

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
1. Title	1.1 Title of SPERC	Formulation & (re)packing of substances and mixtures (industrial): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 2.2.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 formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small-scale packing, sampling, maintenance and associated laboratory activities.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	F – Formulation or re-packing	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 specific 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 (EU, 2016). Wastewater generated during cleaning and maintenance operations is directed to a waste water treatment plant for biological 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.	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 ECom 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
		All unrecovered waste is handled as an industrial waste that can be incinerated or in some cases re-distilled. 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		
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). <i>Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment</i> 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:	100,000 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:	OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	Y	N
	5.2 Days emitting			
	Number of emission days per year:	300 (default value)	Y	Y
	Justification / information source:	ECHA (2016). <i>Guidance on Information Requirements and Chemical Safety Assessment. Chapter R.16: Environmental Exposure Assessment</i> Version 3.0. European Chemicals Agency. 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 Release factors				
	sub-SPERC identifier:	ESVOC 2.2.a.v2 VP >1000 Pa; WS <1 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility <1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air)	2.5%	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 A2.1, 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):	0.0005%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. (http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/ijm/mono(2004)21&doclanguage=en)	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 formulation into a mixture (ERC 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)	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey.	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
		https://etd.lib.metu.edu.tr/upload/12607041/index.pdf		
	sub-SPERC identifier:	ESVOC 2.2.b.v2 VP >1000 Pa; WS 1-10 mg/l	Y	N
	ERC:	ERC 2		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	2.5%	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 A2.1, 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):	0.002%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.c.v2 VP >1000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water Solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	2.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.02%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.d.v2 VP >1000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water Solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	2.5%	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 A2.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.2%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. (http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en)	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 formulation into a mixture (ERC 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)	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. (https://etd.lib.metu.edu.tr/upload/12607041/index.pdf)	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.e.v2 VP >1000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure >1000 Pa Water Solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	2.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.5%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.f.v2 VP 100-1000 Pa; WS <1 mg/l	Y	N
	ERC	ERC 2		
	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0005%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.g.v2 VP 100-1000 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 2		
	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.h.v2 VP 100-1000 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 2		
	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.02%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.i.v2 VP 100-1000 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 2		
	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.2%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/n/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.j.v2 VP 100-1000 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 2		
	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.5%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.k.v2 VP 10-100 Pa; WS <1 mg/l	Y	N
	ERC	ERC 2		
	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):	0.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0005%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.1.v2; VP 10-100 Pa; WS 1-10 mg/l	Y	N
	ERC	ERC 2		
	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):	0.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.002%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.m.v2 VP 10-100 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 2		
	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):	0.5%	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 A2.1, 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):	0.02%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. (http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/ijm/mono(2004)21&doclanguage=en)	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 formulation into a mixture (ERC 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)	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. (https://etd.lib.metu.edu.tr/upload/12607041/index.pdf)	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.n.v2 VP 10-100 Pa; WS 100-1000 mg/l	Y	N
	ERC	ERC 2		
	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):	0.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.2%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.o.v2 VP 10-100 Pa; WS >1000 mg/l	Y	N
	ERC	ERC 2		
	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):	0.5%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.5%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.p.v2 VP <10 Pa; WS <1 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure <10 Pa Water Solubility <1 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	0.25%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.0005%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.q.v2 VP <10 Pa; WS 1--10 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure <10 Pa Water Solubility 1-10 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	0.25%	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 A2.1, 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):	0.002%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	sub-SPERC identifier:	ESVOC 2.2.r.v2 VP <10 Pa; WS 10-100 mg/l	Y	N
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure <10 Pa Water Solubility 10-100 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	0.25%	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 A2.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.02%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. (http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en)	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 formulation into a mixture (ERC 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)	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. (https://etd.lib.metu.edu.tr/upload/12607041/index.pdf)	Y	N
	sub-SPERC identifier:	ESVOC 2.2.s.v2	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
		VP <10 Pa; WS 100-1000 mg/l		
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure <10 Pa Water Solubility 100-1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	0.25%	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 A2.1, Brussels, Belgium. (https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf)	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.2%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. (http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en)	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 formulation into a mixture (ERC 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)	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. (https://etd.lib.metu.edu.tr/upload/12607041/index.pdf)	Y	N
	sub-SPERC identifier:	ESVOC 2.2.t.v2 VP <10 Pa; WS >1000 mg/l	Y	N

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	ERC	ERC 2		
	sub-SPERC applicability:	Vapour pressure <10 Pa Water Solubility >1000 mg/l	Y	N
5.3.1 Release Factor – air				
	Numeric value / percent of input amount (Air):	0.25%	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 A2.1, Brussels, Belgium. https://echa.europa.eu/documents/10162/16960216/tqdp2_2ed_en.pdf	Y	N
5.3.2 Release Factor – water				
	Numeric value / percent of input amount (Water):	0.5%	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 a published value for the wastewater generation volume per tonne of capacity at a facility formulating industrial lubricants (OECD, 2004). OECD (2004). Emission Scenario Documents on Lubricants and Lubricant Additives. OECD Series on Emission Scenario Documents, Number 10. Organization for Economic Co-operation and Development. Paris, France. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=en/jm/mono(2004)21&doclanguage=en	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 formulation into a mixture (ERC 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	Y	N
5.3.4 Release Factor – waste				
	Percent of input amount disposed as waste:	4.0%	Y	N
	Justification of RFs:	The value has been adopted from an authoritative literature source that documents the release factors for hazardous wastes generated in an industrial setting (Yilmaz, 2006). Yilmaz, O., 2006. Hazardous Waste Inventory of Turkey, Department of Environmental Engineering, Middle East Technical University, Ankara, Turkey. https://etd.lib.metu.edu.tr/upload/12607041/index.pdf	Y	N

References to SPERC Background Document

FS Section	Content field	Explanation of content	CSR ¹	eSDS ²
	Reference to Background Document	ESIG/ESVOC (2018). SpERC Background Document (1 st 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