- FS Section	Content field	Explanation of content	CSR	eSDS
1. Title	**1.1 Title of SPERC**	De-icing applications (professional): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 8.14a.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	No	N	N
	2.2 Process domain			
	Description of activities/processes:	Covers use for ice prevention and de-icing of vehicle, aircraft and other equipment by spraying.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	PW – Widespread use by professional workers	Y	Y
	SU	SU0 – Other	Y	Y
	PC	PC4 – Anti-freeze and de-cing products	Y	Y
3. Operational conditions	**3.1 Conditions of use**			
	Location of use	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:	Unused and spent products and solutions should be appropriately labelled and stored for eventual recovery or disposal as hazardous waste. A suitable unbreakable and closable container should be used when storing and shipping hazardous materials. The containers must be solvent compatible, leakproof, and free of any defects. Contaminated debris such as disposable paper towels, brushes, rollers, masks, transfer vessels, and wipes that may contain small amounts of solvent residue need to be handled as hazardous waste and properly disposed of in a manner that is consistent with local, regional, and national regulations. Direct disposal of waste into a municipal sewer system needs to conform with all applicable laws and regulations. A spill plan needs to be available that outlines the steps to be taken to minimize any potential health and environmental threats. EPA (2001). Managing Your Hazardous Waste: A Guide for Small Businesses. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. Washington, DC. https://www.epa.gov/sites/production/files/2014-12/documents/k01005.pdf.	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):	AEA, 2015. Recommendations for De-icing/Anti-icing Aeroplanes on the Ground. Association of European Airlines. Brussels, Belgium. https://skybrary.aero/bookshelf/books/2869.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 m^3/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 air are minimized when the product is used in accordance with the manufacturers' instructions and established practices.	Y	Y
	Reference for RMM Efficiency (soil):	AEA, 2015. Recommendations for De-icing/Anti-icing Aeroplanes on the Ground. Association of European Airlines. Brussels, Belgium. https://skybrary.aero/bookshelf/books/2869.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 8.14a.v3	Y	N
	ERC	ERC 8d		
	sub-SPERC applicability:	None	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air)	5%	Y	Y
	Justification of RFs (Air):	The value is based on a recommendation jointly issued by the European Monitoring and Evaluation Programme (EMEP) and the European Environment Agency (EEA) and considers the emission of non-methane VOCs as a result of aircraft deicing (EEA. 2019). The recommended value	Y	N

- FS Section	Content field	Explanation of content	CSR	eSDS
		of 53 kg/tonne of applied deicer is equivalent to an air emission factor of 5.3%, which has been rounded to a value 5% to improve its utility. EEA (2019). EMEP/EEA Air Pollutant Emisson Inventory Guidebook: Technical Guidance to Prepare National Emission Inventories. European Environment Agency, Copenhagen, Denmark. Available from: https://www.eea.europa.eu/publications/emep-eea-guidebook-2019		
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	70%	Y	Y
	Justification of RFs (Water):	The value is based on survey data from US airports showing that at least 70% of the deicing fluid used on aircraft was recovered and treated at a wastewater treatment plant (FAA, 2011; Switzenbaum et al.1999), This includes the ADF that is deposited on the pavement below the aircraft as well as fluid that is lost due to overspray or drippage. The used fluid was collected in stormwater sewers either at the gate or at dedicated central deicing pads. FAA (2001). Anti-Icing Endurance Time Tests of Two Certified SAE Type I Aircraft Deicing Fluids. U.S. Department of Transportation, Federal Aviation Administration, Washington, DC. Available from: https://rosap.ntl.bts.gov/view/dot/61475 Switzenbaum M. S., Veltman S., Schoenberg T., Durand C. M., Mericas D., Wagoner B. (1999). Workshop: Best Management Practices for Airport Deicing Stormwater. University of Massachusetts/Amherst, Amherst, MA. Available from: http://s3-us-west-2.amazonaws.com/ucldc-nuxeo-ref-media/6b2e6aad-9833-4d06-962f-1fad660ed43b	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	12%	Y	Y
	Justification of RFs (Soil):	The overall loss of aircraft deicing fluid to soil and groundwater was conservatively determined using the results from a study examining the amount of fluid captured in snowbank and snowmelt water (Corsi et al., 2006). The average capture amount of 12.6% has been truncated at 12% and provides a reasonable approximation of the soil release associated with the professional use of a water treatment chemicals. Corsi S. R., Geis S. W., Loyo-Rosales J. E., Rice C. P., Sheesley R. J., Failey G. G., Cancilla D. A. (2006). Characterization of aircraft deicer and anti-icer components and toxicity in airport snowbanks and snowmelt runoff. Environmental Science & Technology; 40: 3195-3202.	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	10%	Y	N
	Justification of RFs:	The waste generation factor was taken from a life cycle assessment of a commercial antifreeze solution suitable for use in automobiles (Hunt, 1996). The stated value represents the amount of ethylene glycol waste that is generated as a result of improper disposal of a 50% ethylene glycol solution. An uncertainty factor has not been applied to this value since a portion of the waste includes the improper release to surface water and soil. Hunt, R.G. et al. (1996). Life cycle assessment of ethylene glycol and propylene glycol antifreeze, International Congress & Exposition, SAE Technical Paper, Detroit, MI.	Y	N
References to SPERC Background Document				
	Reference to Background Document	ESIG/ESVOC (2019). SpERC Background Document (1st draft). Specific Environmental Release Categories (SpERCs) for the professional use of solvents and solvent-borne substances in de-icing, construction, and laboratory applications. European Solvents Industry Group. Brussels, Belgium.	Y	N