FS Section	Content field	Explanation of content	CSR	eSDS
1. Title	**1.1 Title of SPERC**	Laboratory reagents (professional): solvent-borne	Y	Y
	1.2 SPERC code	ESVOC SPERC 8.17.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 the use of small quantities within laboratory settings, including material transfers and equipment cleaning.	Y	Y
	2.3 List of applicable Use Descriptors			
	LCS	PW – Widespread use by professional workers	Y	Y
	SU	SU24 – Scientific research and development	Y	Y
	PC	PC21 – Laboratory chemicals	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	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

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4. Obligatory RMMs onsite	**RMM Efficiency (air):**	Emissions to air are minimized when the product is used in accordance with established practices.	Y	Y
	Reference for RMM Efficiency (air):	USEPA (2000). Environmental Management Guide for Small Laboratories. EPA 233-B-00-001, U.S. Environmental Protection Agency, Small Business Division. Washington, DC. https://nepis.epa.gov/Exe/ZyPDF.cgi/100049DH.PDF?Dockey=100049DH.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 established practices.	Y	Y
	Reference for RMM Efficiency (soil):	USEPA (2000). Environmental Management Guide for Small Laboratories. EPA 233-B-00-001, U.S. Environmental Protection Agency, Small Business Division. Washington, DC. https://nepis.epa.gov/Exe/ZyPDF.cgi/100049DH.PDF?Dockey=100049DH.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 8.17.v3	Y	N
	ERC	ERC 8a		
	sub-SPERC applicability:	None	Y	N
	5.3.1 Release Factor – air			
	Numeric value / percent of input amount (Air)	32%	Y	Y

FS Section	Content field	Explanation of content	CSR	eSDS
	Justification of RFs (Air):	The value was based on an examination of the stack releases of 21 polar, nonpolar, and chlorinated solvent vapors from four large research laboratories located in the US (Ballinger et al., 2013). Measurements revealed air release fractions that were normally distributed and ranging from 0.9% to 50.7% with an upper 90% limit value of 32%. This value provides a suitably conservative determination of the air releases that would be expected with the professional use of solvents in the laboratory. Ballinger, M.Y., Duchsherer, C.J., Woodruff, R.K., Larson, T.V., 2013. Estimating air chemical emissions from research activities using stack measurement data. *Journal of the Air & Waste Management Association* **63**, 336-348.	Y	N
	5.3.2 Release Factor – water			
	Numeric value / percent of input amount (Water):	15%	Y	Y
	Justification of RFs (Water):	University guidelines allow polar solvents to be washed down the laboratory drains at aqueous concentrations not exceeding 10% and volumes not exceeding 3 L/day (University of Gothenburg, 2012.). This equates to a daily disposal of 0.3 L/day of neat solvent and a release factor of 15%, assuming a typical solvent use rate of 2 L/day in a modestly sized wet chemistry laboratory (Welch et al., 2015; Scott, 2000). University of Gothenburg, 2012. Guidelines for Wastewater from Laboratory Research and Teaching at the University of Gothenburg and the Chalmers University of Technology. University of Gothenburg. Gothenburg, Germany. Welch, C.J., Nowak, T., Joyce, L.A., Regalado, E.L., 2015. Cocktail chromatography: enabling the migration of HPLC to nonlaboratory environments. ACS Sustainable Chemistry & Engineering 3, 1000-1009. Scott, R.I., 2000. Pollution Prevention in an Organic Chemistry Research Laboratory Princeton University. Princeton, NJ. https://www.princeton.edu/~rmizzo/P2-chemistrylab.htm.	Y	N
	5.3.3 Release Factor – soil			
	Numeric value / percent of input amount (Soil):	1%	Y	Y
	Justification of RFs (Soil):	A soil release factor for a mid-sized professional laboratory was developed assuming that a small amount of a liquid reagent will be spilled or leaked during storage or use at the site. Many small to medium-sized laboratories are equipped with outdoor storage areas where reagents and solvents are stowed in bulk quantities for later use (Eddy and Wood, 1997). Transport to and from these areas presents an opportunity for accidental ground spillage and release accompanied by an incomplete clean-up of the affected area. It is highly probable that some releases will occur at professional laboratories using outdoor storage facilities and the amount released is estimated to be no greater than 1% for the vast majority of wet chemistry teaching laboratories located on college campuses. Eddy, R.M., Wood, J.T., 1997. Chemical safety and lab renovations. Chemical Health & Safety 4, 14-17. Tsokou, A.M., Howells, A., Stark, M.S., 2019. Measuring and reducing chemical spills by students: a randomized controlled trial of providing feedback. Journal of Chemical Education 96, 2180-2187.	Y	N
	5.3.4 Release Factor – waste			
	Percent of input amount disposed as waste:	50%	Y	N
	Justification of RFs:	The solvent waste generated in research and analytical laboratories is generally accumulated and disposed of as hazardous waste. There has also been a recent trend toward the recovery and reuse of common laboratory solvents such as ethyl acetate, tolune, and acetonitrile (Stepnowski, P. et al., 2002; Zweckmair et al., 2017). When utilized, the solvent recovery efficiencies typically range from 50 to 95%. Since these recovery systems are not in widespread use, a substantial portion of the solvent waste from laboratories is collected for disposal in an incinerator. The waste release factor of 50% reflects the increasingly common implementation of recovery and reuse programs in many laboratories.	Y	N

FS Section	Content field	Explanation of content	CSR	eSDS
		Stepnowski, P. et al. (2002). Total recycling of chromatographic solvents—applied management of methanol and acetonitrile waste. Resources, Conservation and Recycling 35, 163-175. Zweckmair, T. et al. (2017). Recycling of analytical grade solvents on a lab scale with a purpose-built temperature-controlled distillation unit. Organic Process Research & Development 21, 578-584.		
References to SPERC Background Document				
	Reference to Background Document	ESIG/ESVOC (2023). SpERC Background Document (2nd edition). 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