Cosmetics Europe SPERC fact sheet - Industrial use in formulation of liquid water-borne cosmetic products

Section	Content
SPERC Title	Industrial use in formulation of liquid water-borne cosmetic products
SPERC code	
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Scope	
	Covers the whole process of formulation as it occurs in the manufacturing of liquid water-borne cosmetics and body care products. This includes storing, mixing, packaging of substances (as part of mixtures) and equipment cleaning, maintenance and associated laboratory activities. Fine Fragrances include the following alcoholic mixtures like After Shave, Perfumes Typically, the viscosity of these products is not specified and not adjusted. Cleaning with water. Low viscosity liquids include the following: Shampoo, hair conditioner, shower gel, foam bath. Typically, the viscosity of these products is specified and adjusted. High viscosity Body and Hair Care / Styling Products include the following like body lotion, anti-transpirants (roll-on, stick), soap formulation “saponification”, hair dyes, hair gels. Typically, the viscosity of these products is specified and adjusted. Non-Liquid Creams include the following: skin care, body care, Mascara, Make-up Foundation. Typically, the viscosity of these products is specified and adjusted. The SPERCs are relevant for operations which discharge their wastewater to treatment by a municipal sewage treatment plant. The SPERCs cover small, medium and large operations, which produce less than 1000 tons, up to 10,000 tons or more than 10,000 tons of finished products per year, respectively.

	Substance Domain: All (see Narrative Description)	
Related use descriptors		
	Main User Group: SU 3	
	Sector of Use: SU10	
	Environmental Release Class: ERC 2	
	Process Categories: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC 9, PROC14, PROC 15.	
	Product categories: PC 39	
Operational conditions		**Operational conditions – Phrases**
	Cosmetics Europe 2.1.a.v2 Cosmetics Europe 2.1.h.v2	Process optimized for highly efficient use of raw materials, Indoor Use, Water-Based Process, Process with negligible volatilization
	Cosmetics Europe 2.1.b.v2 Cosmetics Europe 2.1.d.v2 Cosmetics Europe 2.1.f.v2 Cosmetics Europe 2.1.i.v2	Process optimized for efficient use of raw materials, Indoor Use, Water-Based Process, Process with negligible volatilization
	Cosmetics Europe 2.1.c.v2 Cosmetics Europe 2.1.g.v2 Cosmetics Europe 2.1.j.v2	Process with efficient use of raw materials, Indoor Use, Water-Based Process, Process with negligible volatilization
		Operational conditions - Free text background
	Cosmetics Europe 2.1.a.v2 Cosmetics Europe 2.1.h.v2	General good practice: e.g. trained staff, spill protection including waste reuse. Advanced technology used in process e.g. Closed automated process Closed transfer system Centralized process control Reduced emissions to waste water due to e.g.: - Dry cleaning of equipment (Use of absorbent materials including incineration of resulting solid waste) - Cleaning involving so-called pigs, CIP-System, etc. - Steam cleaning - Manual removal of residual products adhering to equipment (e.g. by manual scrubbing, vacuum cleaning, etc.) Reduced number of transfer and cleaning operations through e.g. - Manufacturing of different products from one premix, to which certain ingredients are added to yield the final products. - Dedicated storage tanks for raw materials, premixes and final products.

	Cosmetics Europe 2.1.b.v2 Cosmetics Europe 2.1.d.v2 Cosmetics Europe 2.1.f.v2 Cosmetics Europe 2.1.i.v2	General good practice: e.g. trained staff, spill protection. Technology used in process e.g Closed batch process Semi Closed transfer system Batch production of final product Reduced number of transfer and cleaning operations through e.g. Dedicated storage tanks for raw materials, and final products	
	Cosmetics Europe 2.1.c.v2 Cosmetics Europe 2.1.g.v2 Cosmetics Europe 2.1.j.v2	General good practice: e.g. trained staff, spill protection. Used in process e.g Batch process Batch production of final product	
Obligatory onsite RMMs		**RMM - Phrase**	**RMM-Efficiency (RE_{SPERC})**
	Cosmetics Europe 2.1.a.v2	No wastewater treatment required	0
	Cosmetics Europe 2.1.b.v2		0
	Cosmetics Europe 2.1.c.v2		0
	Cosmetics Europe 2.1.d.v2		0
	Cosmetics Europe 2.1.f.v2		0
	Cosmetics Europe 2.1.g.v2		0
	Cosmetics Europe 2.1.h.v2		0
	Cosmetics Europe 2.1.i.v2		0
	Cosmetics Europe 2.1.j.v2		0
Substance use rate		**Phrase**	**Value (M_{SPERC})**
	Cosmetics Europe 2.1.a.v2 Cosmetics Europe 2.1.h.v2	Maximum daily site tonnage (kg/day):	16,700
	Cosmetics Europe 2.1.b.v2 Cosmetics Europe 2.1.d.v2 Cosmetics Europe 2.1.f.v2 Cosmetics Europe 2.1.i.v2		4,500
	Cosmetics Europe 2.1.c.v2 Cosmetics Europe 2.1.g.v2 Cosmetics Europe 2.1.j.v2		450
	Justification		
	M_{SPERC} can be used by the registrant when starting the environmental assessment. M_{SPERC}-represents an indicative worst case value for the substance use rate per site. The M_{SPERC} values have been estimated in dependence of the size of the operation, the number of days emitting, and the concentration of the substance in a finished product (i.e. mixture). See M_{SPERC}-derivation in Appendix.		
Days emitting		**Phrase**	**Value (d)**
	Cosmetics Europe 2.1.a.v2 Cosmetics Europe 2.1.h.v2	Emission Days (days/year): [FD4]	250

	Cosmetics Europe 2.1.b.v2 Cosmetics Europe 2.1.d.v2 Cosmetics Europe 2.1.f.v2 Cosmetics Europe 2.1.i.v2		250
	Cosmetics Europe 2.1.c.v2 Cosmetics Europe 2.1.g.v2 Cosmetics Europe 2.1.j.v2		250

Release factors		**Values (per pathway)**			
		To air	To water	To soil	To waste
	Cosmetics Europe 2.1.a.v2	0	0.001	0	0
	Cosmetics Europe 2.1.b.v2	0	0.002	0	0
	Cosmetics Europe 2.1.c.v2	0	0.004	0	0
	Cosmetics Europe 2.1.d.v2	0	0.015	0	0
	Cosmetics Europe 2.1.f.v2	0	0.01	0	0
	Cosmetics Europe 2.1.g.v2	0	0.02	0	0
	Cosmetics Europe 2.1.h.v2	0	0.01	0	0
	Cosmetics Europe 2.1.i.v2	0	0.02	0	0
	Cosmetics Europe 2.1.j.v2	0	0.04	0	0
		Justification			

Releases to Air:

Releases of raw materials via volatilization are quantitatively very low. For that reason, the study by Royal Haskoning (2009) does not consider to establish release factors for the use of fragrance materials in the manufacturing of detergent products. It is assumed that these findings also apply for the manufacturing of personal care and cosmetics products. For that reason, the release factor is set to zero.

Releases to water via wastewater:

Releases to the wastewater can be the result of cleaning of mixing vessels, tubing, production/packaging lines with water. The spent cleaning water is discharged to the wastewater. The numbers that are presented in this SPERC originate from the study by Royal Haskoning (2009). The number for Cosmetics Europe 2.1.a.v2 is equal to that for large production of liquid conditioner, shampoos and shower gels in the study by Royal Haskoning (2009). The Royal Haskoning data for small scale production of liquid conditioner, shampoos and shower gels were adopted (in a conservative approach) for medium scale production in Cosmetics Europe 2.1.b.v2. The number for small scale manufacturing of liquid conditioner, shampoos and shower gels according to Cosmetics Europe 2.1.c.v2 was extrapolated by the Cosmetics Europe sector expert team based on the Royal Haskoning data. The release factor for Cosmetics Europe 2.1.a.v2 is further supported by the Life Cycle Inventories of detergents (LCI, Franke et al., 1991). That publication formed the basis for the A/B Tables for detergent manufacturing in the EU Technical Guidance (EU TGD 2003). Again, it is assumed that the findings for manufacturing detergent products apply for the manufacturing of personal care and cosmetics products.

For Cosmetics Europe 2.1.d.v2 (fine fragrances) as well as Cosmetics Europe

<table>
<tr><td></td><td colspan="3">2.1.h.v2, Cosmetics Europe 2.1.i.v2. and Cosmetics Europe 2.1.j.v2 (non-liquid creams) Royal Haskoning (2009) did not distinguish between scales of production. Where relevant, release factors in these spERCs have been extrapolated (in a conservative approach) by the Cosmetics Europe sector expert team from the Royal Haskoning (2009). Data are based on the increasing degree of control of the manufacturing process from large to small scale.
The spERCs for Cosmetics Europe 2.1.f.v2 and Cosmetics Europe 2.1.g.v2 (high viscosity body care) reflect emission values between the product type of liquid conditioner, shampoos and shower gels (low viscosity) and non-liquid creams. Hence, these emission factors were interpolated between these values.

Releases to soil: Direct releases to soil must be avoided.
Releases to waste: Not relevant – no obligatory RMM which divert substances to waste.

EU TGD 2003 Technical Guidance Document on Risk Assessment. Part II, Appendix1 A Table A2 (p 226)
Franke et al., 1995 Ökobilanzierung- Sachbilanz für die Waschmittel-Konfektionierung Tenside Surf. Det, 32:(508-514)
Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials Ref.:9S3975.01/R0007/Nijm, 2009).</td></tr>
<tr><td>Optional risk management measures</td><td></td><td>Type of RMM</td><td>Efficiency</td></tr>
<tr><td></td><td rowspan="7">Cosmetics Europe 2.1.a.v2
Cosmetics Europe 2.1.b.v2
Cosmetics Europe 2.1.c.v2
Cosmetics Europe 2.1.d.v2
Cosmetics Europe 2.1.f.v2
Cosmetics Europe 2.1.g.v2
Cosmetics Europe 2.1.h.v2
Cosmetics Europe 2.1.i.v2
Cosmetics Europe 2.1.j.v2</td><td>- Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of □ (%):</td><td rowspan="7">Efficiency to be specified depending on treatment technology available on site and substance properties.</td></tr>
<tr><td>- If discharging to municipal sewage treatment plant, no onsite wastewater treatment required</td></tr>
<tr><td>- If discharging to municipal sewage treatment plant, provide the required onsite wastewater removal efficiency of □ (%):</td></tr>
<tr><td>- Typical onsite wastewater treatment technology provides removal efficiency of □ (%):</td></tr>
<tr><td>- Provide onsite wastewater removal efficiency of □ (%):</td></tr>
<tr><td>Oil/ water separator</td></tr>
<tr><td></td><td colspan="3">Typical emission reducing equipment/procedures in the cosmetic product plants may comprise:
1. Spill protected areas
2. (Dry) cleaning procedures with maximization of waste reuse in the process
3. Collection of spills and handling by an external third party (typically via</td></tr>
</table>

	incineration) 4. On-site physico-chemical pre-treatment of the waste water (e.g. via pH adjustment, flocculation/precipitation, sedimentation) 5. manual removal of residual products adhering to equipment (e.g. by scrubbing, vacuum cleaning, etc.) Handling of the sludge by an external third party (typically via incineration)		
Narrative description	**Industrial use in formulation of liquid water-borne cosmetics and body care products**		
	For economic reasons, formulation of mixtures requires minimized losses of raw materials during the mixing and packaging of products. Losses of raw materials via volatilization are negligible. Significant losses to the environment can be the result of cleaning of mixing vessels, tubing, production/packaging lines. High viscosity products adhere more strongly to the walls of mixing vessels, tubing, production/packaging lines. They are less efficiently transferred into the packaging. Hence, emissions caused by equipment cleaning are higher and lower for high and low viscosity products, respectively. These losses occur irrespective of the physical-chemical properties of the substance employed in a cosmetic product. For that reason, this SPERC pertains to all substances. **Technical comments** - Before treatment means: emissions as entering an on-site biological WWTP, or if absent, as leaving the site towards a municipal WWTP. - It is assumed for simplicity that 1 kg cosmetic product (excl. water) represents ~ 1 kg COD. Actual average value for the chemical ingredients may range from 1-2. - Emissions to <u>soil or solid waste</u> are not discussed here, as justified in IFRA (2009), these are considered negligible. Emissions to <u>air</u> are discussed above.		
Scaling	Scaling options are based on the comparison of the $M_{Safe\ SPERC}$ with M_{Site} and changes due to RMM (RE) and/or dilution situation on site (q and $G_{Effluent}$).		
	Scalable parameters	Parameter description	Values – SPERC /ES
	$M_{Safe\ SPERC}$, (kg/d)	Amount which can be safely used based on the SPERC	M_{Safe} – outcome of chemical safety assessment
	$RE_{Total,\ SPERC}$	Removal efficiency assumed in the SPERC	0
	q_{SPERC}	Factor by which receiving surface water. dilutes the sewage after treatment	10
	$G_{Effluent,\ SPERC}$ (m^3/d)	Discharge rate of sewage.	2,000
		Scaling condition	
		risk driven by wastewater treatment plant microbes $[M_{Safe,SPERC} \times (1 - RE_{Total,\ SPERC})] / G_{Effluent,\ SPERC} \geq [M_{Site} \times (1 - RE_{Total,\ Site})] / G_{Effluent,\ Site}$	

		risk driven by freshwater/freshwater sediments, marine water/marine water sediments $[M_{Safe,SPERC} \times (1 - RE_{Total, SPERC})] / (G_{Effluent, SPERC} \times q_{SPERC}) \geq [M_{Site} \times (1 - RE_{Total, Site})] / (G_{Effluent, Site} \times q_{Site})$	
	Site-specific parameters	Parameter description	Values – Site
	$M_{Site,}$ (kg/d)	Amount which is actually used on-site	To be determined by Downstream User
	$RE_{Total, Site}$	Removal efficiency realized through RMMs on site	
	q_{Site}	Factor by which receiving surface water.dilutes the sewage after treatment	
	$G_{Effluent, Site}$	Discharge rate of sewage.	

Appendix: M_{SPERC}-Derivation

M_{SPERC} can be used by the registrant when starting the environmental assessment. M_{SPERC}-represents an indicative worst case value for the substance use rate per site. M_{SPERC} is calculated according to: $\mathbf{M_{SPERC} = M_{Finished} \times C_{SP} \times T_{Emission,SPERC}^{-1}}$ with C_{SP} = Exemplary concentration of substance in finished product, $M_{Finished}$ = the amount of finished product manufactured (per year), $T_{Emission,SPERC}$ = number of days emitting. Typical parameters values are given in Table 1. $M_{Finished}$ - ranges correspond to the tonnage ranges of finished product as defined by Royal Haskoning (2009) for formulators. The $M_{Finished}$ –ranges are to help formulators find out which SPERC is relevant for their operation. M_{SPERC} values in brackets correspond to $M_{Finished}$ production ranges. For M_{SPERC} distinct values founded on expert estimation are provided, since these are recommended as starting values for environmental exposure assessments, provided no better information is available.

Table 1: Derivation of the default substance use rate M_{SPERC} for *use in formulation of liquid water-borne cosmetics and body care products*. The derivation is based on typical values of the operational conditions for the various applications covered by this SPERC.

SPERC	**Other Operational Conditions – Phrase**	**Operational Conditions – Values for selected parameters expressing the operational conditions for the SPERC 'industrial use – formulation of granular cleaning and maintenance products.**			
		M_{SPERC} (kg/d)	**$T_{Emission, SPERC}$** (days per year)	**$M_{Finished}$** (t/y)	**C_{SP}**
Cosmetics Europe 2.1.a.v2 Cosmetics Europe 2.1.h.v2	Process optimized for highly efficient use of raw materials.	16700 (> 8000)	250*	>10000	20%
Cosmetics Europe 2.1.b.v2 Cosmetics Europe 2.1.d.v2 Cosmetics Europe 2.1.f.v2 Cosmetics Europe 2.1.i.v2	Process optimized for efficient use of raw materials.	4500 (800-8000)	250*	1000-10000	20%
Cosmetics Europe 2.1.c.v2 Cosmetics Europe 2.1.g.v2 Cosmetics Europe 2.1.j.v2	Process with efficient use of raw materials.	450 (<800)	250*	<1000	20%

* $T_{emission\ spERC}$ has been selected according to Royal Haskoning review on large and medium compounders (Royal Haskoning, 2009)

Appendix - Determinant Lists

SPERC Cosmetics Europe 2.1.a.v2: Formulation of low viscosity liquids *(large scale)*

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Equipment cleaning	Qual	Equipment cleaning with minimized emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Dry cleaning of equipment (Use of absorbent materials and vacuum cleaning including incineration of resulting solid waste) - Cleaning involving so-called pigs - Cleaning involving so-called "cleaning in place" (CIP System) - Steam cleaning and/or - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with minimized emissions to wastewater	
Process efficiency	Qual	Process optimized for highly efficient use of raw materials (II)	Typical measures may include e.g. - Closed automated process and/or - Closed transfer system and/or - Centralized process control and/or - re-use of process grey water for cleaning - optimized and/or automated systems for the transport and handling of raw	Process optimized for highly efficient use of raw materials.	

materials, that minimize overall exposure levels and incidental spills
- Reduced number of transfer and cleaning operations through e.g.
- Manufacturing of different products from one premix (masterbatch), to which certain ingredients are added to yield the final products.
- Dedicated storage tanks for raw materials, premixes and final products
Recovery of materials through e.g.
- Recycling Residues of granular detergents in cleaning steps at packaging or transfer lines into the slurries.

SPERC Cosmetics Europe 2.1.b.v2: Formulation of low viscosity liquids *(medium scale)*

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Equipment cleaning	Qual	Equipment cleaning with reduced emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with reduced emissions to wastewater	
Process efficiency	Qual	Process optimized for efficient use of raw materials.	Typical measures may include e.g. - Closed batch systems and / or - Semi-closed transfer system and/or - Batch production of final product Reduced number of transfer and cleaning operations through e.g. - Dedicated storage tanks for raw materials, premixes and final products	Process optimized for efficient use of raw materials.	

SPERC Cosmetics Europe 2.1.c.v2: Formulation of low viscosity liquids *(small scale)*

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Equipment cleaning	Qual	Equipment cleaned with water, washing disposed of with wastewater		Equipment cleaned with water, washing disposed of with wastewater.	
Process efficiency	Qual	Process with efficient use of raw materials.	Typically implemented measures for reducing emissions to waste water may include: - Closed batch systems	Process with efficient use of raw materials.	

SPERC Cosmetics Europe 2.1.d.v2: Formulation of Fine Fragrances - Cleaning with Water

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Equipment cleaning	Qual	Equipment cleaning with reduced emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with reduced emissions to wastewater	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Process efficiency	Qual	Process optimized for efficient use of raw materials.	Typical measures may include e.g. - Closed batch systems and / or - Semi-closed transfer system and/or - Batch production of final product Reduced number of transfer and cleaning operations through e.g. - Dedicated storage tanks for raw materials, premixes and final products	Process optimized for efficient use of raw materials.	

SPERC Cosmetics Europe 2.1.f.v2: Formulation of High Viscosity Body Care Products (medium scale)

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Equipment cleaning	Qual	Equipment cleaning with reduced emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with reduced emissions to wastewater	
Process efficiency	Qual	Process optimized for efficient use of raw materials.	Typical measures may include e.g. - Closed batch systems and / or - Semi-closed transfer system and/or - Batch production of final product Reduced number of transfer and cleaning operations through e.g. - Dedicated storage tanks for raw materials, premixes and final products	Process optimized for efficient use of raw materials.	

SPERC Cosmetics Europe 2.1.g.v2: Formulation of High Viscosity Body Care Products (Small scale)

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process		Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Equipment cleaning	Qual	Equipment cleaned with water, washing disposed of with wastewater		Equipment cleaned with water, washing disposed of with wastewater.	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Waste treatment	Qual	Waste resulting from on-site RMM to be disposed as chemical waste			
Process efficiency		Process with efficient use of raw materials.	Typically implemented measures for reducing emissions to waste water may include: - Closed batch systems	Process with efficient use of raw materials.	

SPERC Cosmetics Europe 2.1.h.v2: Formulation of Non-liquid Creams (skin care, body care, Mascara, Make-up Foundation) (large scale)

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Equipment cleaning	Qual	Equipment cleaning with minimized emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Dry cleaning of equipment (Use of absorbent materials and vacuum cleaning including incineration of resulting solid waste) - Cleaning involving so-called pigs - Cleaning involving so-called "cleaning in place" (CIP System) - Steam cleaning and/or - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with minimized emissions to wastewater	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Waste treatment	Qual	Residues which cannot be recycled are disposed off as chemical waste.		Residues which cannot be recycled are disposed off as chemical waste.	
Process efficiency	Qual	Process optimized for highly efficient use of raw materials (II)	Typical measures may include e.g. - Closed automated process and/or - Closed transfer system and/or - Centralized process control and/or - re-use of process grey water for	Process optimized for highly efficient use of raw materials.	

			cleaning - optimized and/or automated systems for the transport and handling of raw materials, that minimize overall exposure levels and incidental spills - Reduced number of transfer and cleaning operations through e.g. - Manufacturing of different products from one premix (masterbatch), to which certain ingredients are added to yield the final products. - Dedicated storage tanks for raw materials, premixes and final products Recovery of materials through e.g. - Recycling Residues of granular detergents in cleaning steps at packaging or transfer lines into the slurries.	
On site treatment of wastewater	Qual	Oil water separator		User sites are assumed to be provided with oil/water separators and for waste water to be discharged via public sewer system

SPERC Cosmetics Europe 2.1.i.v2: Formulation of Non-liquid Creams (skin care, body care, Mascara, Make-up Foundation) (medium scale)

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Equipment cleaning	Qual	Equipment cleaning with reduced emissions to wastewater	Typically implemented measures for reducing emissions to waste water may include: - Manual removal of residual products adhering to equipment (e.g. by manual scrabbing, vacuum cleaning, etc.) - use of two-liner systems (i.e. single use disposable reactor cover that is incinerated after use as solid waste)	Equipment cleaning with reduced emissions to wastewater	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Waste treatment	Qual	Residues which cannot be recycled are disposed off as chemical waste.		Residues which cannot be recycled are disposed off as chemical waste.	
Process efficiency	Qual	Process optimized for efficient use of raw materials.	Typical measures may include e.g. - Closed batch systems and / or - Semi-closed transfer system and/or - Batch production of final product Reduced number of transfer and cleaning operations through e.g. - Dedicated storage tanks for raw materials, premixes and final products	Process optimized for efficient use of raw materials.	
On site treatment of wastewater	Qual	Oil water separator		User sites are assumed to be provided with oil/water separators and for waste water	

	to be discharged via public sewer system

SPERC Cosmetics Europe 2.1.j.v2: Formulation of Non-liquid Creams (skin care, body care, Mascara, Make-up Foundation) (small scale)

Determinant Label	Quali-/ Quanti -tative	Value	Description of Value	Standard Phrase	Efficiency -if applicable
Type of Process	Qual	Substance applied in aqueous process solution with negligible volatilization		Product applied in aqueous process solution with negligible volatilization.	
Equipment cleaning	Qual	Equipment cleaned with water, washing disposed of with wastewater.		Equipment cleaned with water, washing disposed of with wastewater	
Indoor/outdoor use	Qual	Indoor Use		Indoor	
Waste treatment		Residues which cannot be recycled are disposed off as chemical waste.		Residues which cannot be recycled are disposed off as chemical waste.	
Process efficiency	Qual	Process with efficient use of raw materials.	Typically implemented measures for reducing emissions to waste water may include: - Closed batch systems	Process with efficient use of raw materials.	
On site treatment of wastewater	Qual	Oil water separator		User sites are assumed to be provided with oil/water separators and for waste water to be discharged via public sewer system	