FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
1. Title	**1.1 Title of SPERC**	Manufacture of substance (industrial): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 1.1.v2	Y	Y
2. Scope	**2.1 Substance/Product Domain**			
	Substance types / functions / properties included or excluded	Applicable to petroleum substances and petrochemicals.	Y	N
	Additional specification of product types covered:	Includes a variety of aliphatic and aromatic hydrocarbons, ketones, alcohols, acetates, glycols, glycol ethers, and glycol ether acetates.	Y	N
	Inclusion of sub-SPERCs	Yes	N	N
	2.2 Process domain			
	Description of activities/processes:	Covers the commercial production of solvents and other large volume volatile organic chemicals from basic raw material feedstocks. Activities include recycling/recovery, material transfer, storage, maintenance, loading (including marine vessel/barge, road/rail car and bulk container), sampling, and associated laboratory activities. Manufacturing facilities typically operate at large integrated sites with a high degree of process control that improves resource efficiencies, material recovery, and process flexibility.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	M - Manufacture	Y	Y
	SU	SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)	Y	Y
	PC	PC0 – Other	Y	Y
3. Operational conditions	**3.1 Conditions of use**			
	Location of use	Indoor	Y	Y
	Water contact during use	Yes	Y	Y
	Connected to a standard municipal biological STP	No, site specifc biological STP with assumed discharge rate of municipal biological STP of >= 2000 m^3/day	Y	Y
	Rigorously contained system with minimisation of release to the environment	No	Y	N
	Further operational conditions impacting on releases to the environment	Volatile compounds subject to air emission controls. Wastewater emissions generated from equipment cleaning with water.	Y	Y
	3.2 Waste Handling and Disposal			
	Waste Handling and Disposal:	Residual raw materials and are in some cases recycled and fed back into the process reactor to improve efficiencies. In other cases, residues and by-products are used as raw materials for other downstream applications (EEA, 2016). Wastewater generated during cleaning and maintenance operations is directed to a waste water treatment plant for biological	Y	N

[1] Explanations that are more detailed can be provided for the CSR..

[2] For the ES for communication a standard phrase may be selected from the ESCom catalogue when available. When no phrase is available yet in the catalogue the proposed phrase can be reported here.

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		degradation. Atmospheric release of waste vapor may be ameliorated using wet scrubbers, thermal oxidizers, solid adsorbents, membrane separators, biofilters, and/or cold oxidizers for trapping residual vapours. All unrecovered waste is handled as an industrial waste that can be incinerated. EEA (2016). Prevention of hazardous waste in Europe — the status in 2015 European Environment Agency, Report No. 35/2016. Copenhagen, Denmark. https://www.eea.europa.eu/publications/waste-prevention-in-europe/file		
4. Obligatory RMMs onsite	**RMM limiting release to air:**	No obligatory RMMs.	Y	Y
	RMM Efficiency (air):	Optional RMMs have been assigned a nominal removal efficiency value that is not accounted for in the air release factor. See the background document for more information.	Y	Y
	Reference for RMM Efficiency (air):	EU (2016). Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Report EUR 28112 EN. European IPPC Bureau. Seville, Spain. http://eippcb.jrc.ec.europa.eu/reference/BREF/CWW_Bref_2016_published.pdf	Y	N
	RMM limiting release to water:	Oil-water separation (e.g. *via* oil water separators, oil skimmers, or dissolved air flotation) is required.	Y	Y
	RMM Efficiency (water):	The efficiency of this RMM varies dependent on the treatment technology and the properties of the substance.	Y	Y
	Reference for RMM Efficiency (water):	EU (2016). Best Available Techniques (BAT) Reference Document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. Report EUR 28112 EN. European IPPC Bureau. Seville, Spain. http://eippcb.jrc.ec.europa.eu/reference/BREF/CWW_Bref_2016_published.pdf	Y	N
	RMM limiting release to soil:	The sludge generated from wastewater treatment is not applied to agricultural soil.	Y	Y
	RMM Efficiency (soil):	Not applicable	Y	Y
	Reference for RMM Efficiency (soil):	ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf	Y	N
5. Exposure Assessment Input	**5.1 Substance use rate**			
	Amount of substance use per day:	2,000,000 kg/day	Y	Y
	Fraction of EU tonnage used in region:	100%	Y	N
	Fraction of Regional tonnage used locally:	100%	Y	N
	Justification / information source:	ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf	Y	N
	5.2 Days emitting			
	Number of emission days per year:	300 (default value)	Y	Y
	Justification / information source:	ECHA, 2016. Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		Version 3.0. European Chemicals Agency. Helsinki, Finland. https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf		
	5.3 Release factors			
	sub-SPERC identifier:	ESVOC 1.1.a.v2 VP >10000 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure >10000 Pa Water solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air)	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.		
	sub-SPERC identifier:	ESVOC 1.1.b.v2 VP >10000 Pa; WS 1-10 mg/l	Y	N
	ERC:	ERC 1		
	sub-SPERC applicability:	Vapour pressure >10000 Pa Water solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.		
	sub-SPERC identifier:	ESVOC 1.1.c.v2 VP >10000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure >10000 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.		
	sub-SPERC identifier:	ESVOC 1.1.d.v2 VP >10000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure >10000 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.		
	sub-SPERC identifier:	ESVOC 1.1.e.v2 VP >10000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure >10000 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities.	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.		
	sub-SPERC identifier:	ESVOC 1.1.f.v2 VP 1000-10000 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1000-10000 Pa Water Solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.g.v2 VP 1000-10000 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1000-10000 Pa Water Solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.h.v2 VP 1000-10000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1000-10000 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.i.v2 VP 1000-10000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1000-10000 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.j.v2 VP 1000-10000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1000-10000 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	5.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.k.v2 VP 100-1000 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water Solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.I.v2 VP 100-1000 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water Solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.m.v2 VP 100-1000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland.	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		(https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)		
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.n.v2 VP 100-1000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01 %	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1).	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)		
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.o.v2 VP 100-1000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 100-1000 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	1.0%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		(ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)		
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.p.v2 VP 10-100 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water Solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.q.v2 VP 10-100 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water Solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.r.v2 VP 10-100 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.s.v2 VP 10-100 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium.	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		(https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)		
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.t.v2 VP 10-100 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 10-100 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.1%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)		
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01 %	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.u.v2 VP 1-10 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water Solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)		
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.v.v2 VP 1-10 Pa; WS 1--10 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water Solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)		
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.w.v2 VP 1-10 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.x.v2 VP 1-10 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.y.v2 VP 1-10 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure 1-10 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.z.v2 VP <1 Pa; WS <1 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water Solubility <1 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.001%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2,	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)		
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.001%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.aa.v2 VP <1 Pa; WS 1--10 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water Solubility 1-10 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.001%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM).	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)		
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.003%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01 %	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.bb.v2 VP <1 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water Solubility 10-100 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.001%	Y	Y
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of	Y	N

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
		environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)		
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.03%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.cc.v2 VP <1 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water Solubility 100-1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.001%	Y	Y

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.3%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. The assigned value is in agreement with a survey of European petroleum refiners that did not show an appreciable generation of residual hazardous solvent waste (CONCAWE, 2017). CONCAWE, 2017. 2013 survey of waste production and management at European refiners, Conservation of Clean Air and Water in Europe, Brussels, Belgium. https://www.concawe.eu/wp-content/uploads/2017/11/rpt12-17.pdf.	Y	N
	sub-SPERC identifier:	ESVOC 1.1.dd.v2 VP <1 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 1		
	sub-SPERC applicability:	Vapour pressure <1 Pa Water Solubility >1000 mg/l	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.001%	Y	Y

FS Section	Content field	Explanation of content	CSR[1]	eSDS[2]
	Justification of RFs (Air):	This value has been adopted from a published source that documents the worst-case estimates of air emissions based on the expert judgement of environmental scientists from the Dutch National Institute for Public Health and the Environment (RIVM). European Commission (2003). European Commission Technical Guidance Document on Risk Assessment (EUTGD), Report EUR 20418 EN/2, Appendix 1, Table A1.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tgdpart2_2ed_en.pdf)	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	1.0%	Y	Y
	Justification of RFs (Water):	The approach used to assign this value is largely qualitative in nature and takes into consideration both the physical properties of the substance and the magnitude of wastewater production at representative production sites. This release factor has been conservatively calculated using water solubility information together with survey results of wastewater effluent volume per tonne of capacity at European oil refineries. CONCAWE (2012). Trends in oil discharged with aqueous effluents from oil refineries in Europe. Report No. 6/12. Brussels, Belgium. (https://www.concawe.eu/wp-content/uploads/2017/01/report-no-6_12.pdf)	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.01%	Y	Y
	Justification of RFs (Soil):	The value has been adopted from an authoritative literature source that documents the release factors for each environmental release category (ERC). The preceding value corresponds to the default release factor for substance manufacturing (ERC 1). ECHA (2016). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.16: Environmental exposure assessment Version 3.0. Appendix A.16-1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/information_requirements_r16_en.pdf)	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	0.2%	Y	N
	Justification of RFs:	The value is consistent with well documented efficiencies and economies that take place in highly automated petrochemical production facilities. The operational conditions are outlined in greater detail in Factsheet Section 3.2 and are consistent with ECHA guidelines for establishing the irrelevance of a waste stage analysis for this this type of facility. ECHA (2012). Guidance on Information Requirements and Chemical Safety Assessment Chapter R.18: Exposure scenario building and environmental release estimation for the waste life stage Version 2.1. Helsinki, Finland. (https://echa.europa.eu/documents/10162/13632/r18_v2_final_en.pdf)	Y	N
References to SPERC Background Document				
	Reference to Background Document	ESIG/ESVOC (2018). SpERC Background Document (1st draft). Specific Environmental Release Categories (SpERCs) for the industrial manufacture, formulation, and intermediate use of solvents and solvent borne substances. European Solvents Industry Group. Brussels, Belgium.	Y	N