FS Section	Content field	Explanation of content	CSR	eSDS
1. Title	**1.1 Title of SPERC**	Use as a fuel (consumer): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 9.12c.v3	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 use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste and consumer uses in liquid fuels.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	C – Consumer use	Y	Y
	SU	SU8 – Manufacture of bulk large-scale chemicals (including petroleum products)	Y	Y
	PC	PC13 – Fuels	Y	Y
3. Operational conditions	**3.1 Conditions of use**			
	Location of use	Indoor/Outdoor	Y	Y
	Water contact during use	Yes	Y	Y
	Connected to a standard municipal biological STP	Yes	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 prone to atmospheric release. Wastewater emissions generated from equipment cleaning with water.	Y	Y
	3.2 Waste Handling and Disposal			
	Waste Handling and Disposal:	Although household hazardous waste (HHW) represents a small portion of the total domestic waste produced by consumers, it needs to be separated from normal trash and amassed for special handling. Many regional municipalities have established voluntary procedures for the identification, collection, and disposal of HHW in a safe and efficient manner. Once amassed, the HHW can be transported to collection sites where it is reused, recycled, or incinerated. The handling and disposal of hazardous waste needs to conform with established practices and local/regional regulations in order to minimize environmental release and the potential for ecological harm. Inglezakis, V.J., Moustakas, K. (2015). Household hazardous waste management: A review. Journal of Environmental Management 150, 310-321. doi: 10.1016/j.jenvman.2014.11.021.	Y	N
	RMM limiting release to air:	No obligatory RMMs.	Y	Y

FS Section	Content field	Explanation of content	CSR	eSDS
4. Obligatory RMMs onsite	**RMM Efficiency (air):**	Emissions to air are minimized when the product is used in accordance with the manufacturers' instructions and established practices.	Y	Y
	Reference for RMM Efficiency (air):	BCERF, 1999. Safe Use and Storage of Hazardous Household Products. Cornell University, Program on Breast Cancer and Environmental Risk Factors. Ithaca, NY. https://extensionhealthyhomes.org/Documents/fs22.safeUse.pdf.	Y	N
	RMM limiting release to water:	By default, the release to water is modified after biological treatment at a standard municipal sewage treatment plant (STP) with an effluent flow rate of 2,000 m³/day. The effluent discharge rate is applicable to a group of 10,000 inhabitants who generate 200 L of wastewater per person.	Y	Y
	RMM Efficiency (water):	The removal efficiency is provided by the SimpleTreat model, which takes into consideration the biodegradability, partitioning behaviour, and volatility of an organic substance. Degradation assumes the operation of an aerobic activated-sludge reactor under steady-state conditions.	Y	Y
	Reference for RMM Efficiency (water):	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
	RMM limiting release to soil:	No obligatory RMMs.	Y	Y
	RMM Efficiency (soil):	Emissions to soil are minimized when the product is used in accordance with the manufacturers' instructions and/or the established practices.	Y	Y
	Reference for RMM Efficiency (soil):	BCERF, 1999. Safe Use and Storage of Hazardous Household Products. Cornell University, Program on Breast Cancer and Environmental Risk Factors. Ithaca, NY. https://extensionhealthyhomes.org/Documents/fs22.safeUse.pdf.	Y	N
5. Exposure Assessment Input	**5.1 Substance use rate**			
	Amount of substance use per day:	Supplied by registrant	Y	Y
	Fraction of EU tonnage used in region:	10% (default value)	Y	N
	Fraction of Regional tonnage used locally:	0.05% (default value)	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:	365 (default value)	Y	Y
	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
	5.3 Release factors			
	sub-SPERC identifier:	ESVOC 9.12c.a.v3 VP >5000 Pa	Y	N
	ERC	ERC 9a ERC 9b		
	sub-SPERC applicability:	Vapour pressure >5000 Pa	Y	N
	5.3.1 Release Factor – air			

FS Section	Content field	Explanation of content	CSR	eSDS
	Numeric value / percent of input amount (Air)	0.4%	Y	Y
	Justification of RFs (Air):	The value has been derived from a published emission factor for the evaporative and exhaust-related release of gasoline hydrocarbons from passenger vehicles. Emissions reported in grams per mile were converted to grams per gram of fuel combusted by adjusting for the average fuel efficiency in an applicable fleet of vehicles. ANL (2013). Updated Emission Factors of Air Pollutants from Vehicle Operations in GREET Using MOVES. Argonne National Laboratory. Argonne, IL. https://greet.es.anl.gov/publication-vehicles-13 NimbleFins (2019). Average MPG of Cars 2019. NimbleFins Limited. London, United Kingdom. 24 July, 2019. https://www.nimblefins.co.uk/average-mpg	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The water and soil release factors examined the fuel spillages at service stations using conventional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.005%	Y	Y
	Justification of RFs (Soil):	The water and soil release factors examined the fuel spillages at service stations using conventional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	2%	Y	N
	Justification of RFs:	The waste factor has been taken from a life cycle assessment of gasoline production and use in passenger cars (Morales, 2015). The evaluation revealed that 2.1 ml of hazardous waste was incinerated per km driven. The stated fuel mileage of 150 ml/km yields a waste release factor of 1.4%, which was rounded upward to 2%. An uncertainty factor has not been applied to this value since the waste associated with industrial fuel use is expected to less than the value obtained for this comprehensive analysis. Morales, M. et al. (2015). Life cycle assessment of gasoline production and use in Chile. *Science of the Total Environment* 505, 833-843.	Y	N

FS Section	Content field	Explanation of content	CSR	eSDS
	sub-SPERC identifier:	ESVOC 9.12c.b.v3 VP 500-5000 Pa	Y	N
	ERC	ERC 9a ERC 9b		
	sub-SPERC applicability:	Vapour pressure 500-5000 Pa	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.2%	Y	Y
	Justification of RFs (Air):	The value has been derived from a published emission factor for the exhaust-related release of diesel hydrocarbons from passenger vehicles. Emissions reported in grams per mile were converted to grams per gram of fuel combusted by adjusting for the average fuel efficiency in an applicable fleet of vehicles. ANL (2013). Updated Emission Factors of Air Pollutants from Vehicle Operations in GREET Using MOVES. Argonne National Laboratory. Argonne, IL. https://greet.es.anl.gov/publication-vehicles-13 NimbleFins (2019). Average MPG of Cars 2019. NimbleFins Limited. London, United Kingdom. 24 July, 2019. https://www.nimblefins.co.uk/average-mpg	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The water and soil release factors examined the fuel spillages at service stations using conventional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.005%	Y	Y
	Justification of RFs (Soil):	The water and soil release factors examined the fuel spillages at service stations using conventional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	2%	Y	N
	Justification of RFs:	The waste factor has been taken from a life cycle assessment of gasoline production and use in passenger cars (Morales, 2015). The evaluation	Y	N

FS Section	Content field	Explanation of content	CSR	eSDS
		revealed that 2.1 ml of hazardous waste was incinerated per km driven. The stated fuel mileage of 150 ml/km yields a waste release factor of 1.4%, which was rounded upward to 2%. An uncertainty factor has not been applied to this value since the waste associated with industrial fuel use is expected to less than the value obtained for this comprehensive analysis. Morales, M. et al. (2015). Life cycle assessment of gasoline production and use in Chile. *Science of the Total Environment* 505, 833-843.		
	sub-SPERC identifier:	ESVOC 9.12c.c.v3 VP <500 Pa	Y	N
	ERC	ERC 9a ERC 9b		
	sub-SPERC applicability:	Vapour pressure <500 Pa	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air):	0.01%	Y	Y
	Justification of RFs (Air):	The emission of volatile organic compounds during the residential combustion of kerosene-containing fuel oil provided a basis for determing this release factor. The emmssion factor for fuel oils was adjusted for ist kerosene content to obtain a value that was specific for this vapor pressure category. Haneke, B.H. and Johnson, G.T. (2001). A national methodology and emission inventory for residential fuel combustion. U.S. Environmental Protection Agency, Emission Inventory Improvement Program. Durham, NC. https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	0.00002%	Y	Y
	Justification of RFs (Water):	The water and soil release factors examined the fuel spillages at service stations using conventional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	0.005%	Y	Y
	Justification of RFs (Soil):	The water and soil release factors examined the fuel spillages at service stations using conven tional dispensing equipment with no vapor recovery capabilities. The lost fuel was distributed to water and soil after adjusting for the amount available for evaporation. Partitioning to the remaining evironmental compartments was estimated using a multimedia fugacity model. Morgester, J.J., et al. (1992). Comparison of spill frequencies and amounts at vapor recovery and conventional service stations in California. *Journal of the Air & Waste Management Association* 42, 284-289. Hilpert, M., and Breysse, P.N. (2014). Infiltration and evaporation of small hydrocarbon spills at gas stations. *Journal of Contaminant Hydrology* 170, 39-52.	Y	N

FS Section	Content field	Explanation of content	CSR	eSDS
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	2%	Y	N
	Justification of RFs:	The waste factor has been taken from a life cycle assessment of gasoline production and use in passenger cars (Morales, 2015). The evaluation revealed that 2.1 ml of hazardous waste was incinerated per km driven. The stated fuel mileage of 150 ml/km yields a waste release factor of 1.4%, which was rounded upward to 2%. An uncertainty factor has not been applied to this value since the waste associated with industrial fuel use is expected to less than the value obtained for this comprehensive analysis. Morales, M. et al. (2015). Life cycle assessment of gasoline production and use in Chile. *Science of the Total Environment* 505, 833-843.	Y	N
References to SPERC Background Document				
	Reference to Background Document	ESIG/ESVOC (2019). SpERC Background Document. Specific Environmental Release Categories (SpERCs) for the consumer use of solvents and solvent-borne substances in high release lubricants, fuels, and low release lubricants. European Solvents Industry Group. Brussels, Belgium.	Y	N