Assessment of regulatory needs

Authority: European Chemicals Agency (ECHA)

Group Name: Aliphatic esters from branched alcohols

General structure: -

Revision history

Version	*Date*	*Description*
1.0	30 September 2021	

EC/List no	CAS no	Substance name	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
939-270-8	-	Reaction product of 2-Hexyldecan-1-ol, 2-Octyldodecan-1-ol and Lauric acid	Full, not (publicly) available
233-560-1	10233-13-3	isopropyl laurate	Full, > 1000
203-751-4	110-27-0	isopropyl myristate	Full, > 1000
205-571-1	142-91-6	isopropyl palmitate	Full, > 1000
203-935-4	112-11-8	isopropyl oleate	Full, > 1000
309-831-6	101227-08-1	Fatty acids, C16-18, 2-butyloctyl esters	Full, not (publicly) available
692-946-1	649747-80-8	Fatty acids, C8-10, 2-ethylhexyl esters	Full, 100 – 1000
603-931-6	135800-37-2	Fatty acids, C8-16, 2-ethylhexyl esters	Full, not (publicly) available
295-366-3	92044-87-6	Fatty acids, coco, 2-ethylhexyl esters	Full, 100 – 1000
261-819-9	59587-44-9	2-ethylhexyl nonanoate	Full, 100 – 1000
243-697-9	20292-08-4	2-ethylhexyl laurate	Full, 100 – 1000
292-811-3	91001-42-2	Fatty acids, C12-20 and C12-20-unsatd., 2-ethylhexyl esters	C&L notification
249-862-1	29806-73-3	2-ethylhexyl palmitate	Full, > 1000
292-951-5	91031-48-0	Fatty acids, C16-18, 2-ethylhexyl esters	Full, > 1000
285-207-6	85049-37-2	Fatty acids, C16-18 and C18-unsatd., 2-ethylhexyl esters	Full, > 1000
297-443-7	93572-14-6	Fatty acids, soya, 2-ethylhexyl esters	Full, not (publicly) available
244-754-0	22047-49-0	2-ethylhexyl stearate	Full, 100 - 1000
247-655-0	26399-02-0	2-ethylhexyl oleate	Full, > 1000
309-832-1	101227-09-2	Fatty acids, C16-18, 2-hexyldecyl esters	Full, 100 - 1000
245-205-8	22766-83-2	2-octyldodecyl myristate	Full, 10 - 100
306-232-1	96690-38-9	Fatty acids, C16-18, 2-octyldodecyl esters	Full, not (publicly) available
485-390-4	868839-23-0	Octanoic acid, 2-propylheptyl ester	Full, not (publicly) available
694-886-1	1365095-43-7	Fatty acids, C8-10, 3-methylbutyl esters	Full, not (publicly) available
228-626-1	6309-51-9	isopentyl laurate	Full, 100 - 1000
943-007-2	-	Fatty acids, C12-18 (even-numbered), 3-methylbutyl esters	Full, not (publicly) available
211-016-4	627-89-4	isopentyl oleate	Full, not (publicly) available
295-389-9	92045-08-4	Fatty acids, tall-oil, C12-15-branched alkyl esters	OSII or TII

[1] The total aggregated tonnage band may be available on ECHA's webpage at https://echa.europa.eu/information-on-chemicals/registered-substances

EC/List no	CAS no	Substance name	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
421-370-3	3681-73-0	(E)-3,7-dimethyl-2,6-octadienylhexadecanoate	Full, not (publicly) available
253-675-0	37811-72-6	Isobutyl laurate	Full, not (publicly) available
288-668-1	85865-69-6	Fatty acids, C16-18, iso-Bu esters	Full, 100 – 1000
284-868-8	84988-79-4	Fatty acids, C16-18 and C18-unsatd., iso-Bu esters	Full, 100 - 1000
261-673-6	59231-34-4	Isodecyl oleate	Full, 100 - 1000
Substance X	-	No public or meaningful name is available	Not registered
276-719-0	72576-80-8	Isooctadecyl palmitate	Full, not (publicly) available
944-288-4	-	Fatty acids, C8-12, isopentyl esters	Full, 100-1000
292-962-5	91031-58-2	Fatty acids, C16-18, iso-Pr esters	Full, not (publicly) available
292-997-6	91031-91-3	Fatty acids, coco, isotridecyl esters	Full, 100 - 1000
285-541-2	85116-88-7	Fatty acids, C14-18 and C16-18-unsatd., isotridecyl esters	Full, not (publicly) available
946-239-2	-	Esterification product of Nonanoic acid with C9-11, C10-rich alcohols, branched	Full, 1 – 10
947-849-1	-	Fatty acids, C16, C18 and C18-unsaturated, C12-15 alcohol (linear and branched), esters	Full, not (publicly) available
306-084-8	95912-88-2	Fatty acids, C16-18, isotridecyl esters	Full, > 1000

This table does not contain group members that are only notified under the CLP Regulation, however, the list is not necessarily exhaustive.

Contents

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Foreword

The assessment of regulatory needs of a group of substances is an iterative, informal process to help authorities consider the most appropriate way to address an identified concern for a group of substances or a single substance and decide whether further regulatory risk management activities are necessary.

The grouping is mainly based on structural similarity and associations made by the registrants between substances through read-across and category approaches as well as category associations from external sources (e.g. OECD categories)[2]. These methods are different from grouping as defined in Section 1.5 of Annex XI to REACH because the scope and intended use of ECHA's grouping is different. Thus, in this context, grouping does not aim to validate read-across and category approaches according to the Annex XI requirements but rather to support a faster and more consistent approach for regulating chemicals and avoid regrettable substitution.

The focus of the assessment is largely based on information available in the registration dossiers and on properties requiring regulatory risk management action at EU level[3]. The information reported on uses is from the registration dossiers (IUCLID) and is used as a proxy for assessing how widespread uses are and whether potential for exposure to humans and releases to the environment can be expected. The chemical safety reports are not necessarily consulted and no quantitative exposure assessment is performed at this stage.

The outcome of these assessments are proposals for immediate (the first action) and subsequent regulatory action(s), including the foreseen ultimate regulatory action (last foreseen regulatory action) to address the identified concern(s) in case the potential hazards are confirmed. For example, further data generation through compliance check is suggested as a first action, to confirm the identified hazard.

Where hazards are confirmed, regulatory risk management actions could be considered for the whole group, for a subgroup or for individual substances within the group. The robustness of the group depends on the stage of assessment and the level of certainty this stage requires. For example, the needs for grouping under restriction may differ from the needs for grouping for the purpose of harmonised classification. Group membership is reconsidered accordingly throughout the iterative assessment of regulatory needs, for example, after further information is generated and the hazard has been clarified or when new insights on uses and risks are available.

The assessment of regulatory needs in itself does not represent a regulatory action, but rather a preparatory step to consider further possible regulatory actions at the level of individual substances or groups/subgroups of substances.

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[2] Working with Groups - ECHA (europa.eu)

[3] Regarding hazard properties the focus is for instance on CMR (carcinogenic, mutagenic and/or toxic to reproduction), sensitiser, ED (endocrine disruptor), PBT/vPvB or equivalent (e.g. substances being persistent, mobile and toxic), aquatic toxicity hazard endpoints and therefore only those are reflected in the report. This does not mean that the substances do not have other known or potential hazards. In some specific cases, ECHA may consider additional hazards (e.g. neurotoxicity, STOT RE).

Publication of ARNs makes it easier for companies to follow the latest status of their substances of interest, anticipate potential regulatory actions and make strategic choices in their chemicals portfolio.

For more information on assessments of regulatory needs please consult ECHA's website[4].

[4] https://echa.europa.eu/understanding-assessment-regulatory-needs

Glossary

ARN	Assessment of Regulatory Needs
CCH	Compliance Check
CLH	Harmonised classification and labelling
CMR	Carcinogenic, mutagenic and/or toxic to reproduction
DEv	Dossier evaluation
ED	Endocrine disruptor
NONS	Notified new substances
OEL	Occupational exposure limit
OSII or TII	On-site isolated intermediate or transported isolated intermediate
PBT/vPvB	Persistent, bioaccumulative and toxic / very persistent and very bioaccumulative
PMT/vPvM	Persistent, mobile, and toxic / very persistent and very mobile
RDT	Repeated dose toxicity
RMOA	Regulatory management options analysis
RRM	Regulatory risk management
SEv	Substance evaluation
STOT RE	Specific target organ toxicity, repeated exposure
SVHC	Substance of very high concern
TPE	Testing proposal evaluation
UVCB	Substance of unknown or variable composition, complex reaction products or of biological materials.

1 Overview of the group

Explanations on the scope of this assessment is available in the foreword to this document. Please read it carefully before going through the report.

ECHA has grouped together structurally similar esters of linear saturated/unsaturated aliphatic fatty acids with branched saturated/unsaturated C3-C20 alcohols. The substances may be mono-constituent, multi-constituent or UVCB substance types. The group does not include acetates of the corresponding branched alcohols.

The group consists of 41 registered substances.

Based on information reported in the REACH registration dossiers, most substances in the group have widespread uses in professional setting or consumer mixtures and/or articles where exposure for workers and consumers and releases to the environment can be expected. EC 295-389-9 is registered as an intermediate only.

The majority of the substances have a very similar use profile. They are used in a wide range of applications. The main sectors or applications commonly reported are as lubricating agent, functional fluid, solvent, additive, co-formulant for plant protection products, blowing agent, binder/release agent in lubricants, cosmetics, oil and gas drilling, coatings and inks, fuels, polymer and plastic, fertilizers, washing and cleaning products, polishes and waxes, pest control / biocides, construction products and textiles.

Substances used in polymers and plastic, construction products as well as in textiles often have article service life reported.

2 Conclusions and proposed actions

The conclusions and actions proposed in the table below are based mainly on the REACH and CLP information available at the time of the assessment by ECHA. The conclusions are preliminary suggestions from a screening-level assessment done by ECHA with the aim to propose the next steps for further work (e.g., strengthening of the hazard conclusions, clarification of the uses and/or potential for exposure). The main source of information is the registration dossiers. Relevant public assessments may also be considered. When new information (e.g., on hazards through evaluation processes, or on uses) will become available, the document may be updated, and conclusions and actions revisited.

Table 1: Conclusions and proposed actions

Subgroup name, EC/List no	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
203-751-4 203-935-4 205-571-1 211-016-4 228-626-1 233-560-1 243-697-9 244-754-0 247-655-0 249-862-1 253-675-0 261-819-9 284-868-8 285-207-6 288-668-1 292-811-3 292-951-5 292-962-5 295-366-3 297-443-7 603-931-6	No hazard or unlikely hazard	No hazard or unlikely hazard	Widespread uses in professionals and consumer products such as lubricants, cosmetics, coatings & inks, polymers and plastics, etc. Potential for exposure for workers and consumers, release to the environment. 295-389-9 is used as intermediate only. Low potential for exposure and release to the environment. 421-370-3 is a NONS registration	**Currently no need for EU RRM** No action <u>Justification</u>: Overall, no or unlikely hazard that would lead to concern for the reported uses.

Subgroup name, EC/List no	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
692-946-1 694-886-1 943-007-2 944-288-4				
245-205-8 261-673-6 276-719-0 285-541-2 292-997-6 295-389-9 306-084-8 306-232-1 309-831-6 309-832-1 485-390-4 939-270-8 946-239-2 946-822-1 947-849-1 421-370-3				

3 Justification for the no need for regulatory risk management action at EU level

Based on currently available information, there is no need for (further) EU regulatory risk management for all group members.

Based on currently available information, for CMR, ED, skin sensitisation, STOT RE, PBT/vPvB and PMT/vPvM hazards are considered unlikely for substances in the group.

Based on the evaluations[5] from other safety bodies, group members are expected to be hydrolysed into corresponding carboxylic acids and alcohols by carboxylesterase enzymes found in most tissues throughout the body, including the gastrointestinal tract. The resulting alcohols will be oxidised to their corresponding aldehydes and linear carboxylic acids, which will in turn be metabolised to carbon dioxide via the fatty acid pathways and the tricarboxylic acid cycle. The resulting carboxylic acids will undergo different metabolic pathways, depending on the carbon chain length and branching: beta-oxidation for short chains, omega-oxidation for long chains and alfa- and/or beta-oxidation for acids with a methyl substituent.

The majority of the carboxylic acid parts of these group members have been or are being assessed by ECHA and are considered to be of low toxicity. The expected alcohol metabolites are also considered of potential low toxicity.

Available short-term systemic toxicity studies do not indicate any toxicity neither any target organ toxicity is expected by the potential metabolites of each ester.

No effects in reproductive toxicity is expected based on available PNDT studies, screening reproductive toxicity studies and absence of effects in reproductive organs for the group members and their potential metabolites.

Available mutagenicity and skin sensitisation studies available are negative.

No carcinogenicity study is available however no carcinogenic effect is expected in view of the absence of mutagenic and repeated dose toxicity hazard.

Regarding a potential ED hazard, the available systemic toxicity studies do not indicate any target organ toxicity in endocrine organs such as the thyroid or the reproductive organs. Therefore, there is no apparent hazard finding that could be linked to endocrine-mediated effects for any substances in these subgroups.

There is remaining uncertainty regarding the breakdown of the esters, more specifically regarding the rate of hydrolysis, as the information available is mostly from literature sources and refers to the generic ability of carboxylesterases to breakdown the esters.

For the environment, available data indicates that the group is not subject to hydrolysis and/or is not considered as a major pathway. All substances are readily biodegradable ranging from 67% – 100% degradation by 28 days and the majority passed the 10 day window. The log Kow information was provided for all the substances as experimental studies, QSARs or read-across with the following

[5] JECFA, 1999 http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2013.3169/epdf; COM, 2003 https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scf_out158_en.pdf; EFSA, 2013 http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2013.3169/epdf

ranges of log Kow > 5.7 – 12 but all the substances are likely to be metabolised. For aquatic toxicity low hazard is expected.

Most substances of this group, have a wide range of uses (including article service life): lubricants, cosmetics, oil & gas drilling, coatings & inks, fuels, polymer production, fertilizers, washing & cleaning products, polishes and waxes, pest control / biocides, construction, textile, etc. Some substances in the group have a much narrower use profile, however their uses fall within these sectors or applications.

Currently no further action is proposed. Information from the potential breakdown products (acids and alcohols) ARNs and the structurally similar esters when available will further inform on their hazardous properties and the strategy can be revisited.

Annex 1: Overview of classifications

Data extracted on 7 May 2020.

EC/ List No	Substance name	Harmonised classification	Classification in registrations
939-270-8	*Reaction product of 2-Hexyldecan-1-ol, 2-Octyldodecan-1-ol and Lauric acid*	-	-
233-560-1	*isopropyl laurate*	-	-
203-751-4	*Isopropyl myristate*	-	-
205-571-1	*Isopropyl palmitate*	-	-
203-935-4	*Isopropyl oleate*	-	-
309-831-6	*Fatty acids, C16-18, 2-butyloctyl esters*	-	-
692-946-1	*Fatty acids, C8-10, 2-ethylhexyl esters*	-	-
603-931 -6	*Fatty acids, C8-16(even numbered), 2-ethylhexyl esters*	-	-
295-366-3	*Fatty acids, coco, 2-ethylhexyl esters*	-	-
261-819-9	*2-ethylhexyl nonanoate*	-	-
243-697-9	*2-ethylhexyl laurate*	-	-
292-811-3	*Fatty acids, C12-20 and C12-20-unsatd., 2-ethylhexyl esters*	-	-
249-862-1	*2-ethylhexyl palmitate*	-	-
292-951-5	*Fatty acids, C16-18, 2-ethylhexyl esters*	-	-
285-207-6	*Fatty acids, C16-18 and C18-unsatd., 2-ethylhexyl esters*	-	-
297-443-7	*Fatty acids, soya, 2-ethylhexyl esters*	-	-
244-754-0	*2-ethylhexyl stearate*	-	-
247-655-0	*2-ethylhexyl oleate*	-	-
309-832-1	*Fatty acids, C16-18, 2-hexyldecyl esters*	-	-

EC/ List No	Substance name	Harmonised classification	Classification in registrations
245-205-8	*2-octyldodecyl myristate*	-	-
306-232-1	*Fatty acids, C16-18, 2-octyldodecyl esters*	-	-
485-390-4	*Octanoic acid, 2-propylheptyl ester*	-	-
694-886-1	*Fatty acids, C8-10 (even numbered), 3-methylbutyl esters*	-	-
228-626-1	*Isopentyl laurate*	-	-
943-007-2	*Fatty acids, C12-18 (even-numbered), 3-methylbutyl esters*	-	-
211-016-4	*Isopentyl oleate*		-
295-389-9	*Fatty acids, tall-oil, C12-15-branched alkyl esters*	-	-
421-370-3	*(E)-3,7-dimethyl-2,6-octadienylhexadecanoate*	Skin Irrit. 2 H315 Aquatic Chronic 4 H413	*Skin Irrit. 2 H315* *Aquatic Chronic 4 H413*
253-675-0	*Isobutyl laurate*	-	-
288-668-1	*Fatty acids, C16-18, iso-Bu esters*	-	-
284-868-8	*Fatty acids, C16-18 and C18-unsatd., iso-Bu esters*	-	-
261-673-6	*Isodecyl oleate*	-	-
	[No public or meaningful name is available]	-	-
276-719-0	*Isooctadecyl palmitate*	-	-
944-288-4	*Fatty acids, C8-12, isopentyl esters*	-	-
292-962-5	*Fatty acids, C16-18, iso-Pr esters*	-	-
292-997-6	*Fatty acids, coco, isotridecyl esters*	-	-
285-541-2	*Fatty acids, C14-18 and C16-18-unsatd., isotridecyl esters*	-	-

EC/ List No	Substance name	Harmonised classification	Classification in registrations
946-239-2	*Esterification product of Nonanoic acid with C9-11, C10-rich alcohols, branched*	-	-
947-849-1	*Fatty acids, C16, C18 and C18-unsaturated, C12-15 alcohol (linear and branched), esters*	-	-
306-084-8	*Fatty acids, C16-18, isotridecyl esters*	-	-
264-119-1	*Fatty acids, lanolin, iso-Pr esters*	-	-
203-934-9	*Isopropyl stearate*	-	-
211-466-1	*Isobutyl stearate*	-	-
283-798-5	*Isooctyl laurate*	-	-
304-693-3	*2-hexyldecyl oleate*	-	-
203-665-7	*8-methylnonyl nonan-1-oate*	-	-
203-758-2	*Isobutyl palmitate*	-	-
218-982-6	*Isopentyl decanoate*	-	-
264-098-9	*2-ethylhexyl octanoate*	-	-
277-647-2	*2-ethylhexyl decanoate*	-	-

Annex 2: Overview of uses based on information available in registration dossiers

Data extracted on 7 May 2020.

Main types of applications structured by product or article types	203-935-4	205-571-1	211-016-4	228-626-1	233-560-1	243-697-9	244-754-0	245-205-8	247-655-0	249-862-1	253-675-0	261-673-6
Lubricant	F, I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**
Cosmetics	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**
Oil & gas drilling	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**
Coatings & inks	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**
Fuel / additives	I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**
Polymers, plastics	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**
Fertilizers	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**
Washing & cleaning	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**
Polishes & waxes	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**
Pest control / biocides	**C**	F, **C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**
Construction	F, I, **P**, **C**, **A**	F, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**
Textiles	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **A**
Intermediate												

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release.

Main types of applications structured by product or article types	261-819-9	276-719-0	284-868-8	285-207-6	285-541-2	288-668-1	292-951-5	292-962-5	292-997-6	295-366-3	295-389-9	297-443-7
Lubricant	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**
Cosmetics	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**	F, **C**		F, **C**
Oil & gas drilling	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**	I, **P**		I, **P**
Coatings & inks	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**
Fuel / additives	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**	I, **P**, **C**		I, **P**, **C**
Polymers, plastics	F, I, **P**	F, I, **P**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**, **A**	F, I, **P**	F, I, **P**, **A**		F, I, **P**
Fertilizers	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**	F, **P**, **C**		F, **P**, **C**
Washing & cleaning	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**
Polishes & waxes	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**	**P**, **C**		**P**, **C**
Pest control / biocides	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**		**C**
Construction	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**		F, I, **P**, **C**, **A**
Textiles	F, I, **A**	F, I, **A**	F, I, **P**, **C**, **A**	F, **C**, **A**	F, I, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**	F, I, **A**	F, I, **P**, **C**, **A**		F, I, **A**
Intermediate											I	I

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release.

Main types of applications structured by product or article types	306-084-8	306-232-1	309-831-6	309-832-1	603-931-6	692-946-1	694-886-1	943-007-2	944-288-4	946-239-2	946-822-1
Lubricant	F, I, **P**, **C**	F, I, **P**, **C**	I, **P**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**		I, **P**, **C**	F, I, **P**, **C**	
Cosmetics	F, **C**	F, **C**		F, **C**		F, **C**	F, **C**	F, **C**	F, **C**		
Oil & gas drilling	I, **P**	I, **P**		I, **P**	**P**	I, **P**	I, **P**		I, **P**		
Coatings & inks	F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**	F, I, **P**, **C**				F, I
Fuel / additives	I, **P**, **C**	I, **P**, **C**		I, **P**, **C**	F, I, **P**, **C**	I, **P**, **C**	I, **P**, **C**		I, **P**, **C**		
Polymers, plastics	F, I, **P**	F, I, **P**		F, I, **P**		F, I, **P**, **A**	F, I, **P**, **A**		F, I, **P**, **A**		F, I, **A**
Fertilizers	F, **P**, **C**	F, **P**, **C**		F, **P**, **C**		F, **P**, **C**	F, **P**, **C**		F, **P**, **C**		
Washing & cleaning	F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**		F, I, **P**, **C**	F, I, **P**, **C**		F, I, **P**, **C**		F, I, **P**, **C**
Polishes & waxes	**P**, **C**	**P**, **C**		**P**, **C**		**P**, **C**	**P**, **C**		**P**, **C**		
Pest control / biocides	**C**	**C**		**C**		**C**	**C**		**C**		
Construction	**P**	F, I, **P**, **C**, **A**		F, I, **P**, **C**, **A**		F, I, **P**, **C**, **A**	F, **P**, **C**, **A**		F, **P**, **C**, **A**		
Textiles	F, I, **A**	F, I, **A**		F, I, **A**		F, I, **P**, **C**, **A**	F, I, **P**, **C**, **A**		F, I, **P**, **C**, **A**		
Intermediate											

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release.

Data extracted on 7 March 2023.

EC number	947-849-1
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents	F, I
PC 37: Water treatment chemicals	F, I, **P**
PC 11: Explosives	**P**
PC 12: Fertilisers	F, I, **P**, **C**
PC 27: Plant protection products	**P**, **C**
PC 4: Anti-freeze and de-icing products	**P**, **C**
PC 35: Washing and cleaning products	F, I, **P**, **C**
PC 8: Biocidal products (e.g. disinfectants, pest control)	I, **C**
PC 28: Perfumes, fragrances	F, **C**
PC 3: Air care products	**C**
PC 39: Cosmetics, personal care products	F, **P**, **C**
PC 31: Polishes and wax blends	I, **P**, **C**
PC 15: Non-metal-surface treatment products	**C**
PC 24: Lubricants, greases, release products	F, I, **P**, **C**
PC 25: Metal working fluids	I, **P**, **C**
PC 16: Heat transfer fluids	**C**

EC number	947-849-1
PC 17: Hydraulic fluids	I, **P**, **C**
PC 13: Fuels	I, **P**, **C**
PC 32: Polymer preparations and compounds	F, I, **P**, **A**
PC 1: Adhesives, sealants	F, I, **P**, **C**
PC 9c: Finger paint	I, **P**, **C**
PC 9b: Fillers, putties, plasters, modelling clay	I, **P**, **C**
PC 9a: Coatings and paints, thinners, paint removes	F, I, **P**, **C**, **A**
PC 18: Ink and toners	F, I, **P**, **C**
PC 34: Textile dyes, and impregnating products	F, I, **C**, **A**
PC 23: Leather treatment products	F, I, **C**
PC 14: Metal surface treatment products	I
PC 21: Laboratory chemicals	F, I, **P**
PC 19: Intermediate	I

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release.

Annex 3: Overview of completed or ongoing regulatory risk management activities

Data extracted on 13 May 2020.

There are no relevant completed or ongoing regulatory risk management activities for any substances.