

REACH Lime Consortium

27 April 2010

Dear Downstream User,

REACH – Generic Exposure Scenarios for Lime Substances

This communication continues the dialogue established within the supply chain for lime substances, which are subject to REACH registration before 1 December 2010*.

Executive Summary

The REACH Regulation sets a number of new requirements with respect to the use of chemical substances. Many of you have kindly provided information on your uses of lime substances*, which we have incorporated in our information database. Using standardised processes and tools we have developed 9 Generic Exposure Scenarios **intended to cover all known uses of lime substances** communicated to the REACH Lime Consortium. **If your use is adequately covered, no further action is required.** Downstream Users who have additional specific information are requested to contact their supplier or the Coordinator of the REACH Lime Consortium. **Your responses are requested by 31 May 2010.**

Introduction

The REACH Regulation sets a number of new requirements with respect to the use of chemical substances. Manufacturers and importers (M/Is) have to demonstrate for **all identified uses** that the substances they **supply are safely used** throughout their whole lifecycle (manufacture, formulation, end use, service life, waste stage life). For lime substances, this has to be **documented** in the Chemical Safety Report (a form of risk assessment).

Part of the risk assessment process includes creation of an Exposure Scenario (ES) for each phase of the lifecycle of the substance. The ES defines how humans and the environment are exposed to the substance, and how that exposure is controlled by applying the appropriate Operational Conditions (i.e. how the substance is to be used) and Risk Management Measures (describing the precautions implemented or recommended for safe uses of the substance). The ES must be annexed to the Safety Data Sheet and thus be appropriately **communicated** to Downstream Users (DUs) and passed down the supply chain. Standardised processes and tools for development of the ES are required to guarantee that as many uses as currently known within the supply chain are covered as identified uses with corresponding Exposure Scenarios.

* Substances covered by the REACH Consortium for Lime Substances

Chemical name	EINECS	CAS	Formula
Calcium oxide	215-138-9	1305-78-8	CaO
Calcium dihydroxide	215-137-3	1305-62-0	CaH ₂ O ₂
Calcium, magnesium oxide	253-425-0	37247-91-9	CaMgO ₂
Dolomite calcined	281-192-5	83897-84-1	CCaMgO ₄
Calcium magnesium (di)hydroxide oxide	261-235-4	58398-71-3	CaH ₂ MgO ₃
Lime (chemical) hydraulic	285-561-1	85117-09-5	-

Note: the substance **Calcium magnesium tetrahydroxide** – CAS: 39445-23-3 (also called fully hydrated dolime) is not covered by the REACH Lime Consortium anymore as notified to the concerned SIEF members on 3 March 2010.

Uses and Use Descriptors

Lime substances have many different uses. Within industry, lime substances find application in the steel sector and treatment of non-ferrous metals. Other major industrial uses include the chemical industry, paper and PCC industry and glass manufacturing. Lime substances are used extensively in the building industry, road and soil stabilisation, as well as the environmental protection sector, agro-food industry, agriculture and forestry. While these are illustrative of the major sectors of use, clearly a number of additional uses have been communicated to the REACH Lime Consortium.

To describe the uses within REACH a use descriptor system has been developed ([ECHA Guidance: Chapter R12](#))**. Each product type can have several Use Descriptors representing different phases of its life cycle. **This is the common framework that permits harmonisation of use communication in all supply chains, including those for lime substances.** The codes are divided into a number of categories:

SU	Sectors of Use: Describes the main area of use (manufacturing, private use etc) and type of industry (e.g. large scale chemical industry)
PC	Product Category: Describes the type of product (e.g. pH regulator, water treatment chemical)
PROC	Process Category: Describes how a substance is being used (e.g. transfer of chemicals, mixing or blending in batch processes)
ERC	Environmental Release Category: Describes the environmental exposure conditions related to the PC and PROC codes
AC	Article Category: Describes the type of article into which the substance has eventually been processed.

Following the development of an initial list of uses the Industry Technical Panel (ITP) of the REACH Lime Consortium has incorporated the extensive numbers of use nominations communicated to us by DUs. Use Descriptors were then allocated, although lime substances are used so widely they can be used in almost all **sectors of use (SU)** described by the use descriptor system (see Table 1).

** Please note that the ECHA REACH User Descriptor guidance is currently undergoing update. All references in this document relate to the latest draft version (March 2010) shown via the link.

Table 1: Nominated SUs for the use of lime substances

SU	Description
SU0-1	Other activity related to manufacturing of chemical products
SU0-2	Other activities related to manufacture and services
SU1	Agriculture, forestry, fishery
SU2	Mining (including offshore industries)
SU3	Industrial manufacturing (all)
SU4	Manufacture of food products
SU5	Manufacture of textiles, leather, fur
SU6	Manufacture of paper and paper products
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals
SU10	Formulation (mixing) of preparations and/or re-packaging
SU11	Manufacture of rubber products
SU12	Manufacture of plastics products, including compounding and conversion
SU13	Manufacture of other non-metallic mineral products, e.g. plasters, cement
SU14	Manufacture of basic metals
SU15	Manufacture of fabricated metal products, except machinery and equipment
SU16	Manufacture of computer, electronic and optical products
SU17	General manufacturing
SU19	Building and construction work
SU20	Health services
SU21	Private households (=general public = consumers)
SU22	Public domain (administration, education, entertainment, services, craftsmen)
SU23	Recycling

Similarly, lime substances are used in many different chemical **product categories (PC)**; these are shown in Table 2.

Table 2: Nominated PCs for the use of lime substances

PC	Description
PC1	Adhesives, sealants
PC2	Adsorbents
PC3	Air care products
PC7	Base metals and alloys
PC8	Biocidal products (e.g. Disinfectants, pest control)
PC9a	Coatings and paints, thinners, paint removers
PC9b	Fillers, putties, plasters, modelling clay
PC10	Building and construction preparations not covered elsewhere
PC12	Fertilizers
PC13	Fuels
PC14	Metal surface treatment products, including galvanic and electroplating products
PC15	Non-metal-surface treatment products
PC17	Hydraulic fluids
PC18	Ink and toners
PC19	Intermediate
PC20	Products such as ph-regulators, flocculants, precipitants, neutralization agents
PC21	Laboratory chemicals
PC22	Lawn and Garden preparations, including fertilisers
PC23	Leather tanning, dye, finishing, impregnation and care products
PC24	Lubricants, greases, release products
PC25	Metal working fluids
PC26	Paper and board dye, finishing and impregnation products: including bleaches and other processing aids
PC28	Perfumes, fragrances
PC29	Pharmaceuticals
PC31	Polishes and wax blends
PC32	Polymer preparations and compounds
PC34	Textile dyes, finishing and impregnating products; including bleaches and other processing aids
PC36	Water softeners
PC37	Water treatment chemicals
PC39	Cosmetics, personal care products
PC0	Other (use UCN codes: see last row)

Note: rows highlighted in grey colour refer to PCs which are obsolete due to an update of the UDS

The most extensive representation of lime substances was found in the analysis of the applicable **process categories (PROC)** (see Table 3).

Table 3: List of applicable PROCs

PROC	Process Category (PROC) name	Comments
PROC1	Use in closed process, no likelihood of exposure	Only applicable to industrial use
PROC2	Use in closed, continuous process with occasional controlled exposure	
PROC3	Use in closed batch process (synthesis or formulation)	
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises	
PROC5	Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant con-tact)	
PROC6	Calendering operations	Excluded: Only applicable to massive objects
PROC7	Industrial spraying	Only applicable to industrial use
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
PROC10	Roller application or brushing	
PROC11	Non industrial spraying	Only applicable to professional use
PROC12	Use of blowing agents in manufacture of foam	Excluded: not declared by DU
PROC13	Treatment of articles by dipping and pouring	
PROC14	Production of preparations* or articles by tableting, compression, extrusion, pelletisation	Excluded for professional use by the Consortium's expertise
PROC15	Use as laboratory reagent	
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected	
PROC17	Lubrication at high energy conditions and in partly open process	
PROC18	Greasing at high energy conditions	
PROC19	Hand-mixing with intimate contact and only PPE available	
PROC20	Heat and pressure transfer fluids in dispersive, professional use but closed systems	Excluded by the Consortium's expertise
PROC21	Low energy manipulation of substances bound in materials and/or articles	Excluded: Only applicable to massive objects
PROC22	Potentially closed processing operations with minerals/metals at elevated temperature; Industrial setting	Only applicable to industrial use
PROC23	Open processing and transfer operations with minerals/metals at elevated temperature	Only applicable to industrial use
PROC24	High (mechanical) energy work-up of substances bound in materials and/or articles	Only applicable to industrial use
PROC25	Other hot work operations with metals	Excluded: Only applicable to metal
PROC26	Handling of solid inorganic substances at ambient temperature	
PROC27a	Production of metal powders (hot processes)	Excluded: Only applicable to metal powder production
PROC27b	Production of metal powders (wet processes)	Excluded: Only applicable to metal powder production

Although lime substances can be used during the manufacturing process of articles, incorporation in articles represents a more limited set of applications (for **Article Category AC** selections see Table 4).

Table 4: Nominated ACs for the use of lime substances

AC	Description
AC0	Other articles
AC1	Vehicles
AC3	Electrical batteries and accumulators
AC4	Stone, plaster, cement, glass and ceramic articles
AC7	Metal articles
AC12-1	Constructional articles and building material for indoor use: wall construction material ceramic, metal, plastic and wood construction material, insulating material.
AC 12-2	Constructional articles and building material for outdoor use: wall construction material, road surface material, ceramic, metal, plastic and wood construction material, insulating material.

Note: rows highlighted in grey colour refer to ACs which are obsolete due to an update of the UDS

Lime Substances – Uses and Exposure Scenarios

Assessment of the environmental exposure of lime substances indicates primary releases to the environment during their production/industrial use (**environmental release categories ERC 1-7 and 12**) as well as certain wide dispersive uses (ERC 8e) (see Table 5).

Table 5: Description for Environmental Release Categories

ERC	Name	Description	Exposure Assessment Approach
ERC 1	Manufacture of substances	Manufacture of organic and inorganic substances in chemical, petro- chemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions	pH approach Producer/downstream uses
ERC 2	Formulation of preparations	Mixing and blending of substances into (chemical) preparations in all types of formulating industries, such as paints and do-it-yourself products, pigment paste, fuels, household products (cleaning products), lubricants etc.	pH approach Producer/downstream uses
ERC 3	Formulation in materials	Mixing or blending of substances which will be physically or chemically bound into or onto a matrix (material) such as plastics additives in master batches or plastic compounds. For instance a plasticizers or stabilizers in PVC master-batches or products, crystal growth regulator in photographic films etc.	pH approach Producer/downstream uses
ERC 4	Industrial use of processing aids in processes and products, not becoming part of articles	Industrial use of processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting	pH approach Producer/downstream uses
ERC 5	Industrial use resulting in inclusion into or onto a matrix	Industrial use of substances as such or in preparations (non-processing aids), which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyes in textile fabrics and leather products, metals in coatings applied through plating and galvanizing processes. The category covers substances in articles with a particular function and also substances remaining in the article after having been used as processing aid in an earlier life cycle stage.	pH approach Producer/downstream uses
ERC 6a	Industrial use resulting in manufacture of another substance (use of intermediates)	Use of intermediates in primarily the chemical industry using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions, for the synthesis (manufacture) of other substances. For instance the use of chemical building blocks (feedstock) in the synthesis of agrochemicals, pharmaceuticals, monomers etc.	pH approach Producer/downstream uses
ERC 6b	Industrial use of reactive processing aids	Industrial use of reactive processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example the use of bleaching agents in the paper industry.	pH approach Producer/downstream uses
ERC 6c	Industrial use of monomers for polymerisation	Industrial use of monomers in the production of plastics (thermoplastics), polymerization processes. For example the use of vinyl chloride monomer in the production of PVC	pH approach Producer/downstream uses
ERC 6d	Industrial use of auxiliaries for polymerisation processes in production of resins, rubbers, polymers	Industrial use of chemicals (cross-linking agents, curing agents) in the production of thremosets and rubbers, polymerization processes. For instance the use of styrene in polyester production or vulcanization agents in the production of rubbers	pH approach Producer/downstream uses
ERC 7	Industrial use of substances in closed systems	Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact with the products produced	pH approach Producer/downstream uses
ERC 8a	Wide dispersive indoor use of processing aids in open systems	Indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment/sewage system, for example, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, deicers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.	No need to perform a ES: justifications provided where needed in the CSR
ERC 8b	Wide dispersive indoor use of reactive substances in open systems	Indoor use of reactive substances by the public at large or professional use. Use (usually) results in direct release into the environment, for example, sodium hypochlorite in lavatory cleaners, bleaching agents in fabric washing products, hydrogen peroxide in dental care products.	No need to perform a ES: justifications provided where needed in the CSR

Lime Substances – Uses and Exposure Scenarios

ERC 8c	Wide dispersive indoor use resulting in inclusion into or onto a matrix	Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.	No need to perform a ES: justifications provided where needed in the CSR
ERC 8d	Wide dispersive outdoor use of processing aids in open system	Outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment, for example, automotive and bicycle care products (polishes, lubricants, deicers, detergents), solvents in paints and adhesives.	No need to perform a ES: justifications provided where needed in the CSR
ERC 8e	Wide dispersive outdoor use of reactive substances in open systems	Outdoor use of reactive substances by the public at large or professional use. Use (usually) results in direct release into the environment, for example, the use of sodium hypochlorite or hydrogen peroxide for surface cleaning (building materials)	FOCUS-EXPOSIT modelling
ERC 8f	Wide dispersive outdoor use resulting in inclusion into or onto a matrix	Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.	No need to perform a ES: justifications provided where needed in the CSR
ERC 9a	Wide dispersive indoor use of substances in closed systems	Indoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.	<i>Not relevant</i>
ERC 9b	Wide dispersive outdoor use of substances in closed systems	Outdoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids in automotive brake systems.	<i>Not relevant</i>
ERC 10 a	Wide dispersive outdoor use of long-life articles and materials with low release	Low release of substances included into or onto articles and materials during their service life in outdoor use, such as metal, wooden and plastic construction and building materials (gutters, drains, frames etc.)	No need to perform a ES: justifications provided where needed in the CSR
ERC 10b	Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)	Substances included into or onto articles and materials with high or intended release during their service life from outdoor use. Such as tyres, treated wooden products, treated textile and fabric like sun blinds and parasols and furniture, zinc anodes in commercial shipping and pleasure craft, and brake pads in trucks or cars. This also includes releases from the article matrix as a result of processing by workers. These are processes typically related to PROC 21, 24, 25, for example: Sanding of buildings (bridges, facades) or vehicles (ships).	No need to perform a ES: justifications provided where needed in the CSR
ERC 11a	Wide dispersive indoor use of long-life articles and materials with low release	Low release of substances included into or onto articles and materials during their service life from indoor use. For example, flooring, furniture, toys, construction materials, curtains, footwear, leather products, paper and cardboard products (magazines, books, news paper and packaging paper), electronic equipment (casing)	No need to perform a ES: justifications provided where needed in the CSR
ERC 11b	Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)	Substances included into or onto articles and materials with high or intended release during their service life from indoor use. For example: release from fabrics, textiles (clothing, floor rugs) during washing. This also includes releases from the article matrix as a result of processing by workers. These are processes typically related to PROC 21, 24, 25. For example removal of indoor paints.	No need to perform a ES: justifications provided where needed in the CSR
ERC 12a	Industrial processing of articles with abrasive techniques (low release)	Substances included into or onto articles and materials are released (intended or not) from the article matrix as a result of processing by workers. These processes are typically related to PROC 21, 24, 25. Processes where the removal of material is intended, but the expected release remains low, include for example: cutting of textile, cutting, machining or grinding of metal or polymers in engineering industries.	pH approach Producer/downstream uses
ERC 12b	Industrial processing of articles with abrasive techniques (high release)	Substances included into or onto articles and materials are released (intended or not) from/with the article matrix as a result of processing by workers. These processes are typically related to PROC 21, 24, 25. Processes where the removal of material is intended, and high amounts of dust may be expected, include for example: sanding operations or paint stripping by shot-blasting.	pH approach Producer/downstream uses
	Other environmental characteristics; please specify		<i>Not relevant</i>

Exposure Scenarios

Generic Exposure Scenarios have been developed and, collectively, **are intended to cover all uses of lime substances**. Clearly, the complex matrix identified for the use of lime substances requires a pragmatic approach to avoid the need to develop a separate ES for each of the different types of substance-use combinations. **Occupational (health-based) exposure scenarios** are proposed primarily to reflect the physical form of the substance. These are:

1. use of lime substance as an **aqueous solution**
2. use of lime substance as a **low dusty material**
3. use of lime substance as a **medium dusty material**
4. use of lime substance as a **highly dusty material**

Since the above categories may apply to industrial and professional settings, a total number of 8 categories were considered. In addition, one category has been included to account for the use of **lime substances in articles**. The **environmental exposure assessment** of lime substances has been developed to cover two main scenarios: (i) **production/industrial use of lime substances, and (ii) wide dispersive uses**. **Further information describing each of the applicable Exposure Scenarios is contained in Table 6** (Overview on exposure scenarios and coverage of substance life cycle).

Communication in the Supply Chain

Downstream Users of lime substances are encouraged to verify if their product category, process category, article category and environmental release category of their use(s) are included Table 6. **If not, please inform your supplier or the Coordinator of the REACH Lime Consortium.**

Operational Conditions and Risk Management Measures (RMMs)

Risk Management Measures (RMMs) for human health should focus on the avoidance and prevention of direct contact with lime substances. Accordingly, appropriate skin and eye protection is required. Respiratory protection is required where aerosols and dusty forms can be inhaled. For environmental emissions to the aquatic compartment it is important that the effluent is assessed and adjusted within an acceptable range for local conditions before discharge to the environment. A significant pH increase of the aquatic environment due to an emission of lime substance(s) should be prevented. In order to receive further information indicating Operational Conditions and Risk Management Measures for each Exposure Scenario, please contact the Coordinator of the REACH Lime Consortium.

Downstream users of lime substances are requested to check if the proposed risk management measures are appropriate for their own installations. DUs who have additional specific information about operational conditions or risk reduction measures are requested to contact their supplier or the Coordinator of the REACH Lime Consortium. In this way the information can be included in the Chemical Safety Report and communicated to the supply chain via the extended-Safety Data Sheet (e-SDS). It is the intention of the REACH Lime Consortium to include all uses, which are considered safe.

Your responses are requested by 31 May 2010.

For further information, please contact the Coordinator of the REACH Lime Consortium:

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Table 6: Overview on exposure scenarios and coverage of substance life cycle

ES number	Manufacture	Identified uses			Resulting life cycle stage		Sector of Use (SU)	Chemical Product Category (PC)	Process category (PROC)	Article category (AC)	ERC
		Formulation	End use	Consumer use *	Service life (for articles)	Waste stage					
9.1. Industrial uses of aqueous solutions of lime substances	X	X	X		X	X	SU3, SU1, SU2a, SU2b, SU4, SU5, SU6b, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU0	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19	AC1, AC3, AC4, AC7, AC0	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b, ERC10a, ERC10b, ERC11a, ERC11
9.2. Industrial uses of low dusty/ powders of lime substances	X	X	X		X	X	SU3, SU1, SU2a, SU2b, SU4, SU5, SU6b, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU0	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC21, PROC22, PROC23, PROC24, PROC26	AC1, AC3, AC4, AC7, AC0	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b, ERC10a, ERC10b, ERC11a, ERC11
9.3. Industrial uses of medium dusty/ powders of lime substances	X	X	X		X	X	SU3, SU1, SU2a, SU2b, SU4, SU5, SU6b, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU0	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC26	AC1, AC3, AC4, AC7, AC0	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b, ERC10a, ERC10b, ERC11a, ERC11

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ES number	Manufacture	Identified uses			Resulting life cycle stage		Sector of Use (SU)	Chemical Product Category (PC)	Process category (PROC)	Article category (AC)	ERC
		Formulation	End use	Consumer use *	Service life (for articles)	Waste stage					
9.4. Industrial uses of high dusty/ powders of lime substances	X	X	X		X	X	SU3, SU1, SU2a, SU2b, SU4, SU5, SU6b, SU8, SU9, SU10, SU11, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU0	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC22, PROC23, PROC24, PROC26	AC1, AC3, AC4, AC7, AC0	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC12a, ERC12b, ERC10a, ERC11a
9.5. Professional uses of aqueous solutions of lime substances		X	X			X	SU22	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC16, PROC17, PROC18, PROC19		ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f
9.6. Professional uses of low dusty/ powders of lime substances		X	X			X	SU22	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC16, PROC17, PROC18, PROC19, PROC26		ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f

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ES number	Manufacture	Identified uses			Resulting life cycle stage		Sector of Use (SU)	Chemical Product Category (PC)	Process category (PROC)	Article category (AC)	ERC
		Formulation	End use	Consumer use *	Service life (for articles)	Waste stage					
9.7. Professional uses of medium dusty/powders of lime substances		X	X			X	SU22	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC16, PROC17, PROC18, PROC19, PROC26		ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f
9.8. Professional uses of high dusty/powders of lime substances		X	X			X	SU22	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC12, PC13, PC14, PC15, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC28, PC29, PC31, PC32, PC34, PC36, PC37, PC39, PC0	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC16, PROC17, PROC18, PROC19, PROC26		ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f
9.9. Professional uses of articles containing lime substances			X			X	SU22	PC2	PROC0, PROC21, PROC24	AC1, AC3, AC4, AC7, AC0	ERC10a, ERC11a

* In the case of Consumer Uses, SU21 and PC2, PC9a/b and PC12 as well as ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f are being taken into consideration.