, 2a, 2b, 4, 5, 6a, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	6, 14, 21, 22, 23, 24, 25	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7, 12a, 12b, 10a, 10b, 11a, 11b
9.6	Professional uses of aqueous solutions of lime substances		X	X		X	6	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 12, 13, 15, 16, 17, 18, 19	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f



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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	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							
9.7	Professional uses of low dusty solids/powders of lime substances		X	X		X	7	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 21, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f
9.8	Professional uses of medium dusty solids/powders of lime substances		X	X		X	8	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b
9.9	Professional uses of high dusty solids/powders of lime substances		X	X		X	9	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24	1, 2, 3, 7, 8, 9a, 9b, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40	2, 3, 4, 5, 8a, 8b, 9, 10, 13, 15, 16, 17, 18, 19, 25, 26	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	2, 8a, 8b, 8c, 8d, 8e, 8f

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	Linked to Identified Use	Sector of use category (SU)	Chemical Category (PC) Product	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer							
9.10	Professional use of lime substances in soil treatment	X	X			10	22	9b	5, 8b, 11, 26		2, 8a, 8b, 8c, 8d, 8e, 8f	
9.11	Professional uses of articles/containers containing lime substances			X	X	11	22; 1, 5, 6a, 6b, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 23, 24		0, 21, 24, 25	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13	10a, 11a, 11b, 12a, 12b	
9.12	Consumer use of building and construction material (DIY)				X	12	21	9b, 9a			8	
9.13	Consumer use of CO <sub>2</sub> absorbent in breathing apparatuses				X	13	21	2			8	

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage Service life (for articles)	Linked to Identified Use	Sector of use category (SU)	Chemical Category (PC) Product	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer							
9.14	Consumer use of garden lime/fertilizer				X	14	21	20, 12			8e	
9.15	Consumer use of lime substances as water treatment chemicals in aquaria				X	15	21	20, 37			8	
9.16	Consumer use of cosmetics containing lime substances				X	16	21	39			8	

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## ES number 9.9: Professional uses of high dusty solids/ powders of lime substances

Exposure Scenario Format (1) addressing uses carried out by workers			
1. Title			
<b>Free short title</b>	Professional uses of high dusty solids/powders of lime substances		
<b>Systematic based on descriptor</b>	<b>title use</b>	SU22, SU1, SU5, SU6a, SU6b, SU7, SU10, SU11, SU12, SU13, SU16, SU17, SU18, SU19, SU20, SU23, SU24 PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC39, PC40 AC1, AC2, AC3, AC4, AC5, AC6, AC7, AC8, AC10, AC11, AC13 (appropriate PROCs and ERCs are given in Section 2 below)	
<b>Processes, tasks and/or activities covered</b>	Processes, tasks and/or activities covered are described in Section 2 below.		
<b>Assessment Method</b>	The assessment of inhalation exposure is based on the exposure estimation tool MEASE. The environmental assessment is based on FOCUS-Exposit.		
2. Operational conditions and risk management measures			
PROC/ERC	REACH definition	Involved tasks	
PROC 2	Use in closed, continuous process with occasional controlled exposure	Further information is provided in the ECHA Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (ECHA-2010-G-05-EN).	
PROC 3	Use in closed batch process (synthesis or formulation)		
PROC 4	Use in batch and other process (synthesis) where opportunity for exposure arises		
PROC 5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)		
PROC 8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities		
PROC 8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities		
PROC 9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)		
PROC 10	Roller application or brushing		
PROC 11	Non industrial spraying		
PROC 13	Treatment of articles by dipping and pouring		
PROC 15	Use as laboratory reagent		
PROC 16	Using material as fuel sources, limited exposure to unburned product to be expected		
PROC 17	Lubrication at high energy conditions and in partly open process		
PROC 18	Greasing at high energy conditions		
PROC 19	Hand-mixing with intimate contact and only PPE available		
PROC 25	Other hot work operations with metals		
PROC 26	Handling of solid inorganic substances at ambient temperature		
ERC2, ERC8b, ERC8d, ERC8f	ERC8a, ERC8c, ERC8e,		Wide dispersive indoor and outdoor use of reactive substances or processing aids in open systems

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## 2.1 Control of workers exposure

### Product characteristic

According to the MEASE approach, the substance-intrinsic emission potential is one of the main exposure determinants. This is reflected by an assignment of a so-called fugacity class in the MEASE tool. For operations conducted with solid substances at ambient temperature the fugacity is based on the dustiness of that substance. Whereas in hot metal operations, fugacity is temperature based, taking into account the process temperature and the melting point of the substance. As a third group, high abrasive tasks are based on the level of abrasion instead of the substance intrinsic emission potential.

PROC	Use in preparation	Content in preparation	Physical form	Emission potential
All applicable PROCs	not restricted		solid/powder	high

### 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 4, 5, 8a, 8b, 9, 10, 16, 17, 18, 19, 26	≤ 240 minutes
PROC 11	≤ 60 minutes
All other applicable PROCs	480 minutes (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

Operational conditions like process temperature and process pressure are not considered relevant for occupational exposure assessment of the conducted processes. In process steps with considerably high temperatures (i.e. PROC 22, 23, 25), the exposure assessment in MEASE is however based on the ratio of process temperature and melting point. As the associated temperatures are expected to vary within the industry the highest ratio was taken as a worst case assumption for the exposure estimation. Thus all process temperatures are automatically covered in this exposure scenario for PROC 22, 23 and PROC 25.

### Technical conditions and measures at process level (source) to prevent release

Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in the processes.

### 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 4, 5, 8a, 8b, 9, 11, 16, 26	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.	generic local exhaust ventilation	72 %	-
PROC 17, 18		integrated local exhaust ventilation	87 %	-
PROC 19		not applicable	na	only in well ventilated rooms or outdoors (efficiency 50 %)
All other applicable PROCs		not required	na	-

### Organisational measures to prevent /limit releases, dispersion and exposure

Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure a safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no eating and smoking at the workplace, the wearing of standard working clothes and shoes unless otherwise stated below. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home. Do not blow dust off with compressed air.

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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)
PROC 9, 26	FFP1 mask	APF=4	Since calcium dihydroxide is classified as irritating to skin, the use of protective gloves is mandatory for all process steps.	Eye protection equipment (e.g. goggles or visors) 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.
PROC 11, 17, 18, 19	FFP3 mask	APF=20		
PROC 25	FFP2 mask	APF=10		
All other applicable PROCs	FFP2 mask	APF=10		
<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. 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>				
<b>– only relevant for agricultural soil protection</b>				
<b>Product characteristics</b>				
Drift: 1% (very worst-case estimate based on data from dust measurements in air as a function of the distance from application)				
<p style="color: red; font-weight: bold;">Quantity of dust per m<sup>3</sup> (in mg)</p> <p style="color: red; font-weight: bold;">Wind speed:</p> <ul style="list-style-type: none"> <li>- 3.5 m/s</li> <li>- 6 m/s</li> <li>- 3.5 m/s</li> </ul> <p style="color: red; font-weight: bold;">Distance from the spreader (in m)</p>				
(Figure taken from: Laudet, A. et al., 1999)				
<b>Amounts used</b>				
Ca(OH) <sub>2</sub>	2,244 kg/ha			
<b>Frequency and duration of use</b>				
1 day/year (one application per year). Multiple applications during the year are allowed, provided the total yearly amount of 2,244 kg/ha is not exceeded (CaOH <sub>2</sub> )				

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<b>Environment factors not influenced by risk management</b>																													
Volume of surface water: 300 L/m <sup>2</sup> Field surface area: 1 ha																													
<b>Other given operational conditions affecting environmental exposure</b>																													
Outdoor use of products Soil mixing depth: 20 cm																													
<b>Technical conditions and measures at process level (source) to prevent release</b>																													
There are no direct releases to adjacent surface waters.																													
<b>Technical conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>																													
Drift should be minimised.																													
<b>Organizational measures to prevent/limit release from site</b>																													
In line with the requirements for good agricultural practice, agricultural soil should be analysed prior to application of lime and the application rate should be adjusted according to the results of the analysis.																													
<b>2.2 Control of environmental exposure – only relevant for soil treatment in civil engineering</b>																													
<b>Product characteristics</b>																													
Drift: 1% (very worst-case estimate based on data from dust measurements in air as a function of the distance from application)																													
<p>The graph plots dust quantity (mg/m<sup>3</sup>) on the y-axis (0 to 120) against distance from the spreader (m) on the x-axis (1, 3, 7, 11, 15, 20). Three data series are shown for wind speeds of 3.5 m/s (blue diamonds), 6 m/s (red squares), and 3.5 m/s (red triangles). The 3.5 m/s series (top) starts at ~105 mg/m<sup>3</sup> at 1m and drops to ~30 mg/m<sup>3</sup> at 20m. The 6 m/s series (middle) starts at ~65 mg/m<sup>3</sup> at 1m and drops to ~10 mg/m<sup>3</sup> at 20m. The 3.5 m/s series (bottom) starts at ~10 mg/m<sup>3</sup> at 1m and remains low, ending at ~5 mg/m<sup>3</sup> at 20m.</p> <table border="1"> <caption>Estimated data from the dust quantity graph</caption> <thead> <tr> <th>Distance (m)</th> <th>3.5 m/s (mg/m<sup>3</sup>)</th> <th>6 m/s (mg/m<sup>3</sup>)</th> <th>3.5 m/s (mg/m<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>105</td> <td>65</td> <td>10</td> </tr> <tr> <td>3</td> <td>90</td> <td>30</td> <td>5</td> </tr> <tr> <td>7</td> <td>25</td> <td>15</td> <td>5</td> </tr> <tr> <td>11</td> <td>60</td> <td>10</td> <td>5</td> </tr> <tr> <td>15</td> <td>35</td> <td>10</td> <td>5</td> </tr> <tr> <td>20</td> <td>30</td> <td>10</td> <td>5</td> </tr> </tbody> </table>		Distance (m)	3.5 m/s (mg/m <sup>3</sup> )	6 m/s (mg/m <sup>3</sup> )	3.5 m/s (mg/m <sup>3</sup> )	1	105	65	10	3	90	30	5	7	25	15	5	11	60	10	5	15	35	10	5	20	30	10	5
Distance (m)	3.5 m/s (mg/m <sup>3</sup> )	6 m/s (mg/m <sup>3</sup> )	3.5 m/s (mg/m <sup>3</sup> )																										
1	105	65	10																										
3	90	30	5																										
7	25	15	5																										
11	60	10	5																										
15	35	10	5																										
20	30	10	5																										
(Figure taken from: Laudet, A. et al., 1999)																													
<b>Amounts used</b>																													
Ca(OH) <sub>2</sub>	238,208 kg/ha																												
<b>Frequency and duration of use</b>																													
1 day/year and only once in a lifetime. Multiple applications during the year are allowed, provided the total yearly amount of 238,208 kg/ha is not exceeded (CaOH <sub>2</sub> )																													
<b>Environment factors not influenced by risk management</b>																													
Field surface area: 1 ha																													
<b>Other given operational conditions affecting environmental exposure</b>																													
Outdoor use of products Soil mixing depth: 20 cm																													

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Technical conditions and measures at process level (source) to prevent release				
Lime is only applied onto the soil in the technosphere zone before road construction. There are no direct releases to adjacent surface waters.				
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil				
Drift should be minimised.				
3. Exposure estimation and reference to its source				
Occupational exposure				
The exposure estimation tool MEASE was used for the assessment of inhalation exposure. The risk characterisation ratio (RCR) is the quotient of the refined exposure estimate and the respective DNEL (derived no-effect level) and has to be below 1 to demonstrate a safe use. For inhalation exposure, the RCR is based on the DNEL for calcium dihydroxide of 1 mg/m <sup>3</sup> (as respirable dust) and the respective inhalation exposure estimate derived using MEASE (as inhalable dust). Thus, the RCR includes an additional safety margin since the respirable fraction being a sub-fraction of the inhalable fraction according to EN 481.				
PROC	Method used for inhalation exposure assessment	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
PROC 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15, 16, 17, 18, 19, 25, 26	MEASE	<1 mg/m <sup>3</sup> (0.5 – 0.825)	Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. A DNEL for dermal effects has not been derived. Thus, dermal exposure is not assessed in this exposure scenario.	
Environmental exposure for agricultural soil protection				
The PEC calculation for soil and surface water was based on the FOCUS soil group (FOCUS, 1996) and on the "draft guidance on the calculation of predicted environmental concentration values (PEC) of plant protection products for soil, ground water, surface water and sediment (Kloskowksi et al., 1999). The FOCUS/EXPOSIT modelling tool is preferred to the EUSES as it is more appropriate for agricultural-like application as in this case where parameter as the drift needs to be included in the modelling. FOCUS is a model typically developed for biocidal applications and was further elaborated on the basis of the German EXPOSIT 1.0 model, where parameters such as drifts can be improved according to collected data: once applied on the soil, calcium dihydroxide can indeed migrate then towards surface waters, via drift.				
Environmental emissions	See amounts used			
Exposure concentration in waste water treatment (WWTP)	Not relevant for agricultural soil protection			
Exposure concentration in aquatic pelagic compartment	Substance	PEC (ug/L)	PNEC (ug/L)	RCR
	Ca(OH) <sub>2</sub>	7.48	490	0.015
Exposure concentration in sediments	As described above, no exposure of surface water nor sediment to lime is expected. Further, in natural waters the hydroxide ions react with HCO <sub>3</sub> <sup>-</sup> to form water and CO <sub>3</sub> <sup>2-</sup> . CO <sub>3</sub> <sup>2-</sup> forms CaCO <sub>3</sub> by reacting with Ca <sup>2+</sup> . The calcium carbonate precipitates and deposits on the sediment. Calcium carbonate is of low solubility and a constituent of natural soils.			
Exposure concentrations in soil and groundwater	Substance	PEC (mg/L)	PNEC (mg/L)	RCR
	Ca(OH) <sub>2</sub>	660	1080	0.61
Exposure concentration in atmospheric compartment	This point is not relevant. Calcium dihydroxide is not volatile. The vapour pressures is below 10 <sup>-5</sup> Pa.			
Exposure concentration relevant for the food chain (secondary poisoning)	This point is not relevant because calcium can be considered to be omnipresent and essential in the environment. The uses covered do not significantly influence the distribution of the constituents (Ca <sup>2+</sup> and OH <sup>-</sup> ) in the environment.			



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**Environmental exposure for soil treatment in civil engineering**

The soil treatment in civil engineering scenario is based on a road border scenario. At the special road border technical meeting (Ispra, September 5, 2003), EU Member States and industry agreed on a definition for a "road technosphere". The road technosphere can be defined as "the engineered environment that carries the geotechnical functions of the road in connection with its structure, operation and maintenance including the installations to ensure road safety and manage run off. This technosphere, which includes the hard and soft shoulder at the edge of the carriageway, is vertically dictated by the groundwater watertable. The road authority has responsibility for this road technosphere including road safety, road support, prevention of pollution and water management". The road technosphere was therefore excluded as assessment endpoint for risk assessment for the purpose of the existing/new substances regulations. The target zone is the zone beyond the technosphere, to which the environmental risk assessment applies.

The PEC calculation for soil was based on the FOCUS soil group (FOCUS, 1996) and on the "draft guidance on the calculation of predicted environmental concentration values (PEC) of plant protection products for soil, ground water, surface water and sediment (Kloskowski et al., 1999). The FOCUS/EXPOSIT modelling tool is preferred to the EUSES as it is more appropriate for agricultural-like application as in this case where parameter as the drift needs to be included in the modelling. FOCUS is a model typically developed for biocidal applications and was further elaborated on the basis of the German EXPOSIT 1.0 model, where parameters such as drifts can be improved according to collected data.

<b>Environmental emissions</b>	See amounts used			
<b>Exposure concentration in waste water treatment plant (WWTP)</b>	Not relevant for road border scenario			
<b>Exposure concentration in aquatic pelagic compartment</b>	Not relevant for road border scenario			
<b>Exposure concentration in sediments</b>	Not relevant for road border scenario			
<b>Exposure concentrations in soil and groundwater</b>	<b>Substance</b>	<b>PEC (mg/L)</b>	<b>PNEC (mg/L)</b>	<b>RCR</b>
	Ca(OH) <sub>2</sub>	701	1080	0.65
<b>Exposure concentration in atmospheric compartment</b>	This point is not relevant. Calcium dihydroxide is not volatile. The vapour pressures is below 10 <sup>-5</sup> Pa.			
<b>Exposure concentration relevant for the food chain (secondary poisoning)</b>	This point is not relevant because calcium can be considered to be omnipresent and essential in the environment. The uses covered do not significantly influence the distribution of the constituents (Ca <sup>2+</sup> and OH <sup>-</sup> ) in the environment.			

**Environmental exposure for other uses**

For all other uses, no quantitative environmental exposure assessment is carried because

- The operational conditions and risk management measures are less stringent than those outlined for agricultural soil protection or soil treatment in civil engineering
- Lime is an ingredient and chemically bound into a matrix. Releases are negligible and insufficient to cause a pH-shift in soil, wastewater or surface water
- Lime is specifically used to release CO<sub>2</sub>-free breathable air, upon reaction with CO<sub>2</sub>. Such applications only relates to the air compartment, where the lime properties are exploited
- Neutralisation/pH-shift is the intended use and there are no additional impacts beyond those desired.

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#### 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 either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. This has to be done by showing that they limit the inhalation and dermal exposure to a level below the respective DNEL (given that the processes and activities in question are covered by the PROCs listed above) as given below. If measured data are not available, the DU may make use of an appropriate scaling tool such as MEASE ([www.ebrc.de/mease.html](http://www.ebrc.de/mease.html)) to estimate the associated exposure. The dustiness of the substance used can be determined according to the MEASE glossary. For example, substances with a dustiness less than 2.5 % according to the Rotating Drum Method (RDM) are defined as "low dusty", substances with a dustiness less than 10 % (RDM) are defined as "medium dusty" and substances with a dustiness  $\geq 10$  % are defined as "high dusty".

DNEL<sub>inhalation</sub>: 1 mg/m<sup>3</sup> (as respirable dust)

**Important note:** The DU has to be aware of the fact that apart from the long-term DNEL given above, a DNEL for acute effects exists at a level of 4 mg/m<sup>3</sup>. By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also covered (according to R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2). When using MEASE for the derivation of exposure estimates, it is noted that the exposure duration should only be reduced to half-shift as a risk management measure (leading to an exposure reduction of 40 %).

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## ES number 9.12: Consumer use of building and construction material (DIY – do it yourself)

Exposure Scenario Format (2) addressing uses carried out by consumers				
1. Title				
<b>Free short title</b>		Consumer use of building and construction material		
<b>Systematic title based on use descriptor</b>		SU21, PC9a, PC9b, ERC8c, ERC8d, ERC8e, ERC8f		
<b>Processes, tasks activities covered</b>		Handling (mixing and filling) of powder formulations Application of liquid, pasty lime preparations.		
<b>Assessment Method*</b>		Human health: A qualitative assessment has been performed for oral and dermal exposure as well as exposure to the eye. Inhalation exposure to dust has been assessed by the Dutch model (van Hemmen, 1992). Environment: A qualitative justification assessment is provided.		
2. Operational conditions and risk management measures				
<b>RMM</b>	No product integrated risk management measures are in place.			
<b>PC/ERC</b>	<b>Description of activity referring to article categories (AC) and environmental release categories (ERC)</b>			
PC 9a, 9b	Mixing and loading of powder containing lime substances. Application of lime plaster, putty or slurry to the walls or ceiling. Post-application exposure.			
ERC 8c, 8d, 8e, 8f	Wide dispersive indoor use resulting in inclusion into or onto a matrix Wide dispersive outdoor use of processing aids in open systems Wide dispersive outdoor use of reactive substances in open systems Wide dispersive outdoor use resulting in inclusion into or onto a matrix			
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
Lime substance	100 %	Solid, powder	High, medium and low, depending on the kind of lime substance (indicative value from DIY <sup>1</sup> fact sheet see section 9.0.3)	Bulk in bags of up to 35 kg.
Plaster, Mortar	20-40%	Solid, powder		
Plaster, Mortar	20-40%	Pasty	-	-
Putty, filler	30-55%	Pasty, highly viscous, thick liquid	-	In tubes or buckets
Pre-mixed lime wash paint	~30%	Solid, powder	High - low (indicative value from DIY <sup>1</sup> fact sheet see section 9.0.3)	Bulk in bags of up to 35 kg.
Lime wash paint/milk of lime preparation	~ 30 %	Milk of lime preparation	-	-
Amounts used				
Description of the preparation	Amount used per event			
Filler, putty	250 g – 1 kg powder (2:1 powder water) Difficult to determine, because the amount is heavily dependent on the depth and size of the holes to be filled.			
Plaster/lime wash paint	~ 25 kg depending on the size of the room, wall to be treated.			
Floor/wall equalizer	~ 25 kg depending on the size of the room, wall to be equalized.			
Frequency and duration of use/exposure				
Description of task	Duration of exposure per event		frequency of events	
Mixing and loading of lime containing powder.	1.33 min (DIY <sup>1</sup> -fact sheet, RIVM, Chapter 2.4.2 Mixing and loading of powders)		2/year (DIY <sup>1</sup> fact sheet)	
Application of lime plaster, putty or slurry to the walls or ceiling	Several minutes - hours		2/year (DIY <sup>1</sup> fact sheet)	

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<b>Human factors not influenced by risk management</b>				
Description of the task	Population exposed	Breathing rate	Exposed body part	Corresponding skin area [cm <sup>2</sup> ]
Handling of powder	Adult	1.25 m <sup>3</sup> /hr	Half of both hands	430 (DIY <sup>1</sup> fact sheet)
Application of liquid, pasty lime preparations.	Adult	NR	Hands and forearms	1900 (DIY <sup>1</sup> fact sheet)
<b>Other given operational conditions affecting consumers exposure</b>				
Description of the task	Indoor/outdoor	Room volume	Air exchange rate	
Handling of powder	indoor	1 m <sup>3</sup> (personal space, small area around the user)	0.6 hr <sup>-1</sup> (unspecified room)	
Application of liquid, pasty lime preparations.	indoor	NR	NR	
<b>Conditions and measures related to information and behavioural advice to consumers</b>				
<p>In order to avoid health damage DIYers should comply with the same strict protective measures which apply to professional workplaces:</p> <ul style="list-style-type: none"> <li>• Change wet clothing, shoes and gloves immediately.</li> <li>• Protect uncovered areas of skin (arms, legs, face): there are various effective skin protection products which should be used in accordance with a skin protection plan (skin protection, cleansing and care). Cleanse the skin thoroughly after the work and apply a care product.</li> </ul>				
<b>Conditions and measures related to personal protection and hygiene</b>				
<p>In order to avoid health damage DIYers should comply with the same strict protective measures which apply to professional workplaces:</p> <ul style="list-style-type: none"> <li>• When preparing or mixing building materials, during demolition or caulking and, above all, during overhead work, wear protective goggles as well as face masks during dusty work.</li> <li>• Choose work gloves carefully. Leather gloves become wet and can facilitate burns. When working in a wet environment, cotton gloves with plastic covering (nitrile) are better. Wear gauntlet gloves during overhead work because they can considerably reduce the amount of humidity which permeates the working clothes.</li> </ul>				
<b>2.2 Control of environmental exposure</b>				
<b>Product characteristics</b>				
Not relevant for exposure assessment				
<b>Amounts used*</b>				
Not relevant for exposure assessment				
<b>Frequency and duration of use</b>				
Not relevant for exposure assessment				
<b>Environment factors not influenced by risk management</b>				
Default river flow and dilution				
<b>Other given operational conditions affecting environmental exposure</b>				
Indoor Direct discharge to the wastewater is avoided.				
<b>Conditions and measures related to municipal sewage treatment plant</b>				
Default size of municipal sewage system/treatment plant and sludge treatment technique				
<b>Conditions and measures related to external treatment of waste for disposal</b>				
Not relevant for exposure assessment				
<b>Conditions and measures related to external recovery of waste</b>				
Not relevant for exposure assessment				
<b>3. Exposure estimation and reference to its source</b>				
<p>The risk characterisation ratio (RCR) is the quotient of the refined exposure estimate and the respective DNEL (derived no-effect level) and is given in parentheses below. For inhalation exposure, the RCR is based on the acute DNEL for lime substances of 4 mg/m<sup>3</sup> (as respirable dust) and the respective inhalation exposure estimate (as inhalable dust). Thus, the RCR includes an additional safety margin since the respirable fraction is a sub-fraction of the inhalable fraction according to EN 481. Since limes are classified as irritating to skin and eyes a qualitative assessment has been performed for dermal exposure and exposure to the eye.</p>				

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<b>Human exposure</b>		
<b>Handling of powder</b>		
<b>Route of exposure</b>	<b>Exposure estimate</b>	<b>Method used, comments</b>
Oral	-	Qualitative assessment Oral exposure does not occur as part of the intended product use.
Dermal	small task: 0.1 µg/cm <sup>2</sup> (-) large task: 1 µg/cm <sup>2</sup> (-)	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. However, dermal contact to dust from loading of lime substances or direct contact to the lime cannot be excluded if no protective gloves are worn during application. This may occasionally result in mild irritation easily avoided by prompt rinsing with water. Quantitative assessment The constant rate model of ConsExpo has been used. The contact rate to dust formed while pouring powder has been taken from the DIY <sup>1</sup> -fact sheet (RIVM report 320104007).
Eye	Dust	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. Dust from loading of the lime substances cannot be excluded if no protective goggles are used. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.
Inhalation	Small task: 12 µg/m <sup>3</sup> (0.003) Large task: 120 µg/m <sup>3</sup> (0.03)	Quantitative assessment Dust formation while pouring the powder is addressed by using the dutch model (van Hemmen, 1992, as described in section 9.0.3.1 above).
<b>Application of liquid, pasty lime preparations.</b>		
<b>Route of exposure</b>	<b>Exposure estimate</b>	<b>Method used, comments</b>
Oral	-	Qualitative assessment Oral exposure does not occur as part of the intended product use.
Dermal	Splashes	Qualitative assessment If risk reduction measures are taken into account no human exposure is expected. However, splashes on the skin cannot be excluded if no protective gloves are worn during the application. Splashes may occasionally result in mild irritation easily avoided by immediate rinsing of the hands with water.
Eye	Splashes	Qualitative assessment If appropriate goggles are worn no exposure to the eyes needs to be expected. However, splashes into the eyes cannot be excluded if no protective goggles are worn during the application of liquid or pasty lime preparations, especially during overhead work. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.
Inhalation	-	Qualitative assessment Not expected, as the vapour pressure of limes in water is low and generation of mists or aerosols does not take place.
<b>Post-application exposure</b>		
No relevant exposure will be assumed as the aqueous lime preparation will quickly convert to calcium carbonate with carbon dioxide from the atmosphere.		
<b>Environmental exposure</b>		
Referring to the OC/RMMs related to the environment to avoid discharging lime solutions directly into municipal wastewater, the pH of the influent of a municipal wastewater treatment plant is circum-neutral and therefore, there is no exposure to the biological activity. The influent of a municipal wastewater treatment plant is often neutralized anyway and lime may even be used beneficially for pH control of acid 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.		

End of the safety data sheet