

**SPERC factsheet – Industrial formulation of lubricant additives**

<b>General Information</b>	
<b>Title of Specific ERC</b>	Industrial formulation of lubricant additives
<b>Applicable ERC</b>	2
<b>Responsible</b>	ATIEL-ATC
<b>Version</b>	V1
<b>Code</b>	ATIEL-ATC SPERC 2.Ai-a.v1
<b>Scope</b>	Covers formulation of lubricant additives, lubricants and greases. Includes associated material transfers, mixing, large and small scale packing, sampling, maintenance and associated laboratory activities.  <i>Substance Domain:</i> Applicable to typical constituents of lubricants and metal working fluids
<b>Coverage</b>	Sectors of Use: SU 10 (Formulation [mixing] of preparations and/or re-packaging (excluding alloys) )  Process Categories: PROC 1 (Use in closed process, no likelihood of exposure), PROC 2 (Use in closed, continuous process with occasional controlled exposure), PROC 3 (Use in closed batch process (synthesis or formulation)), PROC 4 (Use in batch and other process (synthesis) where opportunity for exposure arises), PROC 5 (Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)), PROC 8a (Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities), PROC 8b (Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities), PROC 9 (Transfer of substance or preparation into small containers (dedicated filling line, including weighing)), PROC 15 (Use as laboratory reagent)

	<b>Characteristics of specific ERC</b>	<b>Type of Input Information</b>	<b>Processing of Input Information</b>
<b>Operational Conditions</b>	Negligible wastewater emissions as process operates without water contact. [OOC20] Process with efficient use of raw materials.[OOC17]	Release Factor based on oil-water phase partitioning and limits for oil discharges <sup>1</sup>	
<b>Obligatory onsite RMM</b>	User sites are assumed to be provided with oil/water separators or equivalent and for waste water to be discharged via public sewer system		
<b>Substance Use Rate</b>	100 000 kg/day <sup>2</sup>	Typical maximum site tonnage, based on sector knowledge	None
<b>Days Emitting</b>	100 - 300 days/year	Default approach of the REACH guidance <sup>3</sup>	None
<b>Environmental Parameters for Fate Calculation</b>	Local freshwater dilution factor : 10. [EF1] Local marine dilution factor : 100 [EF2] Receiving surface water flow is 18000 m <sup>3</sup> /d [EF3]	ERC default settings <sup>4</sup>	These values can be scaled with site specific data

<sup>1</sup> OECD Emission Scenario Document on Lubricants and Lubricant Additives, Number 10, November 2004 for details of principles and [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES) for explanation and application.

<sup>2</sup> Substance Use Rate is Msperc (k/d) which is defined as the maximum amount of Risk Determining Substance (RDS) used in a typical process.

<sup>3</sup> ECHA Guidance on information requirements and chemical safety assessment, Chapter R.16: Environmental Exposure Estimation, Section R.16.3.2

<sup>4</sup> ECHA Guidance on information requirements and chemical safety assessment, Chapter R.16: Environmental Exposure Estimation, Section R.16.6.3

<b>Emission Fractions</b>	<b>Characteristics of Specific ERC</b>		<b>Justification</b>
	<i>To Air</i>	5 E-07	Based on sector knowledge information and responses to the ATIEL-ATC questionnaire 2010 Release estimations are based on emission data for VOC and hydrocarbons. <sup>5</sup>
	<i>To Municipal Wastewater/Sewer/ Water courses</i>	Depends on physico-chemical properties of RDS	Release fraction is after application of assumed Risk Management Measures based on sector practices and other regulatory requirements for risk determining substances in base oil, consistent with respect to OECD lubricants ESD <sup>6</sup>
	<i>To Soil</i>	0.0	Surveys (ATIEL-ATC questionnaire responses 2010) have revealed that no biosolids of industrial origin are applied to land (in line with national regulations) and are incinerated.

<sup>5</sup> See [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES) for responses to questionnaire.

<sup>6</sup> OECD Emission Scenario Document on Lubricants and Lubricant Additives, Number 10, November 2004 for details of principles, [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES) for explanation and other information such as for the application see the document ATIEL-ATC\_Estimating Environmental Releases of Lubricant Additives to Water, and for calculations depending on the physico-chemical properties of the Risk Determining Substance see the spreadsheet.

	Type of RMM	Typical Efficiency
Appropriate Risk Management Measures (RMM) that may be used to achieve required emission reduction	<b>Air</b>	
	<i>Local/Onsite Technology</i>	
	a) Wet scrubber - for gas removal, or b) Waste gas treatment - thermal oxidation	a) Default value = 70% and maximum achievable > 99% b) Default value= 98 % and maximum achievable > 99.9%  7
	<b>Water</b>	
<i>Offsite Technology</i> Municipal wastewater treatment plant	Waste water is assumed to be discharged via public sewer system.	
<i>Local/Onsite Technology</i> User sites are assumed to be provided with oil/water separators or equivalent and for waste water to be discharged via public sewer system	Minimum 90-95 % <sup>8</sup>	

<sup>7</sup> Values as documented in Cefic RMM library see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/> ; for responses to ATIEL-ATC questionnaire values see [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES).

<sup>8</sup> Values as documented in Cefic RMM library see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/> ; for responses to ATIEL-ATC questionnaire values see [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES).

**Safe Use****Communication in SDS**

The REACH registrant establishes a set of standard conditions of safe use for a substance by adopting the conditions specified in this SPERC and recommending a Required Removal Efficiency (RRE) for adequate risk reduction. If RRE = 0, wastewater emission controls (beyond those specified by the operational conditions) are not required to ensure safe use of the substance. If > 0, the RRE may be achieved via offsite municipal sewage treatment (providing substance removal efficiency,  $RE_{\text{Offsite}}$ ).

Removal efficiency requirements, as dictated by the assumed operating conditions, are documented in the Chemical Safety Report and communicated in the Safety Data Sheet. All other parameters underlying a substance exposure scenario based on the SPERC 'Industrial formulation of lubricant additives', are implicitly referred to via the reference to this SPERC.

**Scaling**

Scaling can be performed for example by using this equation which is shown in more detail with explanations in GES related documents<sup>9</sup> and in Cefic guidance<sup>10</sup>:

$$RCR_{DU} = RCR_{ES} * \frac{M_{DU}}{M_{ES}} * \frac{C_{du}}{C_{es}} * \frac{F_{water, DU}}{F_{water, ES}} * \frac{(1 - f_{abatement, DU})}{(1 - f_{abatement, ES})} * \frac{T_{emission, ES}}{T_{emission, DU}}$$

Guidance is based on assumed operating conditions which may not be applicable to all sites: thus scaling may be necessary to define appropriate site-specific risk management measures [DSU1].

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2]

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. [DSU8]

Prepared by:

Peter E T Douben, REACHWise Ltd,

on behalf of the ATIEL-ATC Working group, supported by members of BP, ExxonMobil, Lubrizol, and Shell.

<sup>9</sup> see [www.ATIEL.org/REACH\\_GES](http://www.ATIEL.org/REACH_GES).

<sup>10</sup> Cefic (2010) REACH Practical Guide on Exposure Assessment and Communication in the supply chains. Part IV: Supplement Exposure Estimation.