

## Fiche de données de sécurité

### RUBRIQUE 1. Identification de la substance/du mélange et de la société/l'entreprise

#### 1.1. Identificateur de produit

Dénomination **MALTA STRUTTURALE NHL 777**

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

Dénomination supplémentaire **Mortier naturel fibré à hautes performances mécaniques, à base de chaux hydraulique naturelle, pour l'intérieur et l'extérieur**

Utilisations Identifiées	Industrielles	Professionnelles	Consommateurs
Mortier à utiliser gâché avec de l'eau	-	✓	-

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

Raison Sociale **FASSA S.r.l.**  
 Adresse **via Lazzaris, 3**  
 Localité et Etat **31027 Spresiano (TV) ITALIA**  
 Tél. **+39 (0)422 7222**  
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Courrier de la personne compétente, personne chargée de la fiche de données de sécurité. **laboratorio.spresiano@fassabortolo.it**

#### 1.4. Numéro d'appel d'urgence

Pour renseignements urgents s'adresser à **ORFILA ( INRS): + 33 ( 0 ) 1 45 42 59 59**

### RUBRIQUE 2. Identification des dangers

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

Le produit est classé comme dangereux conformément aux dispositions du Règlement (CE) 1272/2008 (CLP) (et amendements successifs). Aussi, le produit nécessite une fiche des données de sécurité conforme aux dispositions du Règlement (CE) 1907/2006 et amendements successifs.  
 D'éventuelles informations supplémentaires relatives aux risques pour la santé et/ou pour l'environnement figurent aux sections 11 et 12 de la présente fiche.

Classification e indication de danger:		
Lésions oculaires graves, catégorie 1	H318	Provoque des lésions oculaires graves.
Irritation cutanée, catégorie 2	H315	Provoque une irritation cutanée.
Sensibilisation cutanée, catégorie 1B	H317	Peut provoquer une allergie cutanée.

#### 2.2. Éléments d'étiquetage

Etiquetage de danger conformément au Règlement (CE) 1272/2008 (CLP) et modifications et adaptations successives.

Pictogrammes de danger:



Mentions d'avertissement: **Danger**

Mentions de danger:  
**H318** Provoque des lésions oculaires graves.  
**H315** Provoque une irritation cutanée.  
**H317** Peut provoquer une allergie cutanée.

## RUBRIQUE 2. Identification des dangers ... / >>

### Conseils de prudence:

- P261** Éviter de respirer les poussières / fumées / gaz / brouillards / vapeurs / aérosols.  
**P280** Porter gants de protection et équipement de protection des yeux / du visage.  
**P302+P352** EN CAS DE CONTACT AVEC LA PEAU: laver abondamment à l'eau / . . .  
**P305+P351+P338** EN CAS DE CONTACT AVEC LES YEUX: Rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.  
**P310** Appeler immédiatement un CENTRE ANTIPOISON / un médecin  
**P501** Éliminer le contenu/réceptacle conformément à la réglementation nationale

**Contient:** Clinker de ciment Portland (blanc)  
Chaux hydraulique naturelle

### 2.3. Autres dangers

Sur la base des données disponibles, le produit ne contient pas de substances PBT ou vPvB en pourcentage supérieur à 0,1%.

Le mélange a une faible teneur en chromates. Dans la forme prête à l'emploi, après l'ajout d'eau la teneur en chrome (VI) soluble est de maximum 2 mg/kg du poids sec total. Une condition indispensable pour assurer une faible teneur en chromates est, en tout cas, un stockage correct au sec en respectant la période maximale de conservation prévue. Le pourcentage d'oxyde de silicium cristallin respirable est inférieur à 1 %. Par conséquent, le produit n'est pas soumis à l'obligation d'identification. Toutefois, l'utilisation d'une protection des voies respiratoires est conseillée.

## RUBRIQUE 3. Composition/informations sur les composants

### 3.1. Substances

Informations non pertinentes

### 3.2. Mélanges

#### Contenu:

Identification	x = Conc. %	Classification 1272/2008 (CLP)
<b>Clinker de ciment Portland (blanc)</b>		
CAS 65997-15-1	10 ≤ x < 20	<b>Eye Dam. 1 H318, Skin Irrit. 2 H315, STOT SE 3 H335, Skin Sens. 1B H317</b>
CE 266-043-4		
INDEX N° Reg. Esente (Reg. 1907/2006 all. V.7)		
<b>Chaux hydraulique naturelle</b>		
CAS 85117-09-5	5 ≤ x < 9	<b>Eye Dam. 1 H318, Skin Irrit. 2 H315, STOT SE 3 H335</b>
CE 285-561-1		
INDEX N° Reg. 01-2119475523-36		

Le texte complet des indications de danger (H) figure à la section 16 de la fiche.

## RUBRIQUE 4. Premiers secours

### 4.1. Description des premiers secours

**YEUX:** Retirer les éventuels verres de contact. Se laver immédiatement et abondamment à l'eau pendant au moins 30/60 minutes en ouvrant bien les paupières. Consulter aussitôt un médecin.  
**PEAU:** Retirer les vêtements contaminés. Prendre immédiatement une douche. Consulter aussitôt un médecin.  
**INGESTION:** Faire boire dans la plus grande quantité possible. Consulter aussitôt un médecin. Ne provoquer de vomissement que sur autorisation expresse du médecin.  
**INHALATION:** Appeler aussitôt un médecin. Amener la personne à l'air libre loin du lieu de l'accident. En cas d'arrêt respiratoire, pratiquer la respiration artificielle. Adopter les précautions appropriées pour le secouriste.

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

Aucune information spécifique n'est disponible sur les symptômes et les effets provoqués par le produit.

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

Informations non disponibles

## RUBRIQUE 5. Mesures de lutte contre l'incendie

### 5.1. Moyens d'extinction

#### MOYENS D'EXTINCTION APPROPRIÉS

Les moyens d'extinction sont les moyens traditionnels: anhydride carbonique, mousse, poudre et eau nébulisée.

#### MOYENS D'EXTINCTION NON APPROPRIÉS

Aucun en particulier.

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

#### DANGERS DUS À L'EXPOSITION EN CAS D'INCENDIE

Éviter de respirer les produits de combustion.

### 5.3. Conseils aux pompiers

#### INFORMATIONS GÉNÉRALES

Refroidir les récipients à l'aide de jets d'eau pour éviter la décomposition du produit et le dégagement de substances dangereuses pour la santé. Veiller à toujours faire usage d'un équipement de protection anti-incendie complet. Récupérer les eaux d'extinction qui ne doivent pas être déversées dans les égouts. Éliminer l'eau contaminée utilisée pour l'extinction et les résidus de l'incendie dans le respect des normes en vigueur.

#### ÉQUIPEMENT

Vêtements normaux de lutte de contre le feu, respirateur autonome à air comprimé à circuit ouvert (EN 137), combinaison pare-flamme (EN469), gants pare-flamme (EN 659) et bottes de pompiers (HO A29 ou A30).

## RUBRIQUE 6. Mesures à prendre en cas de dispersion accidentelle

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

Éviter la formation de poussières en vaporisant le produit avec de l'eau à moins de contre-indications.

Veiller au port de dispositifs de protection (dispositifs de protection individuelle indiqués à la section 8 de la fiche des données de sécurité compris) afin de prévenir la contamination de la peau, des yeux et des vêtements personnels. Ces indications sont valables aussi bien pour le personnel chargé du travail que pour les interventions d'urgence.

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

Éviter que le produit ne soit déversé dans les égouts, dans les eaux superficielles, dans les nappes phréatiques.

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

Récupérer le produit déversé et le placer dans des conteneurs pour sa récupération ou son élimination. Si le produit est inflammable, utiliser un appareil anti-déflagration. Éliminer les résidus à l'aide d'un jet d'eau sauf contre-indications.

Prévoir une aération suffisante du lieu d'écoulement. Évaluer la compatibilité du récipient à utiliser avec le produit, faire référence à la section 10. L'élimination des matériaux contaminés doit s'effectuer conformément aux dispositions du point 13.

### 6.4. Référence à d'autres rubriques

D'éventuelles informations relatives à la protection individuelle et l'élimination figurent dans les sections 8 et 13.

## RUBRIQUE 7. Manipulation et stockage

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

Manipuler le produit après avoir consulté toutes les autres sections de la présente fiche de sécurité. Éviter la dispersion du produit dans l'environnement. Ne pas manger, ni boire ni fumer durant l'utilisation. Retirer les vêtements contaminés et les dispositifs de protection avant d'accéder aux lieux de repas.

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

A conserver exclusivement dans le récipient d'origine. Conserver les récipients fermés, à un endroit bien aéré, à l'abri des rayons directs de soleil. Conserver les conteneurs loin des éventuels matériaux/matières incompatibles, faire référence à la section 10.

#### Contrôle du chrome (VI) soluble :

Dans les ciments traités avec un agent réducteur du Chrome (VI), conformément à la réglementation visée à la section 15, l'efficacité de l'agent réducteur diminue dans le temps. Les sacs de ciment fournissent, par conséquent, des informations sur la date de production, les conditions de stockage et la période de stockage pendant laquelle l'agent réducteur reste actif et permet de maintenir la teneur en chrome (VI) soluble en-dessous de la limite de 2 ppm du poids total sec du ciment, conformément à la norme EN 196-10.

### RUBRIQUE 7. Manipulation et stockage ... / >>

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

Informations non disponibles

### RUBRIQUE 8. Contrôles de l'exposition/protection individuelle

#### 8.1. Paramètres de contrôle

Références Réglementation:

ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
EU	OEL EU	Directive (UE) 2017/164; Directive 2009/161/UE; Directive 2006/15/CE; Directive 2004/37/CE; Directive 2000/39/CE; Directive 91/322/CEE.
	TLV-ACGIH	ACGIH 2016

#### Clinker de ciment Portland (blanc)

##### Valeur limite de seuil

Type	état	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
TLV-ACGIH		1				RESPIR

#### Chaux hydraulique naturelle

##### Valeur limite de seuil

Type	état	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
VLEP	ITA			4		RESPIR
OEL	EU	1				RESPIR

##### Concentration prévue sans effet sur l'environnement - PNEC

Valeur de référence en eau douce	0,49	mg/l
Valeur de référence pour la catégorie terrestre	1080	mg/kg

Légende:

(C) = CEILING ; INHALA = Part inhalable ; RESPIR = Part respirable ; THORAC = Part thoracique.

VND = danger identifié mais aucune valeur DNEL/PNEC disponible ; NEA = aucune exposition prévue ; NPI = aucun danger identifié.

Aux fins de l'évaluation du risque, il est recommandé de tenir compte des valeurs limites d'exposition professionnelle prévues par l'ACGIH pour les poussières inertes classées de manière spécifique (PNOC fraction respirable: 3 mg/m3; PNOC fraction inhalable: 10 mg/m3). En cas de dépassement de ces valeurs limites, il est recommandé d'utiliser un filtre de type P dont la classe (1, 2 ou 3) devra être choisie en fonction du résultat de l'évaluation du risque.

#### 8.2. Contrôles de l'exposition

Aux fins de l'évaluation du risque, il est recommandé de tenir compte des valeurs limites d'exposition professionnelle prévues par l'ACGIH pour les poussières inertes non classées de manière spécifique (PNOC fraction respirable : 3 mg/m3 ; PNOC fraction inhalable : 10 mg/m3). En cas de dépassement de ces valeurs limites, il est recommandé d'utiliser un filtre de type P dont la classe (1, 2 ou 3) devra être choisie en fonction du résultat de l'évaluation du risque.

Le recours à des mesures techniques appropriées devant toujours avoir la priorité sur l'utilisation des dispositifs de protection individuelle, veiller à assurer une bonne ventilation sur le lieu de travail par le biais d'un système d'aspiration approprié.

Pour le choix des dispositifs de protection individuelle au besoin demander conseil aux fournisseurs de substances chimiques.

Les dispositifs de protection individuelle doivent être marqués du label de certification CE qui atteste leur conformité aux normes en vigueur.

Prévoir une douche d'urgence avec accessoires de lavage du visage et des yeux.

##### PROTECTION DES MAINS

Dans le cas où serait prévu un contact prolongé avec le produit, il est recommandé de se protéger les mains avec des gants de travail résistant à la pénétration (réf. norme EN 374).

Le matériau des gants de travail doit être choisi en fonction du processus d'utilisation et des produits qui en dérivent. Il est par ailleurs rappelé que les gants en latex peuvent provoquer des phénomènes de sensibilisation.

##### PROTECTION DES PEAUX

Utiliser des vêtements de travail à manches longues et des chaussures de sécurité à usage professionnel de catégorie II (réf. Directive 89/686/CEE et norme EN ISO 20344). Se laver à l'eau et au savon après avoir ôté les vêtements de protection.

##### PROTECTION DES YEUX

Il est recommandé de porter une visière à capuche de protection avec lunettes hermétiques (réf. norme EN 166).

##### PROTECTION DES VOIES RESPIRATOIRES

Il est recommandé de faire usage d'un masque filtrant de type P dont la classe (1, 2 ou 3) et la nécessité effective devront être établies en fonction du résultat de l'évaluation du risque (réf. norme EN 149).

##### CONTRÔLE DE L'EXPOSITION ENVIRONNEMENTALE

Les émissions de processus de production, y compris celles d'appareillages de ventilation, doivent être contrôlées pour garantir le respect de la réglementation en matière de protection de l'environnement.

**RUBRIQUE 9. Propriétés physiques et chimiques****9.1. Informations sur les propriétés physiques et chimiques essentielles**

Etat Physique	poudre
Couleur	blanc
Odeur	inodore
Seuil olfactif	Non disponible
pH	11-13
Point de fusion ou de congélation	Non disponible
Point initial d'ébullition	Non applicable
Intervalle d'ébullition	Non disponible
Point d'éclair	Non applicable
Vitesse d'évaporation	Non disponible
Inflammabilité de solides et gaz	non applicable
Limite infer.d'inflammab.	Non disponible
Limite super.d'inflammab.	Non disponible
Limite infer.d'explosion	Non disponible
Limite super.d'explosion	Non disponible
Pression de vapeur	Non disponible
Densité de la vapeur	Non disponible
Densité relative	1,3-1,5
Solubilité	Non disponible
Coefficient de partage: n-octanol/eau	Non disponible
Température d'auto-inflammabilité	Non disponible
Température de décomposition	Non disponible
Viscosité	Non disponible
Propriétés explosives	non applicable
Propriétés comburantes	Non disponible

**9.2. Autres informations**

Informations non disponibles

**RUBRIQUE 10. Stabilité et réactivité****10.1. Réactivité**

Aucun danger particulier de réaction avec d'autres substances dans les conditions normales d'utilisation.

**10.2. Stabilité chimique**

Le produit est stable dans les conditions normales d'utilisation et de stockage.

**10.3. Possibilité de réactions dangereuses**

Dans des conditions d'utilisation et de stockage normales, aucune réaction dangereuse n'est prévisible.

**10.4. Conditions à éviter**

Aucune en particulier. Respecter néanmoins les précautions d'usage applicables aux produits chimiques.

**10.5. Matières incompatibles**

Informations non disponibles

**10.6. Produits de décomposition dangereux**

Informations non disponibles

**RUBRIQUE 11. Informations toxicologiques****11.1. Informations sur les effets toxicologiques**

Métabolisme, cinétique, mécanisme d'action et autres informations

**RUBRIQUE 11. Informations toxicologiques** ... / >>

Informations non disponibles

Informations sur les voies d'exposition probables

Informations non disponibles

Effets différés et immédiats, et effets chroniques d'une exposition de courte et de longue durée

Informations non disponibles

Effets interactifs

Informations non disponibles

**TOXICITÉ AIGUË**

LC50 (Inhalation - vapeurs) du mélange: Non classé (aucun composant important)

LC50 (Inhalation - aérosols / poussières) du mélange: Non classé (aucun composant important)

LD50 (Oral) du mélange: Non classé (aucun composant important)

LD50 (Dermal) du mélange: Non classé (aucun composant important)

Clinker de ciment Portland (blanc)

LD50 (Der) > 2000 mg/kg (rabbit)

Chaux hydraulique naturelle

LD50 (Or.) > 2000 mg/kg Rat

LD50 (Der) > 2500 mg/kg Rabbit

**CORROSION CUTANÉE / IRRITATION CUTANÉE**

Provoque une irritation cutanée

**LÉSIONS OCULAIRES GRAVES / IRRITATION OCULAIRE**

Provoque des lésions oculaires graves

**SENSIBILISATION RESPIRATOIRE OU CUTANÉE**

Sensibilisant pour la peau

**MUTAGÉNICITÉ SUR LES CELLULES GERMINALES**

Ne répond pas aux critères de classification pour cette classe de danger

**CANCÉROGÉNÉCITÉ**

Ne répond pas aux critères de classification pour cette classe de danger

**TOXICITÉ POUR LA REPRODUCTION**

Ne répond pas aux critères de classification pour cette classe de danger

**TOXICITÉ SPÉCIFIQUE POUR CERTAINS ORGANES CIBLES - EXPOSITION UNIQUE**

Ne répond pas aux critères de classification pour cette classe de danger

**TOXICITÉ SPÉCIFIQUE POUR CERTAINS ORGANES CIBLES - EXPOSITION RÉPÉTÉE**

Ne répond pas aux critères de classification pour cette classe de danger

**DANGER PAR ASPIRATION**

Ne répond pas aux critères de classification pour cette classe de danger

**RUBRIQUE 12. Informations écologiques****12.1. Toxicité**

Chaux hydraulique naturelle  
EC10/LC10 (NOEC) 12000 mg/kg - NOEC (21d) 1080 mg/kg (plant) - LC50 (96h fresh water) 50,6 (Fish)

Chaux hydraulique naturelle	
LC50 - Poissons	158 mg/l/96h Fish (sea water)
EC50 - Crustacés	49,1 mg/l/48h
EC50 - Algues / Plantes Aquatiques	184,57 mg/l/72h
NOEC Chronique Crustacés	32 mg/l 14d
NOEC Chronique Algues/Plantes Aquatiques	48 mg/l 72h

**12.2. Persistance et dégradabilité**

Clinker de ciment Portland (blanc)  
Dégradabilité: données non disponible

**12.3. Potentiel de bioaccumulation**

Informations non disponibles

**12.4. Mobilité dans le sol**

Informations non disponibles

**12.5. Résultats des évaluations PBT et vPvB**

Sur la base des données disponibles, le produit ne contient pas de substances PBT ou vPvB en pourcentage supérieur à 0,1%.

**12.6. Autres effets néfastes**

Informations non disponibles

**RUBRIQUE 13. Considérations relatives à l'élimination****13.1. Méthodes de traitement des déchets**

Procéder si possible à une réutilisation. Les résidus du produit doivent être considérés comme des déchets spéciaux dangereux. La dangerosité des déchets contenant une part de ce produit doit être évaluée sur la base des dispositions légales en vigueur. L'élimination doit être confiée à une société agréée pour le traitement des déchets, dans le respect de la réglementation nationale et de l'éventuelle réglementation locale en vigueur.

**EMBALLAGES CONTAMINÉS**

Les emballages contaminés doivent être ou bien récupérés ou bien éliminés dans le respect de la réglementation nationale applicable au traitement des déchets.

**RUBRIQUE 14. Informations relatives au transport**

Le produit n'est pas à considérer comme dangereuse selon les dispositions courantes sur le transport routier des marchandises dangereuses (A.D.R.), sur le transport par voie ferrée (RID), maritime (IMDG Code) et par avion (IATA).

**14.1. Numéro ONU**

Non applicable

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

Non applicable

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

Non applicable

**RUBRIQUE 14. Informations relatives au transport ... / >>****14.4. Groupe d'emballage**

Non applicable

**14.5. Dangers pour l'environnement**

Non applicable

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

Non applicable

**14.7. Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC**

Informations non pertinentes

**RUBRIQUE 15. Informations relatives à la réglementation****15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement**Catégorie Seveso - Directive 2012/18/CE : AucuneRestrictions relatives au produit ou aux substances contenues conformément à l'Annexe XVII Règlement (CE) 1907/2006  
Aucune

Substances figurant dans la Candidate List (Art. 59 REACH)

Sur la base des données disponibles, le produit ne contient pas de substances SVHC en pourcentage supérieur à 0,1%.

Substances sujettes à autorisation (Annexe XIV REACH)

Aucune

Substances sujettes à l'obligation de notification d'exportation Reg. (CE) 649/2012 :

Aucune

Substances sujettes à la Convention de Rotterdam :

Aucune

Substances sujettes à la Convention de Stockholm :

Aucune**Contrôles sanitaires**

Les travailleurs exposés à cet agent chimique ne doivent pas être soumis à surveillance sanitaire si les résultats de l'évaluation des risques montrent que le risque pour la sécurité et la santé est modéré et que les mesures de la directive 98/24/CE sont suffisantes.

La mise sur le marché et l'utilisation du ciment sont soumises à une restriction sur la teneur en chrome (VI) soluble (REACH Annexe 17, point 47, Composés du chrome VI) :

1) le ciment et les mélanges contenant du ciment ne peuvent pas être mis sur le marché ou utilisés s'ils contiennent, une fois hydratés plus de 2 mg/kg (0,0002 %) de Chrome (VI) soluble du poids total sec du ciment.

2) Si des agents réducteurs sont utilisés, sous réserve de l'application des autres dispositions communautaires sur la classification, l'emballage et l'étiquetage des substances et des mélanges, les fournisseurs doivent s'assurer avant la mise sur le marché que l'emballage du ciment ou des mélanges contenant du ciment porte de manière visible, lisible et indélébile l'information de la date d'emballage, ainsi que des conditions de stockage et de la période de stockage pendant laquelle l'agent réducteur reste actif et permet de maintenir la teneur en chrome (VI) soluble en-dessous de la limite indiquée au paragraphe 1.

3) Par dérogation, les paragraphes 1 et 2 ne doivent pas être appliqués pour la mise sur le marché et l'utilisation dans des procédés totalement automatisés, contrôlés de près, où le ciment et les mélanges contenant du ciment sont manipulés exclusivement au moyen de machines et où le contact avec la peau n'est pas prévu.

**15.2. Évaluation de la sécurité chimique**

Aucune évaluation de sécurité chimique n'a été effectuée pour le mélange et les substances qu'il contient.

**RUBRIQUE 16. Autres informations**

Texte des indications de danger (H) citées dans les sections 2-3 de la fiche:

**Eye Dam. 1**  
**Skin Irrit. 2**Lésions oculaires graves, catégorie 1  
Irritation cutanée, catégorie 2



**RUBRIQUE 16. Autres informations** ... / >>

<b>STOT SE 3</b>	Toxicité spécifique pour certains organes cibles - exposition unique, catégorie 3
<b>Skin Sens. 1B</b>	Sensibilisation cutanée, catégorie 1B
<b>H318</b>	Provoque des lésions oculaires graves.
<b>H315</b>	Provoque une irritation cutanée.
<b>H335</b>	Peut irriter les voies respiratoires.
<b>H317</b>	Peut provoquer une allergie cutanée.

**LÉGENDE:**

- ADR: Accord européen pour le transport des marchandises dangereuses sur route
- CAS NUMBER: Numéro du Chemical Abstract Service
- CE50: Concentration ayant un effet sur 50% de la population soumise aux tests
- CE NUMBER: Numéro d'identification dans l'ESIS (système européen des substances existantes)
- CLP: Règlement CE 1272/2008
- DNEL: Niveau dérivé sans effet
- EmS: Emergency Schedule
- GHS: Système harmonisé global de classification et d'étiquetage des produits chimiques
- IATA DGR: Règlement pour le transport des marchandises dangereuses de l'Association internationale du transport aérien
- IC50: Concentration d'immobilisation de 50% de la population soumise aux tests
- IMDG: Code maritime international pour le transport des marchandises dangereuses
- IMO: International Maritime Organization
- INDEX NUMBER: Numéro d'identification dans l'Annexe VI du CLP
- LC50: Concentration mortelle 50%
- LD50: Dose mortelle 50%
- OEL: Niveau d'exposition sur les lieux de travail
- PBT: Persistant, bio-accumulant et toxique selon le REACH
- PEC: Concentration environnementale prévisible
- PEL: Niveau prévisible d'exposition
- PNEC: Concentration prévisible sans effet
- REACH: Règlement CE 1907/2006
- RID: Règlement pour le transport international des marchandises dangereuses par train
- TLV: Valeur limite de seuil
- TLV PIC: Concentration qui ne doit être dépassée à aucun moment de l'exposition au travail.
- TWA STEL: Limite d'exposition à court terme
- TWA: Limite d'exposition moyenne pondérée
- VOC: Composé organique volatil
- vPvB: Très persistant et bio-accumulant selon le REACH
- WGK: Wassergefährdungsklassen (Deutschland).

**BIBLIOGRAPHIE GENERALE:**

1. Règlement (UE) 1907/2006 du Parlement européen (REACH)
2. Règlement (CE) 1272/2008 du Parlement européen (CLP)
3. Règlement (UE) 790/2009 du Parlement européen (I Atp. CLP)
4. Règlement (UE) 2015/830 du Parlement européen
5. Règlement (UE) 286/2011 du Parlement européen (II Atp. CLP)
6. Règlement (UE) 618/2012 du Parlement européen (III Atp. CLP)
7. Règlement (UE) 487/2013 du Parlement européen (IV Atp. CLP)
8. Règlement (UE) 944/2013 du Parlement européen (V Atp. CLP)
9. Règlement (UE) 605/2014 du Parlement européen (VI Atp. CLP)
10. Règlement (UE) 2015/1221 du Parlement européen (VII Atp. CLP)
11. Règlement (UE) 2016/918 du Parlement européen (VIII 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
- Site Internet IFA GESTIS
- Site Internet Agence ECHA
- Banque de données de modèles de SDS de substances chimiques - Ministère de la santé et Institut supérieur de la santé

**Note pour les usagers:**

Les données contenues dans cette fiche se basent sur les connaissances dont nous disposons à la date de la dernière édition. Les usagers doivent vérifier l'exactitude et l'intégralité des informations en relation à l'utilisation spécifique du produit. Ce document ne doit pas être interprété comme une garantie d'une propriété quelconque du produit. Etant donné que nous n'avons aucun moyen de vérifier l'utilisation du produit, les usagers doivent respecter les lois et les dispositions courantes en matière d'hygiène et sécurité. Nous ne serons pas responsables d'utilisations incorrectes.

**RUBRIQUE 16. Autres informations** ... / >>

Fournir une formation appropriée au personnel chargé de l'utilisation de produits chimiques.

Modifications par rapport à la révision précédente.  
Des modifications ont été apportées aux sections suivantes:  
01 / 02 / 03.

## EXPOSURE SCENARIOS

The current document includes all relevant occupational and environmental exposure scenarios (ES) for the production and use of natural hydraulic lime (NHL) 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.

**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: 185.), 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 natural hydraulic lime professional and industrial and consumer use is performed and organized. 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	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	HS Service life for articles)						
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

Revision date: 12/2010

Printing Date: 12/2010

ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage	Linked to Identified Use	Sector of use category (SU)	Chemical Product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer	US Service life for articles)						
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
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

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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage	Linked to Identified Use	Sector of use category (SU)	Chemical Product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer	US Service life for articles)						
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	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	US Service life for articles)						
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



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ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage	Linked to Identified Use	Sector of use category (SU)	Chemical Product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer	HS Service life for articles)						
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
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

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Revision date: 12/2010

Printing Date: 12/2010

ES number	Exposure scenario title	Manufacture	Identified uses			Resulting life cycle stage	Linked to Identified Use	Sector of use category (SU)	Chemical Product category (PC)	Process category (PROC)	Article category (AC)	Environmental release category (ERC)
			Formulation	End use	Consumer							
9.12	Consumer use of building and construction material (DIY)				X	X						8

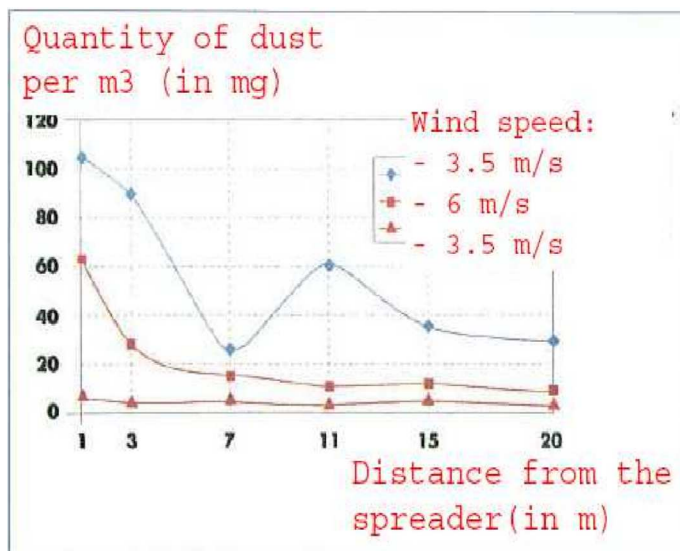
**ES number 9.9: Professional uses of high dusty solids/powders of lime substances**

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, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f	Wide dispersive indoor and outdoor use of reactive substances or processing aids in open systems	

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 in preparation</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>				
<p>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.</p>				
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>				
<b>PROC</b>	<b>Specification of respiratory protective equipment (RPE)</b>	<b>RPE efficiency (assigned protection factor, APF)</b>	<b>Specification of gloves</b>	<b>Further personal protective equipment (PPE)</b>
<b>PROC 9, 26</b>	FFP1 mask	APF=4	<p>Since natural hydraulic lime is classified as irritating to skin, the use of protective gloves is mandatory for all process steps.</p>	<p>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.</p>
<b>PROC 11, 17, 18, 19</b>	FFP3 mask	APF=20		
<b>PROC 25</b>	FFP2 mask	APF=10		
<b>All other applicable PROCs</b>	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. 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.</p>				
<b>2.2 Control of environmental exposure – only relevant for agricultural soil protection</b>				
<b>Product characteristics</b>				

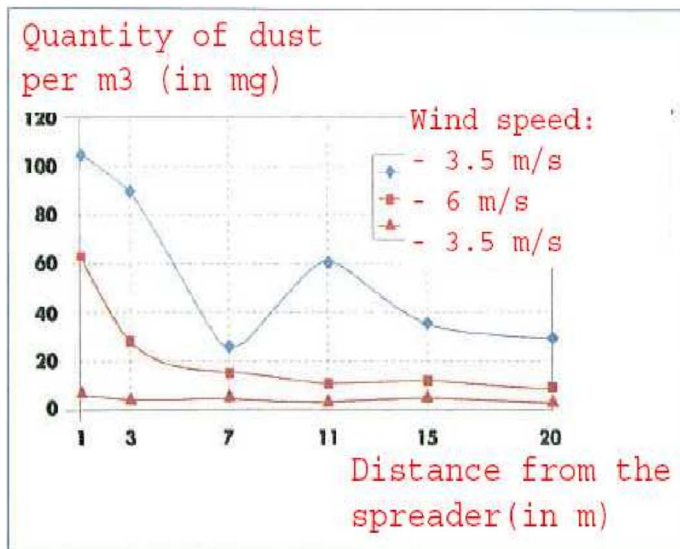
Drift: 1% (very worst-case estimate based on data from dust measurements in air as a function of the distance from application)



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

<b>Amounts used</b>	
Natural hydraulic lime	2,420 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 2,420 kg/ha is not exceeded (NHL).	
<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 minimized.	
<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)



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

**Amounts used**

Natural hydraulic lime 256,865 kg/ha

**Frequency and duration of use**

1 day/year and only once in a lifetime. Multiple applications during the year are allowed, provided the total yearly amount of 256,865 kg/ha is not exceeded (NHL).

**Environment factors not influenced by risk management**

Field surface area: 1 ha

**Other given operational conditions affecting environmental exposure**

Outdoor use of products Soil mixing depth: 20 cm

**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 natural hydraulic lime (NHL) of 1 mg/m³ (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 natural hydraulic lime 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.
<b>Environmental exposure for agricultural soil protection</b>				
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 (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: once applied on the soil, natural hydraulic lime can indeed migrate then towards surface waters, via drift.				
<b>Environmental emissions</b>	See amounts used			
<b>Exposure concentration in waste water treatment plant (WWTP)</b>	Not relevant for agricultural soil protection			
<b>Exposure concentration in aquatic pelagic compartment</b>	<b>Substance</b>	<b>PEC (ug/L)</b>	<b>PNEC (ug/L)</b>	<b>RCR</b>
	NHL	8	574	0.015
<b>Exposure concentration in sediments</b>	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.			
<b>Exposure concentrations in soil and groundwater</b>	<b>Substance</b>	<b>PEC (mg/L)</b>	<b>PNEC (mg/L)</b>	<b>RCR</b>
	NHL	712	1262	0.56
<b>Exposure concentration in atmospheric compartment</b>	This point is not relevant. Natural hydraulic lime 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.			
<b>Environmental exposure for urban soil treatment</b>				



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.

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 (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.

<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>
	NHL	819.32	1262	0.65
<b>Exposure concentration in atmospheric compartment</b>	This point is not relevant. Natural hydraulic lime 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 $OH^{-}$ ) 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 urban soil treatment
- 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.

#### 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 longterm 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 %).

**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)		
<b>Human factors not influenced by risk management</b>				
<b>Description of the task</b>	<b>Population exposed</b>	<b>Breathing rate</b>	<b>Exposed body part</b>	<b>Corresponding skin area [cm<sup>2</sup>]</b>
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>				
<b>Description of the task</b>	<b>Indoor/outdoor</b>	<b>Room volume</b>	<b>Air exchange rate</b>	
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 noeffect 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.				

<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.		