



European
Commission



Revision of EU Ecolabel Criteria for Lubricants

AHWG 1
February 2017
Seville

Joint Research Centre
the European Commission's
in-house science service



JRC Science Hub: ec.europa.eu/jrc

Joint
Research
Centre

Agenda

1. Political objectives of the EU Ecolabel and process description
2. Summary of preliminary report:
 - ❖ Scope and definition
 - ❖ Market analysis & other labels
 - ❖ Technical analysis.
3. Draft criteria proposal and rationale
4. Conclusion, next steps and closure of the workshop

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1. Political objectives & Process description



- IE – Petten, The Netherlands
- *Institute for Energy*



- IRMM – Geel, Belgium
- *Institute for Reference Materials and Measurements*



- ITU – Karlsruhe, Germany
- *Institute for Transuranium Elements*



- IES/ IHCP/ IPSC – Ispra, Italy
- *Institute for Environment and Sustainability*

- *Institute for Health and Consumer Protection*

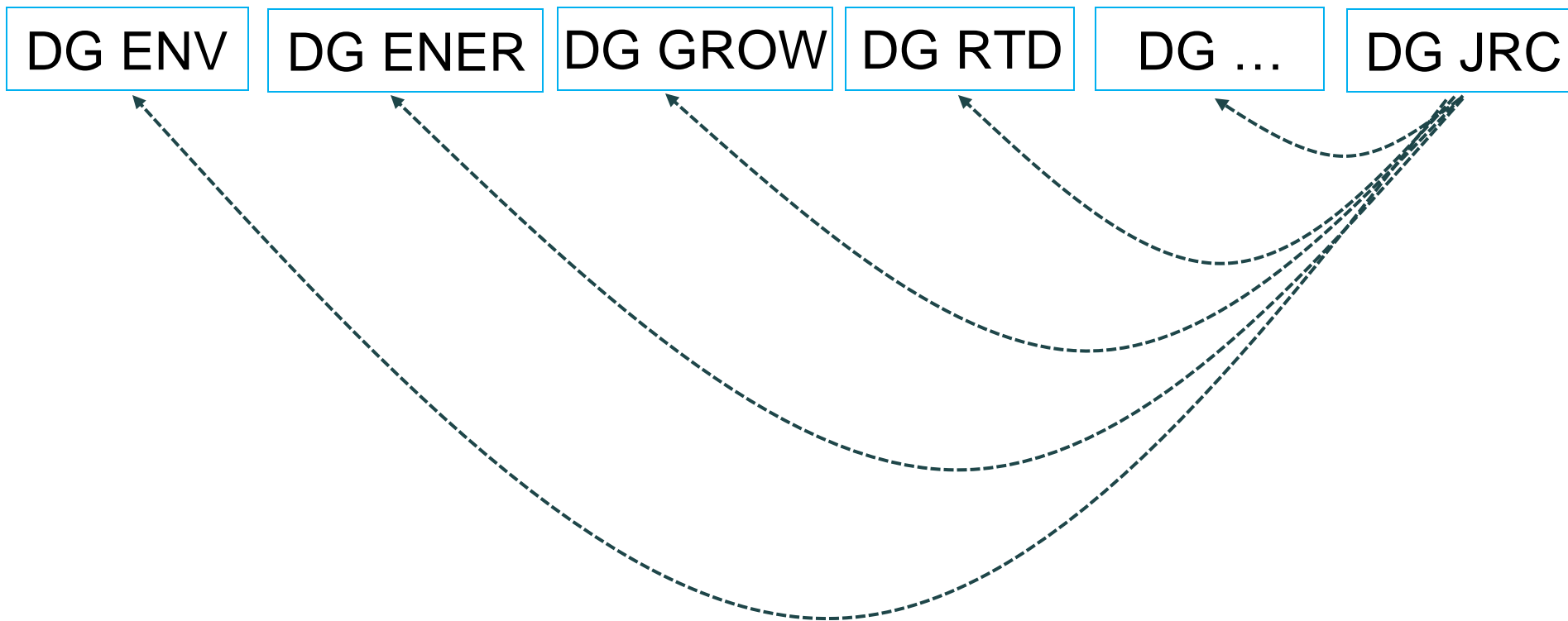
Institute for the Protection and Security of the Citizen



- IPTS – Sevilla, Spain
- *Institute for Prospective Technological Studies*



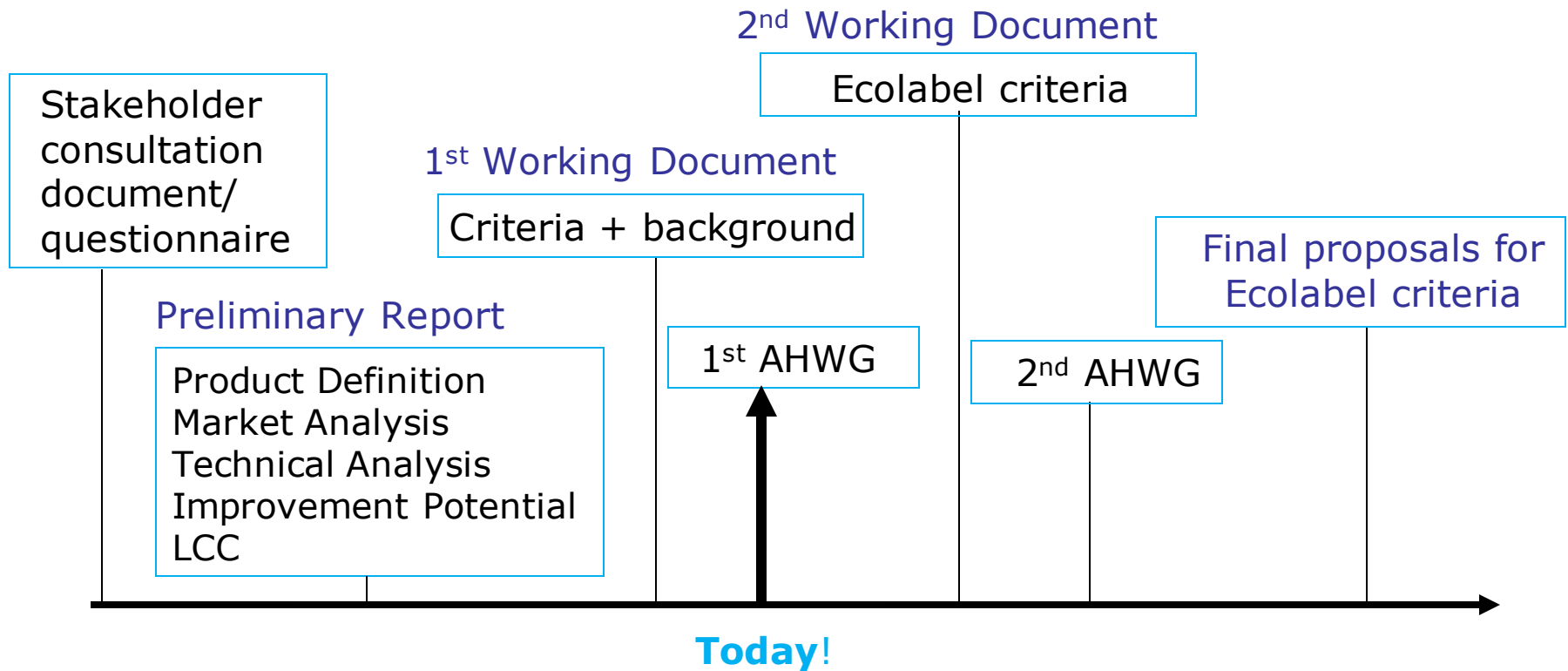
Joint Research Centre in the context of the European Commission:



Activities in support of Product Policy

- JRC B5 Product Bureau supports the **development and implementation of Sustainable Product Policies**, among them the EU Ecolabel Regulation and the Green Public Procurement Communication.
- **Analysis of product groups** with focus on techno-economic and environmental aspects.
- **Develop criteria** and implementing measures until the stage of voting in committee (resp. publication on GPP page).

Criteria development process





1. Political objectives & Process description

Using the BATIS system

author: Nicholas Dodd

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- Stakeholder comments: AHWG2 consultation round 16/04/14- 04/07/14
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New consultation round on criteria proposals for EU Ecolabel/GPP comp

Dear Computer and Office IT Equipment stakeholders,
You are invited to post your comments in the AHWG2 and GPP consultation round folders.
You are also invited to post relevant background information in support of the

author: Nicholas Dodd

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Monday, May 12, 2014 12:25 AM

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<input type="checkbox"/> EU Ecolabel_Draft criteria legal text_preamble v1	(nicholas.dodd)	16/04/2014 23:16	30/04/2014 10:35	
<input type="checkbox"/> EU Ecolabel_Hazardous substances criteria proposal_Revision v2	(nicholas.dodd)	29/04/2014 10:24	30/04/2014 10:35	
<input type="checkbox"/> EU Ecolabel_Hazardous substances evidence matrix_Revision v2	(nicholas.dodd)	29/04/2014 10:25	30/04/2014 10:36	
<input type="checkbox"/> EU Ecolabel_Hazardous substances_Sub-group meeting 26/02/14 minutes	(nicholas.dodd)	29/04/2014 10:26	30/04/2014 10:36	
<input type="checkbox"/> EU Ecolabel_Technical background document, Revision 2	(nicholas.dodd)	16/04/2014 23:15	30/04/2014 10:35	
<input type="checkbox"/> GPP Office IT Equipment_ Revised criteria proposals_Version 1	(nicholas.dodd)	30/04/2014 10:33	30/04/2014 10:34	
<input type="checkbox"/> GPP Office IT Equipment_Technical background and criteria proposals_Version 1	(nicholas.dodd)	30/04/2014 10:32	30/04/2014 10:34	

1. Stakeholders can provide **comments** on technical report and criteria proposals (**before 28th February**).
2. Comments need to be submitted using the BATIS system.
3. June 2017: EUEB progress update
4. October 2017: Second AHWG meeting
5. Beginning 2018: Final report
6. Process finalisation ~July 2018

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Task 1: Scope and definition

- 1) Possible revision of the **definition** of lubricant, which comprises **all product types covered** under the scope,
- 2) A **potential to enlarge the scope** to cover higher market share and to allow companies to improve the environmental performance for the different types of lubricant formulations.
- 3) **Harmonisation of lubricant families:** ISO 6743 standard: “Lubricants, industrial oils and related products”.

Definition proposal

“A lubricant means a substance or mixture (**product**) which reduce friction, adhesion, heat, wear and corrosion when introduced between two solid surfaces in relative movement and capable to transmit power. The most common constituent substances (**ingredients**) are base fluids and additives”

Rationale:

The current definition for lubricants:

“lubricant means a preparation consisting of base fluids and additives”

- **More complex lubricant compositions**, which do not consist of base fluids and additives but of emulsions (e.g. metal working fluids, demoulding agents...) or on solid state compounds (e.g. fine powders to reduce friction)- **not covered** by the existing definition based on composition.
- Amendment to include a reference to the **functionality**.
- Today we present additional suggestions:
 - substance or mixture to be replaced by **product** and constituent substances by **ingredients**.

Complementary definitions:

'base fluid' means a lubricating fluid whose flow, ageing, lubricity and anti-wear properties, as well as its properties regarding contaminant suspension, have not been improved by the inclusion of additive(s);

'substance' means a chemical element and its compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the products and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition;

'thickener' means one or more substances in the base fluid used to thicken or modify the rheology of a lubricating fluid or grease;

'main component' means any substance accounting for more than 5 % by weight of the lubricant;

'additive' means a substance or mixture whose primary functions are the improvement of the flow, ageing, lubricity, anti-wear properties or of contaminant suspension;

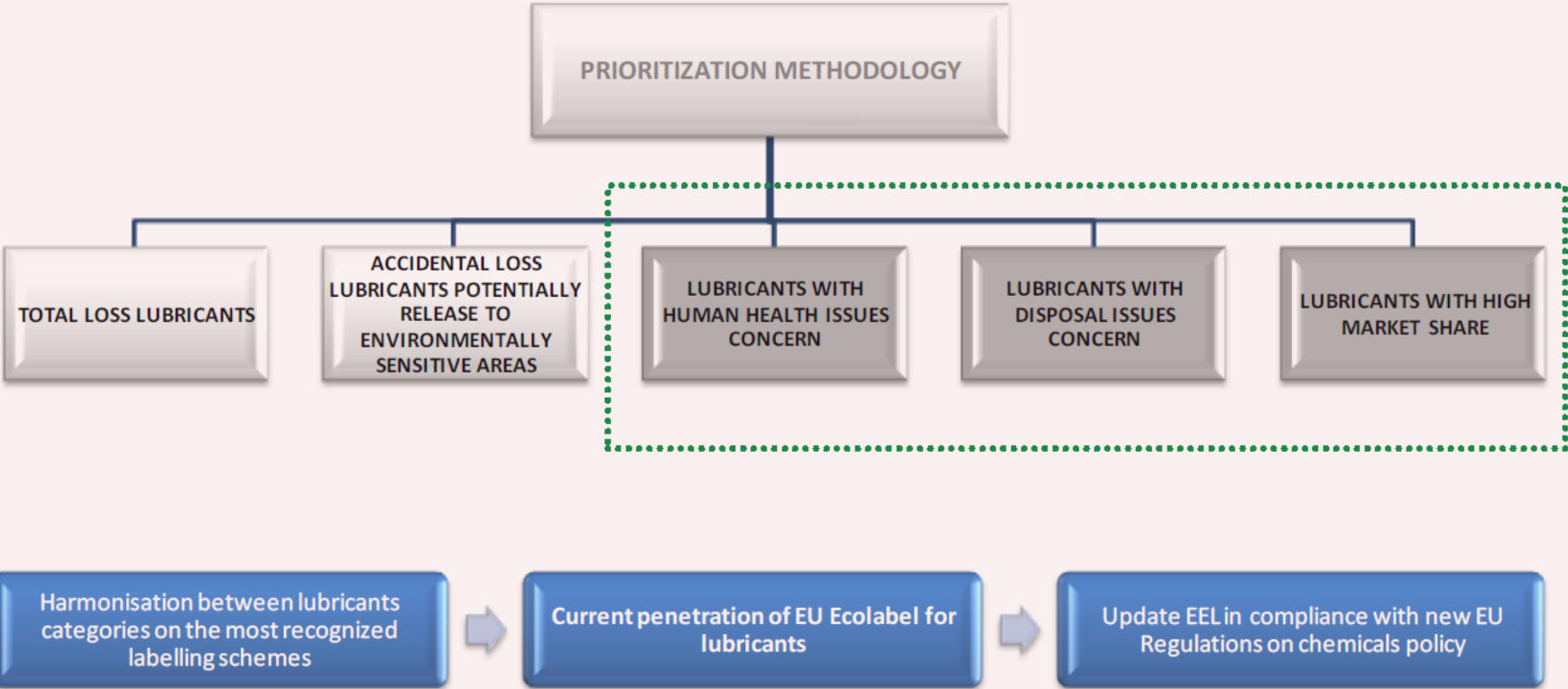
'grease' means a solid to semi-solid mixture which consists of a 'thickener' and may include other ingredients imparting special properties in a liquid lubricant.

- With regard the **scope** – the existing scope only encompasses **~16% of the total lubricants market**
- First **survey**, proposal to extend the scope to **cover the categories of ISO 6743** to increase the market share of the potential EU Ecolabel products ---**very ambitious in one step**
- **Environmental impacts of lubricants can be caused at any life stage of its life cycle** (e.g. during raw material extraction or at the end of life) and **not only from its potential release** to the environment.

- For this reason, it is considered reasonable to **extend the scope** to other lubricants:
 - that presents **risk of accidental losses (accidental loss lubricants)**,
 - and to **other risks lubricants** which are those lubricants associated to **other environmental impacts** than those associate to its potential release.

- **Prioritisation procedure** used as a basis to prepare a proposal of the revised scope.

2. Preliminary report: Scope and definition



Lubricants considered:

- **Total loss lubricants** – major environmental impact
- **Accidental loss lubricants potentially release to environmentally sensitive areas**
- **Lubricants with concerns regarding human health**
- **Lubricants with concerns regarding disposal.** i.e. high potential for environmental impacts at end-of-life (waste lubricants)
- **Lubricants with high market share and/or target end-consumer** (e.g. engine oils currently not covered by the EEL)

In addition to the existing scope:

Internal combustion engine oils: only 2-stroke oil lubricants are included. 4-T stroke oil will be also analysed because of the **high market share and the problematic on collecting waste oil produced** (especially at particular level). Korea Ecolabel has three product categories of engine oils beside lubricants with criteria related to emissions of air pollutants and resource consumption.

Metalworking: classified as accidental loss, could be important due to the impact on **human health** (workers' exposure). Also impacts linked with waste could be relevant. Included in **Korea Ecolabel**

Temporary protection against corrosion – proposed to be included – often used on open systems and in environmentally **sensitive areas**. Sometimes not recovered after use and waste lubricant can be lost into the environment (classified as total loss). **Korea Ecolabel**, as “anti-rust lubricating oil”

ISO Family	ISO 6743-99 Description	Current EU Ecolabel	Proposed EU Ecolabel	Lubricant loss
A	Total loss systems	Included	Included	Total
B	Mould release	Concrete	Included	Total
		Industrial	Excluded	Accidental
C	Gears	Included	Included	Accidental/Partial
D	Compressors	Excluded	Excluded	Accidental
E	Internal combustion engine oils	4-T stroke oil	Excluded	Accidental
		2-T stroke oil	Included	Total
F	Spindle bearings, bearings, and associated clutches	Excluded	Excluded	Accidental/Partial
G	Slideways	Excluded	Excluded	Partial
H	Hydraulic systems	Included	Included	Accidental/Partial
M	Metalworking	Excluded	Included	Accidental
P	Pneumatic tools	Excluded	Excluded	Accidental/Partial
Q	Heat transfer fluids	Excluded	Excluded	Accidental
R	Temporary protection against corrosion	Excluded	Included	Total
T	Turbines	Stern tube	Included	Total
		Industrial	Excluded	Accidental/Partial
U	Heat treatment	Excluded	Excluded	Accidental
X	Greases	Included	Included	Accidental /Partial/Total

Scope proposal:

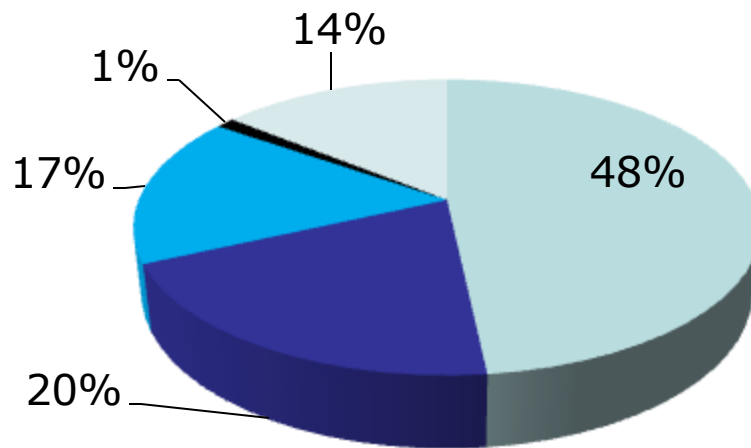
- **Category 1:** Hydraulic systems (ISO Family H) and metalworking fluids (ISO Family M)
- **Category 2:** Greases (ISO Family X)
- **Category 3:** Total loss systems (ISO Family A), turbines stern tube (ISO Family T), concrete mould release (ISO Family B), temporary protection against corrosion (ISO Family R)
- **Category 4:** 2-T stroke oils, 4-T stroke oils (ISO Family E)
- **Category 5:** Gears (ISO Family C)

ISO Family	ISO 6743-99 Description		Current EEL	Proposal
A	Total loss systems		Included	Included
B	Mould release	Concrete	Included	Included
C	Gears		Included	Included
E	Internal combustion engine oils	4-T stroke oil	Excluded	Included
		2-T stroke oil	Included	Included
H	Hydraulic systems		Included	Included
M	Metalworking		Excluded	Included
R	Temporary protection against corrosion		Excluded	Included
T	Turbines	Stern tube	Included	Included
X	Greases		Included	Included

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EU Ecolabel licenses and products today








N° licences by product type

- 1 - hydraulic fluids and tractor transmission oils
- 2 - greases and stern tube greases
- 3 - chain saw oil, concrete release agents and other total loss lubricants
- 4 - two-strokes oils
- 5 - industrial and marine gear oils

CB	Licences	Products
Austria	3	4
Belgium	1	12
Czech Republic	2	9
Finland	1	4
France	10	69
Germany	48	160
Netherland	12	47
Poland	2	3
Spain	1	3
United Kingdom	17	52

2. Preliminary report: Market analysis

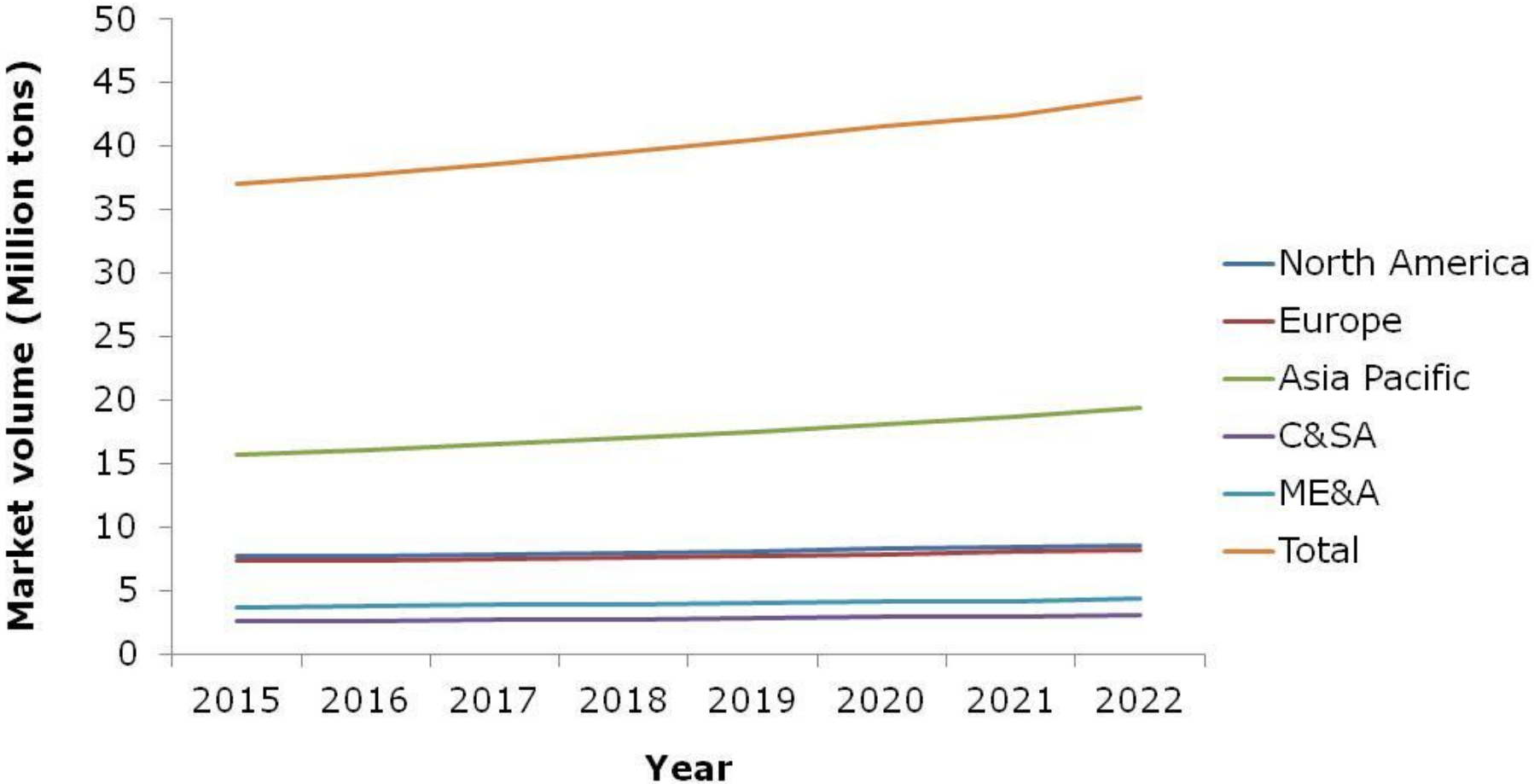


Program name	LOGO	Region	Date of revision	Number of Certified Products
Nordic Ecolabel		Denmark, Finland, Iceland, Norway and Sweden	withdrawn	
Blue Angel		Germany	2014	89
Eco Mark Japan		Japan	2012	ND
Korea-Ecolabel		Korea	2012	ND
USDA, CERTIFIED BIOBASED PRODUCT		U.S.A	2002	214
Swedish Standard		Sweden	2016	142
Environmentally Acceptable Lubricants (EAL)		U.S.A	2011	ND
OSPAR		European Union	-	ND

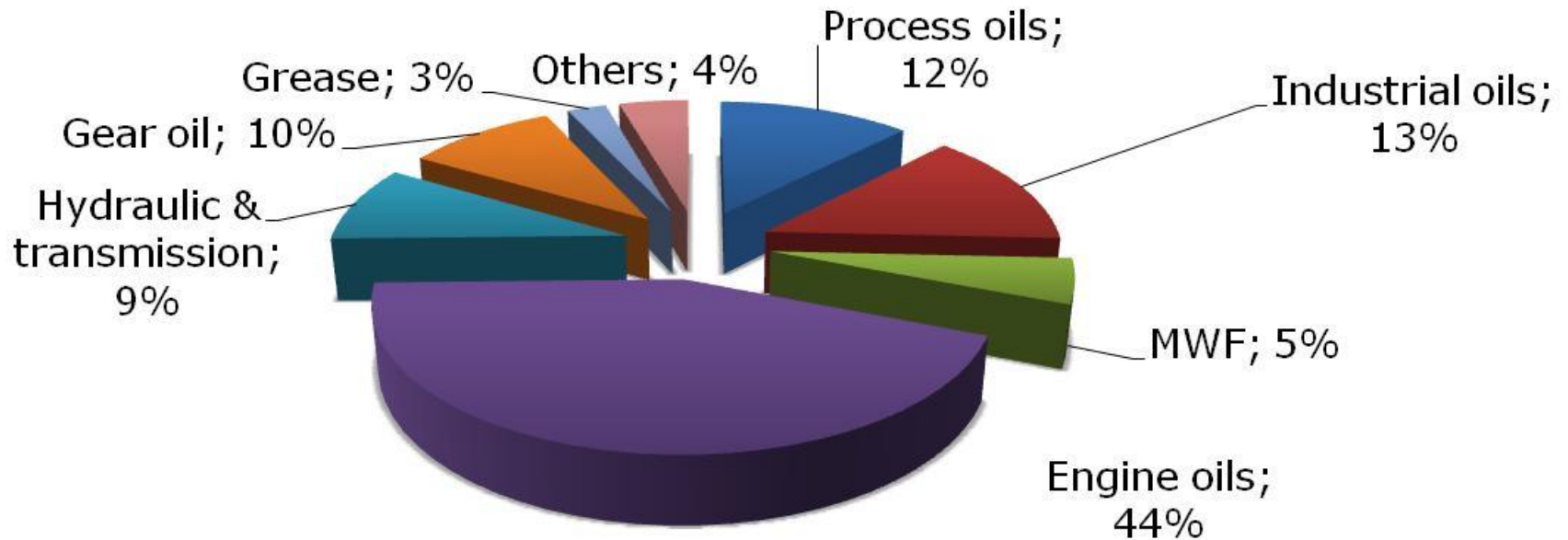
2. Preliminary report: Market analysis



Global lubricant market, growth perspective



Lubricant market segmentation



Global market demand by product in 2014: 36.4MT (35.7 billion USD).

Industrial; 39%

Consumer
automotive, 33%

Commercial
automotive, 28%

Current Ecolabel scheme covers only approximately the 16% of the lubricants market (mainly Hydraulic fluids and Greases).

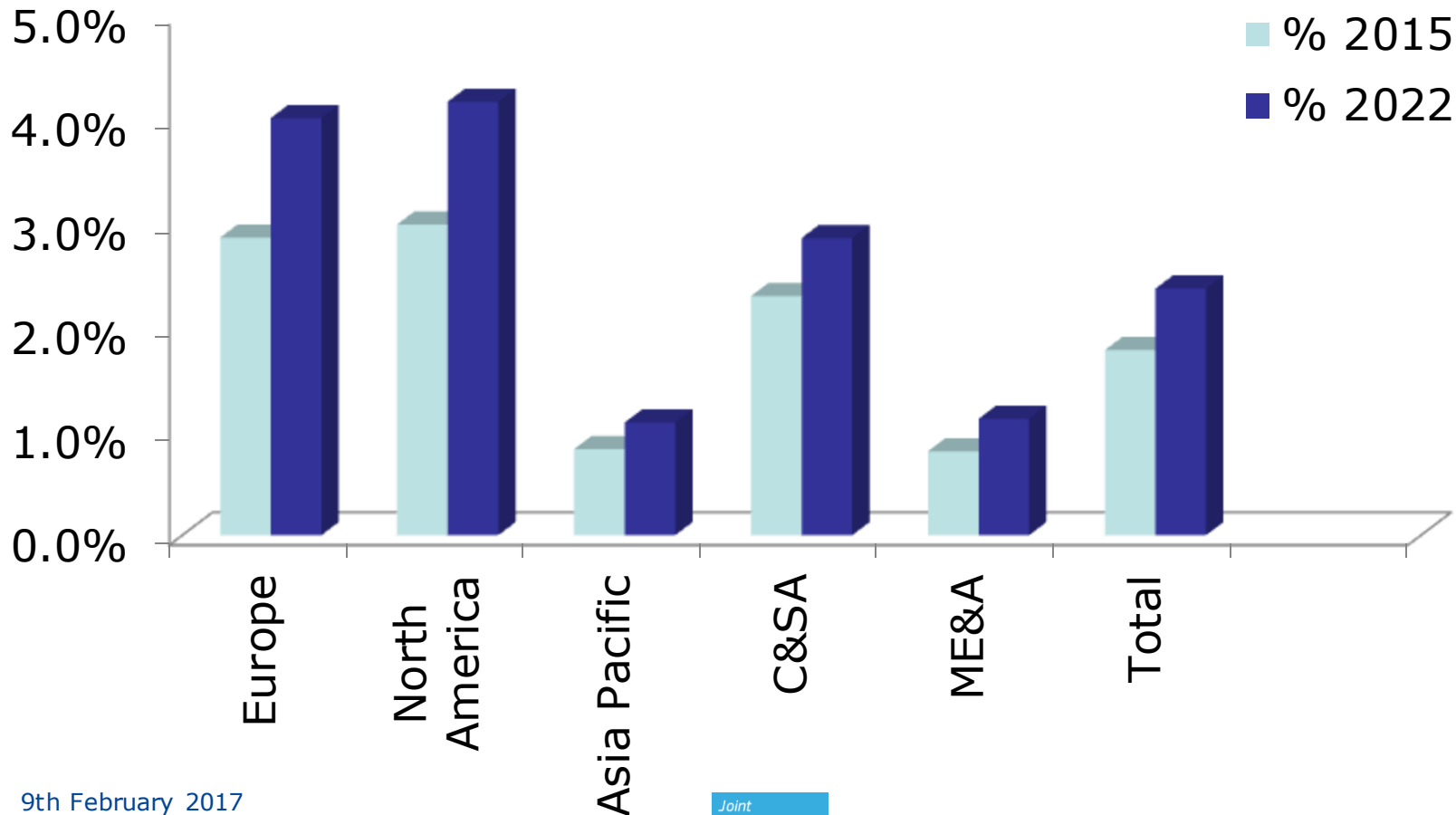
Estimation of the **market share for the categories not covered:**

Family B mould release (currently only concrete release agents are considered)	1.91MT
Family M metalworking	
Family D Compressors	
Family P pneumatic tools	4.57MT
Family Q heat transfer fluids	
Family E internal combustion engine oils release (currently only two-stroke oils are considered)	16.26MT
Family F spindle bearings, bearings and associated clutches	
Family R temporary protection against corrosion	1.65MT
Family G slideways	Unknown (part
Family T turbines	Hydraulic systems 8.23MT)
Family U heat treatment	Unknown



Biolubricants

Global Biolubricants market volume by region in 2015 and 2022



- The **lubricant market** has worldwide **size of about 37 MT**, with a forecast to reach the 44MT by 2022.
- EU Ecolabel scheme does cover approximately the 16%.
- It is difficult, based on the licenses registered in the Ecolabel, to make estimation on the real market impact of the scheme.
- Large market categories in volume not covered under the scope: part of the ISO **Family E** internal combustion engine oils release, with more than 15 MT yearly.
- The estimated global volume of biolubricants is expected to reach **1 million tons in 2022**.
A favorable regulatory measures and higher consumer awareness are expected to drive this market upwards.

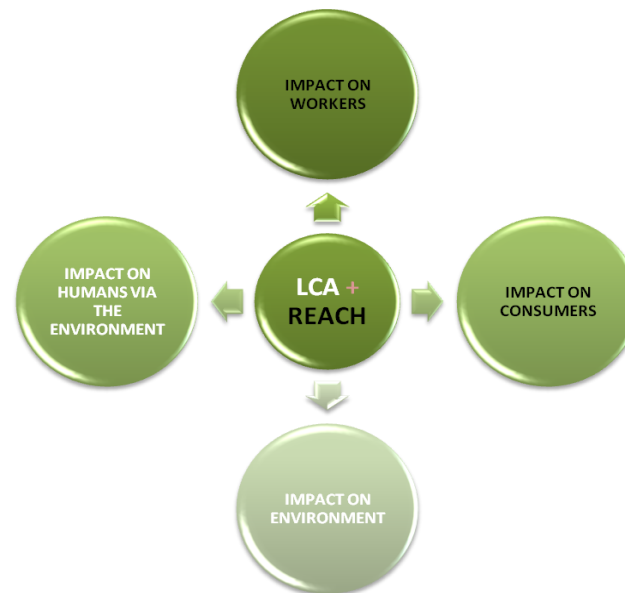
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Evaluation of the life cycle of a lubricant – to identify **stages with the highest environmental impacts** and those with the **highest improvement potential**.

- Critical review of published LCA studies: 12 LCAs have been screened; evaluation of the quality, classification using four parameters:
 - scope,
 - data,
 - impacts categories
 - conclusions/findings
- Search of supplementary information on sustainability considerations in the different cycle stages
- Ecoinvent 8.0. and its database have been used for analyzing some of the cycle stages of lubricants

- LCA methodology characterises environmental burdens attributed to inputs and outputs from the product system
- In order to analyse the hazards associated to a product due to content of **substances of concern** REACH information and LCA have been integrated, to identify all relevant environmental and human health impacts



- Considering a **cradle-to-grave** approach release to the environment during use and disposal stages can be critical
- Most LCAs studied only cover **cradle-to-gate** scope and for this reason a quantification of the relevance of these last stages are not difficult

The overall findings indicate that the main environmental impact of lubricant life cycle is produced:

- during the **use stage and the end of life**
- and that the impact is **highly dependent on the raw materials used**



2. Preliminary report: Technical analysis

Raw material extraction, transport and processing of components:

- **Raw materials** since the impacts associated to **extraction and processing** (energy consumption).
- The composition (formulation) of lubricants will condition the potential impact to the environment during and after use (inherent biodegradability and toxicity)

Additives:

- Between 7-20% of formulation by weight
- Not covered in most of LCA studies
- Still can have relevant contribution to the overall impact of lubricants in some impact categories with impacts up to 50% of the total impacts (in particular for carcinogens and mineral extraction).

The relative impacts related with **transport process** seem to be of low relevance.



2. Preliminary report: Technical analysis

Raw material extraction, transport and processing of components:

Comparing **different base fluids**:

Vegetable oils:

- Advantages due its renewable origin and higher biodegradability
- Main impacts due to agriculture stage
- Lower energy consumption during processing and lower global warming potential than mineral and synthetic oils

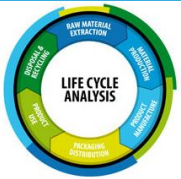
Synthetic oils:

- Refining/synthesis phase is the main contributor of impacts
- Higher production impacts than mineral oil due to more complex processing and higher energy consumption
- Longer life and lower impact during use

Mineral bas oils: Highest contribution due to the extraction phase

Re-refined oils: CO₂ emissions can be reduced by more than 50% as compared to the conventional mineral oils

Water base fluid: Environmental impact mainly during disposal of waste fluids



2. Preliminary report: Technical analysis

Manufacturing of lubricant, packaging and distribution

Manufacturing comprises blending and has lower environmental impact than the **processing of raw materials** (where energy consumption is more relevant), although it can have relevant impacts in some categories.

Packaging

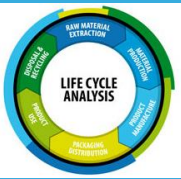
- a broad range of packaging types
- less covered in LCA studies,
- relevance of the potential impacts is not well known. Sustainability measures of relative easy implementation while bringing environmental benefits.



2. Preliminary report: Technical analysis

Use phase

- **Probability of release to the environment** (application and loss during use and management of used oil) and the consequences in terms of toxicity and impact on human health and the different environmental systems.
- **approx. 50%** of all traditional lubricants are **released into the environment during use, spills, or disposal.**
- Releases threaten ground soil and surface waters with oil contamination there by endangering drinking water supply and aquatic organisms.



2. Preliminary report: Technical analysis

End-of-life

- **Uncontrolled disposal** of lubricant has adverse effect on the soils, aquatic life and drinking water.
- 50% of **used oils** become waste oils potentially recoverable.
- **waste oils** (WO) are hazardous waste. In addition to additives, waste oil is also likely to contain metals from engine wear; unburned fuel; PAH (polyaromatic hydrocarbons) from polymerisation and incomplete combustion of fuel; particulates and water.
- **proper collection and posterior re-refining** – lower impacts than disposal (burning) and associated environmental savings with respect to using new lubricant as raw material.



Points for discussion and written feedback

- Do you agree with the proposed **definition**?
- Do you agree with **widening of the scope**? Do you agree to the scope proposal?
- The existing and revised definitions do not exclude **water base lubricants**, however no awarded licenses. Stakeholders are asked to provide relevant information on the **potential limitations on water base lubricants to comply with the criteria**?
- Other comments on **market data** and **technical analysis** are welcome.

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3. Draft criteria proposal and rationale

Link between the environmental aspects identified and the EU Ecolabel criteria

Existing criteria	Criteria proposal	Environmental aspects	
Criterion 1. Excluded or limited substances and mixtures	Criterion 1. Excluded and limited substances	Hazardous substances Emission to soil/ water	It limits the hazardous substances and mixtures that can be included in the product, limiting environmental and health risks of users.
Criterion 2. Restricted substances			It ensures that the overall aquatic toxicity is limited.
Criterion 3. Additional aquatic toxicity requirements	Criterion 2. Aquatic toxicity		It ensures that the ingredients are biodegradable and will not persist in water.
Criterion 4. Biodegradability and bioaccumulative potential	Criterion 3. Biodegradability and Bioaccumulative potential	Raw materials extraction and processing	It promotes more sustainable alternatives to mineral oils (bio-based, re-refined, synthetic).
Criterion 5. Renewable raw material	Criterion 4. Raw materials		It ensures that the vegetable oils used for the lubricant manufacturing comes from a sustainably management plantation.
	Criterion 5. Origin and traceability of vegetable oils		

3. Draft criteria proposal and rationale



Existing criteria	Criteria proposal	Environmental aspects	
	Criterion 6. Exhaust emissions	Emissions to air	It limits the air emissions of 2-stroke engine oils.
	Criterion 7. Packaging	Raw materials extraction and processing Spillage during use phase Waste generation and disposal	Recycled content for packaging materials. It ensures prevention of spillage during use. It ensures that a limited amount of waste will be generated and that the packaging can be recycled, as far as possible.
Criterion 6. Minimum technical performance	Criterion 8. Minimum technical performance	Efficiency during use	It guarantees that the product meets certain quality (technical performance) requirements foreseen for the different applications.
	Criterion 9. Consumer information	Waste generation and disposal	It reminds consumers to dispose of the packaging in a responsible manner.
Criterion 7. Information on EU Ecolabel	Criterion 10. Information on EU Ecolabel		It informs consumers that the product has a limited amount of undesired substances and therefore also a lower environmental impact, in order to encourage the purchase of the product.

Criterion 1: Excluded or limited substances



CRITERION 1: Excluded or limited substances

- (a) Hazardous substances
 - (i) Final product
 - (ii) Substances
- (b) Specified excluded and restricted substances
 - (i) Excluded substances
 - (ii) Restricted substances
- (c) Substances of very high concern (SVHCs)

AIM ➡ reduce the content of substances of concern in the product formulation to limit the potential of related environmental impacts



Changes

- Proposal to merge the existing criteria **1 Excluded or limited substances and mixtures** and **2 Exclusion of specific substances** - only one criterion related to substances
- **Alignment** with the recently voted EU Ecolabel criteria for formulations (e.g. detergents, rinse-off cosmetics)
- This first sub-criterion – **(a) Hazardous substances** – is directly linked to the requirements given in the EU Ecolabel Regulation (EC) No 66/2010, split into two requirements



Carcinogenic, mutagenic or toxic for reproduction	
Category 1A and 1B	
H340	May cause genetic defects
H350	May cause cancer
H350i	May cause cancer by inhalation
H360F	May damage fertility
H360D	May damage the unborn child
H360FD	May damage fertility. May damage the unborn child
Category 2	
H360Fd	May damage fertility. Suspected of damaging the unborn child
H360Df	May damage the unborn child. Suspected of damaging fertility
Acute toxicity	
Category 1 and 2	
H300	Fatal if swallowed
H310	Fatal in contact with skin
H330	Fatal if inhaled
H304	May be fatal if swallowed and enters airways

Long list of CLP hazards

- The currently used interpretation of the **grouping of hazards** as per Regulation (EC) No 1272/2008 and the Task Force on Chemicals 1



Criterion 1: Excluded or limited substances

Proposal for Criterion 1: Excluded or limited substances

1 (a) Hazardous substances

(i) Final product

The final product shall not be classified and labelled as being acutely toxic, a specific target organ toxicant, a respiratory or skin sensitiser, carcinogenic, mutagenic or toxic for reproduction, or hazardous to the aquatic environment, as defined in Annex I to Regulation (EC) No 1272/2008 and in accordance with the list in Table 1.

Carcinogenic, mutagenic or toxic for reproduction

Category 1A and 1B	Category 2
H340 May cause genetic defects	H341 Suspected of causing genetic defects
H350 May cause cancer	H351 Suspected of causing cancer
H350i May cause cancer by inhalation	
H360F May damage fertility	H361f Suspected of damaging fertility
H360D May damage the unborn child	H361d Suspected of damaging the unborn child
H360FD May damage fertility. May damage the unborn child	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child
H360Fd May damage fertility. Suspected of damaging the unborn child	H362 May cause harm to breast fed children
H360Df May damage the unborn child. Suspected of damaging fertility	

Acute toxicity

Category 1 and 2	Category 3
H300 Fatal if swallowed	H301 Toxic if swallowed
H310 Fatal in contact with skin	H311 Toxic in contact with skin
H330 Fatal if inhaled	H331 Toxic if inhaled
H304 May be fatal if swallowed and enters airways	EUH070 Toxic by eye contact



Proposal for Criterion 1: Excluded or limited substances

FOR DISCUSSION:

(ii) Substances

The final product formulation, including all intentionally added ingredients present at a concentration **limit of or above x% weight by weight** (in the final product), shall not contain substances that meet the criteria for classification as toxic, hazardous to the aquatic environment, ~~respiratory or skin sensitisers~~, carcinogenic, mutagenic or toxic for reproduction in accordance with Annex I to Regulation (EC) No 1272/2008 and in accordance with the list in Table 1.

Where stricter, the generic or specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall take precedence.

- Criterion proposal **aligned with other product groups** – formulations
- Decision on the %: 0.010% versus 0.10%
- For the moment the product is not evaluated at substances level in a way other EU Ecolabel products are – Need to understand better the specificity of the group



Proposal for Criterion 1: Excluded or limited substances

Discussion in the frame of Task Force on Chemicals 2

Substances or mixtures which change their properties upon processing (e.g. become no longer bioavailable, undergo chemical modification) so that the identified hazard no longer applies are exempted from the above requirement.

(...)

Substances and mixtures included in Table 2 (derogated substances) (to be completed in a later stage if requirement (ii) Substances is kept) are exempted from point (a)(ii) of Criterion 1.

Derogation form in BATIS

Need to identify derogation needs



Proposal for criterion 1: Excluded or limited substances

1 (b) Specified excluded and restricted substances

(i) Excluded substances

The substances listed below shall not be included in the product formulation regardless of concentration: **(to be completed if considered necessary along the revision process)**

(ii) Restricted substances

The substances listed below shall not be included in the product formulation **above the concentration of 0,010% (w/w) of the final product:**

- substances appearing in the Union List of priority substances in the field of water policy in Annex X to Directive 2000/60/EC and the OSPAR List of Chemicals for Priority Action (<http://www.ospar.org/work-areas/hasec/chemicals/priority-action>);
- organic halogen compounds and nitrite compounds;
- metals or metallic compounds with the exception of sodium, potassium, magnesium and calcium. In the case of thickeners, also lithium and/or aluminium compounds may be used up to the concentration limited by other criteria



Proposal for criterion 1: Excluded or limited substances

1 (c) Substances of very high concern (SVHCs)

The final product shall not contain any substances that have been identified in accordance with the procedure described in Article 59(1) of Regulation (EU) No 1907/2006, which establishes the candidate list for substances of very high concern.

(if derogation requests are received for SVHC presence in the final product below 0.010% w/w, reformulation should be considered)

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Assessment and verification: the applicant shall provide a signed declaration of compliance supported by declarations from their suppliers, if appropriate, or SDS confirming the non-presence of all the candidate list substances.

Reference to the latest list of substances of very high concern shall be made on the date of application.



Additional information on hazardous substances in the lubricant sector

- Although all organic-based functional fluids (lubricants) are usually subject to potential microbiological deterioration, only those products that are water-based are usually candidates for **biocides use**.
- Therefore, biocides are typically used in **metalworking fluids, hydraulic fluids and mould release**.
- Biocides have been revised extensively due to their sensitizing potential and the possible enlargement of the scope based on human health issues concern (new category: metalworking fluids).
- Only biocidal products containing biocidal active substances approved by European Commission and authorized for use in lubricants are allowed for use.



Additional information on hazardous substances in the lubricant sector

- Chloromethylisothiazolinone (CMIT) and methylisothiazolinone (MIT) are widely used in lubricants due to their effectiveness within such wide pH range. The dosage of CMIT+MIT added to the products is usually very low.
- According to the CLP classification, if **the concentration of CMIT/MIT (3:1) is $\geq 0,0015\%$ (15 ppm)**, the final mixture must be classified as **Skin Sens 1; H317**.



Additional information on hazardous substances in the lubricant sector

- Currently, **nanomaterials** are covered by the definition of a “substance” under REACH, although there is no explicit reference to nanomaterials and the same REACH provisions apply to all chemical substances.
- **Nanomaterials are not intrinsically hazardous per se** but there may be a need to take into account specific considerations in their risk assessment. The results of the assessment helps understanding whether the nanomaterial is hazardous and whether or not further action is justified.
- The use of two nanomaterials of possible concern that could be considered to be **specifically restricted in the product group** was identified.



Additional information on hazardous substances in the lubricant sector

Silver nanoparticle: (AgNP) reveal high ecotoxicity even at very low effect concentrations. AgNP are classified as very toxic towards aquatic organisms (very low values of EC50, e.g. for algae of 4 µg/l and also for crustaceans – far below 1 mg/l). In addition, at low concentrations inhibition of nitrifying bacteria can occur and the function of wastewater treatment plants may be affected due to the presence of AgNP.

Boron-based NP: Boric acid is used to be a common additive in metal-working fluid (MWF) formulations thanks to its excellent extreme pressure/anti-wear properties and bacteriostatic and bactericidal actions. Nowadays, largely phased out from MWFs because of **health concerns**. Some recent studies mention “boron-based **NP** lubrication additives that can drastically lower friction and wear in a wide range of industrial and transportation applications”, indicating **renewed interest in boric acid**. Boric acid is identified as a substance meeting the criteria of **Article 57 (c) of REACH regulation (SVHC and included in the candidate list for authorization)** owing to its classification as toxic for reproduction.



Points for discussion and written feedback

- Implication of the **strict interpretation of the article 6(6) and 6 (7)** of the EU Ecolabel regulation.
- Would setting of **restrictions at substance level** lead to an ambition level that is not achievable by candidates and therefore to a significant loss of licenses?
- In the case criteria is finally set at the substance level it is crucial that stakeholders provide information on the hazardous substances or functional groups of substances which require **derogations**; shall this be needed.



Points for discussion and written feedback

With regard, 1 (b) Specified excluded and restricted substances

Stakeholders views on following issues are welcome:

- The use of two **nanomaterials of possible concern** that could be considered to be specifically excluded or limited in the product group is presented for further discussion: silver and boron-based nanoparticle.
- Stakeholders are asked to **provide information on the biocides used** in their products, in particular the ones carrying harmonised classification.

Criterion 2: Aquatic toxicity



CRITERION 2: Aquatic toxicity

2.1 Requirements for the lubricant and its main components

2.2 Requirements for each substance present above 0,10 % (w/w)

AIM ➡ lubricants have potential to cause disturbances in aquatic ecosystems – emissions to water during their life cycle or due to accidental spillages. EU Ecolabel aims to limit the aquatic toxicity of the ingredients used in lubricant product group.

- Analysis of **other ecolabels** has been performed to understand how aquatic toxicity requirements are addressed in respective schemes.
- According to this analysis:
 - Blue Angel, Eco Mark Japan and Korea Eco-Label have similar requirements to the ones of the EU Ecolabel (the thresholds are also comparable)
 - In Nordic Ecolabel (withdrawn), NF Environment and Swedish Standard different cumulative % mass fraction are allowed depending on the aquatic toxicity of the components.



- According to the available information, nearly all current applicants have used Criterion 2.2. In the last revision, it was already suggested to remove this criterion.
- It was commented that many types of greases are the result of a direct reaction product and their **full composition is not completely known.**
- Existing criterion 3.1 and 3.2 are proposed to be maintained in the revised criteria version. However some modifications are suggested.
- **Proposal to keep the requirement 2.1 just for greases.** When adequate toxicity data are available for all the components in the mixture, criterion 2.2 shall be applied.



Proposal for criterion 2: Aquatic toxicity

The applicant shall demonstrate mandatorily compliance by meeting the requirements of criterion 2.2, **except category 2**, greases (ISO Family X), where the applicant shall demonstrate compliance by meeting the requirements of either criterion 2.1 or criterion 2.2 depending on the toxicity data available for the components in the mixture (freshly prepared lubricant):

- When unknown substances are present in the mixture ~~for more than~~ **at concentrations up to 5%** by weight in the lubricant ~~or reliable aquatic toxicity data of the mixture exists~~, criterion 2.1 can be applied.
- When adequate toxicity data are available for all the components in the mixture, **criterion 2.2** shall be applied.

Category 2

Criterion 2.1

Category 1, 3, 4 and 5

Criterion 2.2

2.1 Requirements for the lubricant and its main components

- Acute aquatic toxicity **or chronic aquatic toxicity** values are proposed in order to provide more options for verification to applicants (in line with short term /long terms toxicity in criterion in 2.2).
- Hypothetical products were modelled in order to understand better whether 2.1 and 2.2 are comparable in terms of ambition level. Initially, thresholds for the lubricant toxicity have been considered to be changed to harmonise ambition level.

But finally we propose to **maintain them at 1000 mg/L**.

- No major changes on the A&V section - to be further defined.

'main component' means any substance accounting for more than 5 % by weight of the lubricant.



Criterion 2: Aquatic toxicity

Proposal for criterion 2: Aquatic toxicity

Criterion 2.1. – Requirements for the lubricant and its main components

The critical concentration for the acute aquatic toxicity shall not exceed values specified in Table 3 for both the lubricant and for each main component.

Table 3 Proposed aquatic toxicity values for both freshly prepared lubricant and for each main component ~~when unknown substances are present in the mixture for more than 5% by weight.~~

Aquatic toxicity CATEGORY 2

Aquatic toxicity for the freshly prepared lubricant	Acute aquatic toxicity or	$\geq 200 \text{ mg/L}$ >1000 mg/L
	Chronic aquatic toxicity	$\geq 20 \text{ mg/L}$ > 100 mg/L
Aquatic toxicity for each main component	Acute aquatic toxicity or	>100 mg/L
	Chronic aquatic toxicity	> 10 mg/L



2.2 Requirements for each substance present above 0,10 % (w/w)

- Stakeholders and competent bodies were contacted to collect information and evaluate the strictness of the current values
- Data on 47 ecolabelled products from 10 different countries was obtained, which represents the 25% of the total ecolabelled lubricants present in the market.
- Based on the outcome of the consultation, it was found that generally the **existing threshold values are higher than the actual values for most of the products analysed.**
- **Stricter aquatic toxicity limits are proposed for new criterion 2.2.**
- No major changes on the A&V section - to be further defined.



Criterion 2.2 Current and proposed threshold values for the aquatic toxicity

Aquatic toxicity		Cumulative mass percentages (%w/w) of substances present within the candidate lubricant)									
		Category 1		Category 2		Category 3		Category 4		Category 5	
		Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal
CHRONIC HAZARD CATEGORY 3 (E)	Acute aquatic toxicity >10 to ≤ 100 mg/L or 1 mg/L < Chronic aquatic toxicity ≤ 10 mg/L	≤ 20	≤ 10	≤ 25	≤ 20	≤ 5	≤ 2	≤ 25	≤ 20	≤ 20	≤ 10
CHRONIC HAZARD CATEGORY 2 (F)	Acute aquatic toxicity >1 to ≤ 10 mg/L or 0,1 mg/L < Chronic aquatic toxicity ≤ 1 mg/L	≤ 5	≤ 2,5	≤ 1	≤ 0,5	≤ 0,5	≤ 0,3	≤ 1	≤ 0,5	≤ 5	≤ 2,5
CHRONIC CATEGORY 1 (G)	Acute aquatic toxicity ≤ 1 mg/L or	≤	≤	≤	≤	≤	≤	≤	≤	≤	≤
ACUTE CATEGORY 1 (G)	Chronic aquatic toxicity ≤ 0,1 mg/L	0,1/M	0,1/M	0,1/M	0,1/M	0,1/M	0,1/M	0,1/M	0,1/M	1/M	0,1/M

The following terms have been modified due to indications of danger under DSD/DPD have been changed to signal words:

Not toxic for **not hazardous to the aquatic environment (D)**

HARMFUL for **chronic hazard Category 3 (E)**

TOXIC for **chronic hazard Category 2 (F)**

VERY TOXIC for **chronic or acute hazard Category 1 (G)**

Proposal for criterion 2: Aquatic toxicity

Criterion 2.2. – Requirements for each substance present above 0,10 % (w/w)

Substances exhibiting a certain degree of aquatic toxicity are allowed up to a cumulative mass concentration indicated in the table 4.

Table 4. Proposed aquatic toxicity requirements for substances present above 0,10% weight by weight in the final product

		Cumulative mass percentage (% w/w in the final product)				
		CAT. 1	CAT. 2	CAT. 3	CAT. 4	CAT. 5
		PROPOSED LIMIT				
Chronic hazard category 3 (E)	Acute >10 to ≤ 100 mg/L or 1 mg/L < Chronic ≤ 10 mg/L	≤ 10	≤ 20	≤ 2	≤ 20	≤ 10
Chronic hazard category 2 (F)	Acute aquatic toxicity >1 to ≤ 10 mg/L or 0,1 mg/L < Chronic aquatic toxicity ≤ 1 mg/L	≤ 2,5	≤ 0,5	≤ 0,3	≤ 0,5	≤ 2,5
Chronic hazard category 1 (G) ACUTE HC 1 (G)	Acute aquatic toxicity ≤ 1 mg/L or Chronic aquatic toxicity ≤ 0,1 mg/L	≤ 0,1/M				



Points for discussion and written feedback

- Are the proposed changes appropriate?
- It seems that options 2.1 is still needed for greases because their **full composition is not completely known**. Stakeholders are asked to inform if option 2.1 (when unknown substances are present) is needed **for other categories?**
- Stakeholders are asked to provide information on the potential difficulties of **new categories** to comply with this criterion.

Criterion 3: Biodegradability and bioaccumulative potential



Biodegradation

- Current EU criterion covers threshold values for:
 - ultimate aerobic biodegradability,
 - inherent aerobic biodegradability,
 - non-biodegradable substances.
- Other ecolabels:
 - Blue Angel (2014): Several threshold are more restrictive
 - NF Environment: different threshold values for the base fluid and the additives
 - The Nordic Ecolabel (**withdrawn**): thresholds only for base fluids



Main changes proposed

- **Ultimately aerobically biodegradable** new thresholds are proposed for **categories 1, 2 and 3**, whereas are maintained for categories 4 (2-stroke oils) and category 5 (gears)
- The **inherent aerobically biodegradability** has been proposed to be modified for the lubricant products **greases (cat 2), 2-stroke oils and 4-stroke oils (cat 4)**
- The Blue Angel defines a more restrictive value for the **non-biodegradable and non-bioaccumulative** fraction. However, the only product group that has been modified is the **greases (cat. 2)**. Others modifications would involve the exclusion of an important percentage of the current lubricants classified in the EU Ecolabel.
- **More changes introduced in category 2.** For new categories included (MWF (cat 1), 4-stroke oils (cat.4) and Temporary protection against corrosion (Cat.3)) a conservative approach has been taken since no data is available for these new categories.

	Category 1		Category 2		Category 3		Category 4		Category 5	
	Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal	Current EEL	Proposal
Ultimately aerobically biodegradable	> 90	> 95	> 75	> 80	> 90	> 95	> 75	> 75	> 90	> 90
Inherently aerobically biodegradable	≤ 5	≤ 5	≤ 25	≤ 15	≤ 5	≤ 5	≤ 20	≤ 15	≤ 5	≤ 5
Non-biodegradable and non-bioaccumulative	≤ 5	≤ 5		≤ 15	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5
Non-biodegradable and bioaccumulative	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1

Bioaccumulation

- Biodegradability is extensively covered by the different regional Ecolabels, on the contrary the bioaccumulation potential are not included in other ecolabel criteria with the exception of the Blue Angel.
- 'Bioaccumulation' means the net result of uptake, transformation and elimination of a substance in an organism due to all routes of exposure. **Bioaccumulation of substances within aquatic organisms can give rise to toxic effects over longer time scales** even when actual water concentrations are low.
- The Blue Angel threshold for bioaccumulation potential is the same as the EU Ecolabel threshold.
- EU Ecolabel stakeholders/CBs consultation about the respective **values** for lubricants which are **currently awarded with the EU Ecolabel**. The data has shown that the **share of bioaccumulative components is very low/negligible**. No change is proposed to this sub-criterion.

Proposal for criterion 3: Biodegradability and bioaccumulative potential

Requirements for the biodegradability and bioaccumulative potential shall be fulfilled by each substance present above 0,10 % weight by weight in the final product. The lubricant shall not contain substances that are both: non-biodegradable and (potentially) bioaccumulative. However, the lubricant may contain one or more substances with a certain degree of degradability and potential or actual bioaccumulation up to a cumulative mass concentration as indicated in following table:

	Category 1	Category 2	Category 3	Category 4	Category 5
Readily aerobically biodegradable	> 95	> 80	> 95	> 75	> 90
Inherently aerobically biodegradable	≤ 5	≤ 15	≤ 5	≤ 15	≤ 5
Non-biodegradable and non-bioaccumulative	≤ 5	≤ 15	≤ 5	≤ 10	≤ 5
Non-biodegradable and bioaccumulative	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1	≤ 0,1

- Update according to the last version of CLP Regulation - a change of nomenclature is proposed: **Ultimately** is changed by **Readily**.



Biodegradation

The biodegradation test does not need to be conducted when:

- the classification of the substance, base fluid or additive is already stated on the **Lubricant Substance Classification** list or a valid letter of compliance from a competent body can be submitted,
- a substance is non-biodegradable if it fails the criteria for ultimate and inherent biodegradability.

The applicant may also use read-across data to estimate the biodegradability of a substance.

Bioaccumulation

The (potential) bioaccumulation does not need to be established when the substance:

- has a MM > 800 g/mol, or
 - has a molecular diameter > 1,5 nm (> 15 Å), or
 - has an octanol-water partition coefficient, log K_{ow}, value of < 4 or >7, or
 - has a measured BCF of ≤ **500** L/kg, or
 - is a polymer and its molecular weight fraction below 1.000 g/mol is < 1%.
- In addition, definitions of ultimately and inherently biodegradable have been removed from the text in order to **simplify the wording**.
- **No amendments** introduced in the **verification** section.



Points for discussion and written feedback

- Are the proposed changes appropriate?
- Stakeholders are asked to provide information on the potential difficulties of **new categories** to comply with this criterion.

Criterion 4: Raw materials



- Mineral oils present the highest impacts due mostly to the **extraction phase**.
- **Bio-based oils** brings advantages due its renewable origin and higher biodegradability.
- Existing criteria (*criterion 5. Renewable raw material*) only requires a **minimum percentage of renewable content** in order to enforce renewable ingredients against mineral oils.
- Nevertheless **other options** could be explored to replace virgin mineral oils:
 - **re-refined and synthetic oils** are proved to have **lower environmental impacts than mineral oils**.



- Regarding **synthetic oils**, the refining/synthesis phase is the main contributor of impacts. In the production stage they have higher impacts than mineral oil. **Longer life and lower impact during use.**
- **Re-refined oils**, with modern re-refining technologies, **CO₂ emissions can be reduced by more than 50% as compared to the conventional production of base oil.** In line with the **circular economy** strategy. Alternative for the categories with less probability to reach the environment.
- However **derogations for toxicity and biodegradability criteria** needs to be considered in order to include re-refined oils within the scope.



Revision of thresholds

➤ Only **Nordic Swan** had a similar criterion setting minimum percentages of renewable content. Nevertheless these values have been not taken as a reference since one reason of the unsuccessful intake of the Nordic Swan could be the high values of renewability.

➤ Consultation of CBs & industry stakeholders :

Products information received	renewable raw material	(cumulative mass percentages (%w/w) of substances present within the candidate lubricant)						Products above the proposed limit
		range	average	50th percentile	75th percentile	current limit	proposed limit	
23 (5 currently not compliant)	Cat. 1	50- 98,4	74,75	80	57,48	≥50%	≥ 60 %	17
7	Cat. 2	54,4-92,82	76,99	81,70	68	≥45%	≥ 60 %	6
9	Cat. 3	73- 97,4	88,46	91,9	80,50	≥70%	≥ 70 %	9
1	Cat. 4	67,29	67,29	67,29	67,29	≥50%	≥ 50 %	1
6	Cat. 5	67,23-82,94	74,20	74,53	70,21	≥50%	≥ 60 %	6

Proposal for criterion 4: Raw materials

FOR DISCUSSION: Discussion and further research needed in order to define the best options for each category

The formulated product shall have a content from renewable origin, synthetic or re-refined that shall be:

≥ 60 % (m/m) for Category 1

≥ 60 % (m/m) for Category 2

≥ 70 % (m/m) for Category 3 (only renewable and synthetic origin).

≥ 50 % (m/m) for Category 4

≥ 60 % (m/m) for Category 5

For renewable origin, the parameter to be analysed will be the carbon content. carbon content derived from renewable raw material means the mass percentage of component A × [number of C-atoms in component A, which are derived from (vegetable) oils or (animal) fats divided by the total number of C-atoms in component A] plus mass percentage of component B × [number of C-atoms in component B, which are derived from (vegetable) oils or (animal) fats divided by the total number of C-atoms in component B] plus the mass percentage of component C × [number of C-atoms in component C, which are derived from (vegetable) oils or (animal) fats divided by the total number of C-atoms in component C], and so on.

The applicant shall indicate on the application form the type (s), source(s) and origin of the material(s) of the main components.

Assessment and verification

The applicant shall provide the competent body with a declaration of compliance with this criterion supported by a high quality test reports or literature data.



- With regard the **assessment and verification**, the existing criterion only requires a declaration of compliance.

- There are **several test methods** to measure **biomass content**:
 - The USDA Bio-Preferred program use the ASTM D6866 (cost: 400\$) for testing the biobased content of a product.
 - ASTM D6866 standard is a test method that provides accurate biobased/biogenic carbon content results.
 - Similar methods are developing following the methodology of carbon-14 analysis:
 - ISO 13833: Stationary source emissions - Determination of the ratio of biomass (biogenic) and fossil-derived carbon dioxide - Radiocarbon sampling and determination.
 - EN 15440: Solid recovered fuels - Methods for the determination of biomass content.



Main changes:

- **More restrictive thresholds** have been proposed, considering the current values for ecolabelled products.
- Also it is considered that **including other alternatives besides renewable substances (i.e synthetic or re-refined origin)**, the broader possibilities on the market could facilitate to accomplish with these new limits.
- However, **re-refined oils** are suggested to **not be allowed for category 3- Total loss systems**
- It is suggested that declaration of compliance shall be supported by a **test reports**.



Points for discussion and written feedback

In order to allow the presence on **re-refined oils** as an alternative for the categories with less probability to reach the environment, stakeholders are asked to provide their views on following options:

- Re-refined oils are not allowed for category 3 (current proposal)
- Re-refined oils are only allowed in category 4 (engine oils)

In addition to include re-refined oils as an option for the categories with less probability to reach the environment, **derogations for toxicity and biodegradability criteria needs to be discussed.**

- In order to better define the verification text stakeholders are asked to provide **information on availability, cost and use of methods to measure % renewable C, % synthetic oils, % of re-refined oil.**

Criterion 5: Origin and traceability of vegetable raw materials



- Renewable raw materials for lubrications are **basically vegetable oils** (mainly derived from rapeseed, sunflower, palm and coconut).
- In **EU**, **rapeseed and sunflower** oils are the major vegetable oils used, while **soybean and corn** are mostly utilized in the **US**.
- A wide range of types of vegetable oils are used in the lubricant sector:

Type of oil	Application
Canola oil	Hydraulic oils, tractor transmission fluids, metalworking fluids, food grade lubes, penetrating oils, chain bar lubes
Castor oil	Gear lubricants, greases
Coconut oil	Gas engine oils
Olive oil	Automotive lubricants
Palm oil	Rolling lubricant, -steel industry, grease
Rapeseed oil	Chain saw bar lubricants, Biodegradable greases
Soybean oil	Lubricants, biodiesel fuel, metal casting/working, hydraulic oil
Jjoba oil	Grease, lubricant applications
Crambe oil	Grease, intermediate chemicals, surfactants
Sunflower oil	Grease,
Tallow oil	Steam cylinder oils, ,lubricants,



- Vegetable oils are biodegradable, in general are less toxic, have a lower price than synthetic esters, are 100 % renewable, and reduce dependency on imported petroleum oils. Beneficial to face two current problems: fossil resources depletion and climate change.
- Some **impacts from vegetable oils** should be considered, especially those related to the agriculture stage. LCA revealed that most of the contribution in global warming, eutrophication and acidification potential is due to the **agriculture stage**.
- Sunflower oil had higher environmental impacts for the energy consumption, acidification, eutrophication and global warming than other vegetable oils; followed by rapeseed oil, coconut and palm oil.



- **Good sustainability harvesting practices are desired** in order to guarantee the minimum environmental impact during the agriculture stage.
- **Certifications:** Roundtable on Sustainable Palm Oil (RSPO) certification (economic, social and ecological criteria).
 - Similar initiatives: e.g. soya beans (Round Table on Responsible Soy (RTRS)) and sugar cane - currently being developed.
 - Some **producer countries** are being developing their **own certificates** - Malaysia Sustainable Palm Oil (MSPO) certification and the mandatory Indonesian Sustainable Palm Oil (ISPO) certification.
- There **isn't exist criteria on this regard in other ecolabel schemes for lubricants.**
- Revision of **Blue Angel** for Biodegradable Lubricants and Hydraulic Fluids (RAL-UZ 178) (2014) it is stated that issues related to the renewable origin of renewable substances should be investigated for possible future criteria.



- Other product groups from EU Ecolabel have set criteria regarding the sustainability of vegetable oils:
 - **Rinsed-off cosmetics & Detergents and cleaning product groups** : Criterion for **sustainable palm oil**
- Although some standard exist for some oils (palm oil, soya oil), it is not the case for the oils **most widely used in lubricants in Europe (sunflower, rapeseed)**.
- **Further research and discussions** are expected in order to better define the proposal.



Proposal for criterion 5: Origin and traceability of vegetable raw materials

Renewable raw materials must be sourced from plantations and exploitations that **meet criteria for sustainable management**.

Assessment and verification

The applicant shall provide **third-party certifications** that the vegetable oils used in the manufacturing of the product originates from sustainably managed plantations.

Points for discussion and written feedback

- Discussions on the **feasibility to set criteria** on sustainability.
- Precedent: only if certification available-criteria can be introduced. (palm oil criterion on detergents and cosmetics). However most widely used in lubricants in Europe (sunflower, rapeseed).
- Stakeholders are asked to provide information on the **relevance of palm oil as a source of vegetable base lubricants?**
- Information on **other sustainable initiatives** is welcome.

Criterion 6: Exhaust emissions



- **Two-stroke oils** are used as lubricants in small (two-stroke) engines. Suitable for outboard motors, snowmobiles, scooter, jet-ski, small boats, **often used in environmentally sensitive areas.**
- In 2-stroke engines there is no dedicated lubrication system, the lubricant is mixed with fuel. Lubricating oil is less combustible than gasoline; some of the **oil that is mixed with gasoline will survive to be emitted in the exhaust.**
- Emissions produced by internal combustion engines (exhaust emissions) are regulated in Europe by "Euro emissions standards".
- Particulate emissions from a single 2-stroke motorcycle is comparable to those from a diesel truck or bus. PM, particularly the finer ones, are associated with respiratory problems.
- **Lubricating oil** is suggested to contribute even **95%** to the total exhaust particle mass.



Korea Eco-label on 2T oils:

- *Exhaust emissions shall be 85 or more*
- *The obstructive of the exhaust system shall be 90 or more*

With regard the Assessment and Verification:

- Korea Eco-label and ISO 13738:2011 *Specifications for two-stroke-cycle gasoline engine oils* relate to JASO (Japanese Automotive Standards Organization) standards **M342** and **M343** to verify the exhaust smoke and exhaust blocking, respectively.

Therefore it is initially **recommended to establish minimum requirements regarding the emission** of air pollutant for **two-stroke engine oils** aligned to the Korea ecolabel.



Proposal for criterion: Exhaust emissions (Applicable only to Two-stroke engine oils)

Two-stroke engine oils shall perform:

Performance	Criterion	Test procedure
Exhaust smoke	≥ 85	JASO M342
Exhaust system blocking	≥ 90	JASO M343

Assessment and verification

The applicant shall provide the information about the exhaust emission test results.



Points for discussion and written feedback

- Stakeholders view on the proposal are welcome.
- Stakeholders are asked to provide information on tests used for emissions measure of 2T oils and their cost.

Criterion 7: Packaging requirements



- Packaging is **less covered in LCA studies**, the **relative impact seems to be minor** compared to other life cycle stages.
- Waste generated due to packaging : 157 kg of packaging waste per inhabitant was generated during 2013 in the EU, of them 19% is plastic packaging.
- The Directive on Packaging and Packaging Waste (Directive 94/62/EC) provides measures aimed at reduce the production of packaging waste and encourage the waste recovery promoting recycling and re-use, for example.
- Considering the extension of the lubricant market, the impact generated due to the waste disposal of packaging could be important. There are **sustainability measures** such as using environmentally friendly materials, design for a correct use/application/resistance to spillage and correct disposal that might be of **relative easy implementation while bringing environmental benefits**.



Packaging materials

- Some materials/substances used in the packaging could be considered important due to its **potential environmental impact and its inherent toxicity**. The **halogenated waste**, when incinerated without precautions, has the potential to form toxic polychlorinated dioxins and furans and many show persistent and bioaccumulative properties. However, the **relevance of halogenated material in lubricant packaging seems to be minor** and in addition, the **incinerations in the EU are regulated**.

Other ecolabels:

- Eco mark Japan: *Packaging shall not contain resins made of halogens and halogenids as constituents.*
- NF-Environment: *Packaging materials **must be marked** in accordance existing standards (NF EN ISO 6120 or DIN 11 469).*

Initially it was suggested to align to other labels. However, it is proposed to not include specific restriction to halogenated plastics but to focus on materials recyclability.



Container design

- For non-professional or non-industrial users, the design of the **dispenser closure** is important and allows the correct dosing of the lubricant fluid and to avoid a spillage to the environment.
- Others ecolabels:
 - Nordic Swan: *in the case of up to five liters an account must be provided of the design used to prevent the retention of oil*
 - NF-Environment: *To limit losses when the use, it is recommended that the packaging of lubricant is designed to:*
 - *To **limit the retention lubricant** in the package*
 - *That users can put the **right dose lubricant** on the chain or in the tank.*



Recycled content and recyclability

- In order to promote a **reduced production of waste** from packaging and the circular economy, it is proposed to encourage the use of packaging from recycled sources and/or the easy recyclability of packaging.
- The recycling rate of packaging in the year 2013 represented 103 kg per habitant, 65,6% of the total waste packaging.
- Some **frontrunners** have been identified selling lubricants in **fully recyclable packaging**.
- No other schemes on lubricants include criteria on recycled content. Further research and discussions are needed in order to set criteria on packaging for lubricants.

Proposal for criterion 7: Packaging requirements

- a) ~~Packaging materials: Product packaging, including caps and labels, must not contain halogenated plastics.~~
- b) Ecodesign: for low capacity packaging, a dispenser closure system allowing proper dosage and avoiding spillage shall be made available to the users as part of the packaging.
- c) Recycled content/Recyclability (For further discussion): plastic packaging **shall be recyclable**, excluding the use of incompatible materials that are not detected and separated during the recycling process **and/or** packaging shall be made on a **minimum of XX% of recycled material**

Assessment and verification

~~The applicant shall provide a declaration of non-use halogenated plastics from the manufacturer of the product packaging.~~

The applicant shall provide a description of the dispenser closure, along with photos or technical drawings of the system.

~~The applicant shall provide the label of the packaging where the information about the waste disposal appears.~~

The applicant shall provide a declaration with the % of recycled material and the list of the materials content within the packaging and their recyclability characteristics.



Points for discussion and written feedback

- Stakeholders are asked to provide their views of **relevance of packaging requirement**.
- Stakeholders are asked to provide information on initiatives on **container design** to efficient use of the lubricant.
- Stakeholders are asked to provide information on the **use of recyclable materials/recycled content** on the lubricants packaging.
- In order to better define the verification text, stakeholders are asked to provide information on availability, cost and use of methods to measure/proof recyclability and recycled content of the packaging.

Criterion 8: Minimum technical performance



- Minimum technical performance criteria have been revised taking into consideration the modifications of the revised scope.
- Harmonisation to the nomenclature of the lubricant families used in the **ISO 6743 classification** helped to **set clearer minimum technical performance requirements** (to define a standard test per family or sub-family).

Proposal for criterion 8: Minimum technical performance

The quality of the candidate lubricant must be equal to or better than those of reference lubricants, or within the tolerances as specified.

ISO	ISO 6743-99	Minimum technical performance
A	Total loss systems	Chainsaw: RAL UZ 48 & AFNOR NF 375 Wire ropes: Lubricity & corrosion requirements Other total loss lubricants: MSR
B	Concrete release agents	Concrete: MSR
C	Gears	DIN 51517 section (I, II or III)
E	Internal combustion engine oils	2S marine: NMMA TC-W3 2S terrestrial: ISO 13738:2000 (EGD) 4S marine: NMMA FC-W 4S terrestrial: ACEA European Oil Sequences 2016
H	Hydraulic systems	ISO 15380 (Tables 2 to 5) Fire resistant hydraulic fluids: ISO 12922
M	Metalworking fluids	MSR
R	Temporary protection	ISO/TS 12928:1999
T	Turbines	Stern tube: ISO 8068:2006
X	Greases	Temporary protection: ISO/TS 12928:1999 Gears: DIN 51517 section (I, II or III) Other greases: "Fit for purpose"

Assessment and verification: the applicant shall provide a declaration of compliance with this criterion supported by testing laboratories confirming compliance with the requirements.



ISO 6743-99	Minimum technical performance
A Total loss systems	Chainsaw: Based on RAL UZ 48 & AFNOR NF 375

Properties	Method	Results
Viscosity	ISO 3104, ASTM D445	Specify at 40 and 100°C
Flash Point	ISO 2592	>200°C
Pour Point	ISO 3016	T<-10°C: Hot climate T<-20°C: Temperate climate T<-30°C: Arctic climate
Ageing	Annex 2 of KWF. Heating in glass dishes at 80°C/1000h	Flow time <15s longer than original flow t No visible changes (separation, flocking or formation of separation layers)
Lubricity	DIN 51347 Brugger	Loading > 27 N/mm ²
Wear on chains and guide bars	ISO/TS 19858:2015 (E)	Chain extension <2mm Wear depth of the guide bar <1.5mm Surface temperature after 180min <85°C
Non corrosive	Visual inspection	No damage to or signs of material change in components of chainsaws



ISO	ISO 6743-99	Minimum technical performance
A	Total loss systems	Wire ropes: Lubricity & corrosion

Main function → reduce friction as the individual wires move over each other.
 Other function: provide corrosion protection and lubrication in the core, inside wires, and on the outer surface.

Existing EEL and other labeling schemes: within the “other total loss systems” and they set the technical performance as ‘**fit for purpose**’.

For wire ropes lubricants, a **minimum technical performance** is suggested based on common analysis:

Properties	Method	Results
Viscosity	ISO 3104 or ASTM D445	Specify at 40 and 100°C
Corrosion	Salt spray (ASTM B117)	>60 hours
	Humidity cabinet (ASTM D1748)	>60 days
Weld point	ASTM D2783	>200 kg
Load-wear index	ASTM D2783	> 45



ISO	ISO 6743-99	Minimum technical performance
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A	Total loss systems	Other total loss lubricants: MSR
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A **minimum stability requirement** has been proposed which guarantees no aspect changes for a short storage time. E.g.: no changes shall be observed when a product recovers 20°C after being 7 days at 5°C and 50°C.

ISO	ISO 6743-99	Minimum technical performance
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B	Concrete release agents	MSR
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No technical standard has been found.

Other EEL programs are also lacking a specific technical performance requirement.

ISO	ISO 6743-99	Minimum technical performance
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C	Gears	DIN 51517 section (I, II or III)
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ISO 6743-99 Minimum technical performance

E	Internal combustion engine oils	2S marine: NMMA TC-W3
		2S terrestrial: ISO 13738:2000 (EGD)

NEW category

4S marine: NMMA FC-W

4S terrestrial: ACEA European Oil Sequences

4-stroke oils:

- **Marine applications**, the National Marine Manufacturers Association (NMMA), has developed testing criteria for the marine four-stroke oil, the NMMA FC-W.
- **Terrestrial applications**, the European Automobile Manufacturer's Association (ACEA) defines a minimum quality level ACEA Oil Sequences 2016 "for service-fill oils for gasoline engines, for light duty diesel engines, for gasoline and diesel engines with after treatment devices, and for heavy duty diesel engines".



ISO	ISO 6743-99	Minimum technical performance
H	Hydraulic systems	ISO 15380 (Tables 2 to 5) Fire resistant: ISO 12922

Fire-resistant hydraulic fluids: additional requirements and pass several fire resistance tests.
At least shall be performed the criteria of **ISO 12922**.

ISO	ISO 6743-99	Minimum technical performance
M	Metalworking fluids	MSR



No previous Eco-label records have been found.
Considering the variety of products and applications for this new category with diverse performance requirements, a MSR (**minimum stability requirement**)



ISO	ISO 6743-99	Minimum technical performance
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R	Temporary protection	ISO/TS 12928:1999
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NEW category

No eco-label precedent has been found for this new category
It is proposed to, at least, perform the protection performance (duration) as defined in ISO/TS 12928:1999.

ISO	ISO 6743-99	Minimum technical performance
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T	Turbines	Stern tube: ISO 8068:2006
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- Existing: Fit for purpose
- Proposal: shall be in accordance with the limits of ISO 8068:2006.



ISO	ISO 6743-99	Minimum technical performance
X	Greases	Temporary protection : ISO/TS 12928:1999 Gears: DIN 51517 section (I, II or III) Other greases: "Fit for purpose"

It has not been possible to establish simple technical requirements for greases.

It has been suggested for specific grease applications:

- Temporary protection against corrosion grease: shall fulfill the specifications of performance duration of ISO/TS 12928:1999 (Table 5)
- Gear greases shall fulfill the requirements of DIN 51517.



Points for discussion and written feedback

- Stakeholder views on the proposal are welcome.
- Stakeholders are asked to provide additional relevant information on tests performed for technical performance of the different categories and their costs.

Criterion 9: Consumer information regarding disposal



- The European List of Waste (Commission Decision 2000/532/EC) classify the wastes and provide a common terminology to improve the efficiency of waste management activities. The lubricating oils are included in the category 13: Oil wastes and wastes of liquid fuels.
- Waste oils are an important source of environmental impact if they are not collected correctly. **The uncontrolled disposal could affect the soils, aquatic life and renders water unfit for drink.**
- Industry should do efforts to make an appropriate disposal and separation. In case of the **private end consumers, higher risk due to the lack of knowledge of the consumer.**
- Requirement to ensure that applicants inform users about the disposal needs of the used lubricant.



- Other Ecolabels: **description with the information about the waste disposal.**
 - NF-Environment: *All lubricating oils can present a risk to the environment and health and therefore should not be discharged into sewers, water or soil.*
 - Swedish Standard specifies that the waste lubricant must not discharge into drains, water courses or onto the ground; and that the applicant should provide recommendations for safe handling of lubricant. Emergency plan in case of spillage.



Proposal for criterion 9: Disposal information

In the case of lubricants designed to be sold to **private end consumers**, the following information shall be present in the **label of the package**:

"Lubricating oil may be harmful to health and environment, it must not be deposited in water systems and it must be managed for an authorized waste manager"

Assessment and verification

The applicant shall provide a label of the packaging where the criterion information appears.



Points for discussion and written feedback

- Stakeholder views on the proposal are welcome.

Criterion 10: Information appearing on the EU Ecolabel



- According to Article 8 (3b) of the EU Ecolabel Regulation 66/2010, for each product group, **three key environmental characteristics of the ecolabelled product may be displayed** in the optional label with text box.
- The information that appears on **the existing EU Ecolabel** criterion has partially modified.
- Main change correspond to the **deletion** of the claim *contains a large fraction of biobased material* that will not be always the case regarding the introduction of **criterion 4.Raw materials**.
- Introduction of the claims:
 - *Restricted amount of hazardous substances;*
 - *Tested for lubricating performance*
- The text is in line with the most recently revised EU Ecolabel criteria of product categories such as detergency product groups.



Proposal for criterion 10: Information appearing on the EU Ecolabel

The logo shall be visible and legible. The EU Ecolabel registration/licence number shall appear on the product and it shall be legible and clearly visible.

The applicant may choose to include an optional text box on the label that contains the following text:

- Limited impact on the aquatic environment
- Restricted amount of hazardous substances
- Tested for lubricating performance

Assessment and verification

The applicant shall provide a signed declaration of compliance along with a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed.



Points for discussion and written feedback

- Stakeholder views on the proposal are welcome.

Agenda

1. Political objectives of the EU Ecolabel and process description
2. Summary of preliminary report:
 - ❖ Scope and definition
 - ❖ Market analysis & Other Ecolabels
 - ❖ Technical analysis.
3. Draft criteria proposal and rationale
4. Conclusion, next steps and closure of the workshop

Next steps following on from this AHWG1 meeting

- Draft minutes will be circulated
 - Please check them for accuracy, we will give a deadline

-Deadlines for written comments:

- 28th February of 2017

- June 2017: EUEB progress update
- October 2017: Second AHWG meeting
- Beginning 2018: Final report
- Process finalisation ~July 2018

Thanks for your attention



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