

EL611. Lubricants

[EL611-2012/1/2012-36]



1. Scope

This standards shall be applied to greases, anti-rust lubricating oils, hydraulic oils, and lubricating oils that are discharged after use.

2. Definition

For the purpose of this documents

2.1

The term "lubricating oils that are discharged after use" means those lubricating oils which are discharged into environment after end of their usage thus difficult to be recovered (for example, chainsaw oils, water soluble cutting oils).

2.2

The term "biodegradability" means numeric representation of a degree to which organic compounds are decomposed by micro-organisms.

2.3

The term "median effective concentration (EC50)" means concentration of a sample at which 50% of testing micro-organisms are immobilized for a certain test period.

2.4

The term "bioconcentration factor (BCF)" means a concentration rate of bio tissue in relation to water concentration when aquatic organism's bio-tissue concentration and water concentration reach an equilibrium.

2.5

The term "n-octanol/water partition coefficient (log_{kw})" means a ratio of compound's concentration in water phase in relation to that in octanol phase in a distribution coefficient form after each compound is dissolved in water and octanol, which are unmixable.

2.6

The term "volatile organic compounds (VOCs)" means a liquid or solid form of organic compounds that are continuously volatilized by consistent temperature and pressure in the air.

Note) In this standard, all organic compounds whose boiling points are 250 °C or less are considered volatile organic compounds.

2.7

The term "volatile aromatic hydrocarbons (VACs)" means aromatic hydrocarbons contained in VOCs.

Note) In this standard, only benzene, toluene, xylene, ethyl benzene, 1,4-dichlorobenzene, and styrene are considered as VACs.

3. Certification Criteria

3.1 Environmental

3.1.1

Manufacturing processes for chemical use shall meet the following criteria.

3.1.1.1

Short-chain chlorinated paraffins (C=10~13), medium-chain chlorinated paraffins (C=14~17), and alkylphenolethoxylates shall not be used.

3.1.1.2

The chemicals under the following H code classifications, which are the hazard codes for aquatic lives by UN GHS (Globally Harmonized System) of Classification and Labelling of Chemicals, shall not be used.

Note) Each of the following material lists is tentatively subject to EU REGULATION (EC) No 1272/2008 annex VI, part 3 (HARMONISED CLASSIFICATION AND LABELLING TABLES).

- H400 : very toxic to aquatic life
- H410 : very toxic to aquatic life with long-lasting effects
- H411 : toxic to aquatic life with long-lasting effects
- H412 : harmful to aquatic life with long-lasting effects
- H413 : may cause long-lasting harmful effects to aquatic life

3.1.1.3

The materials under the CarC. Cat. 1, CarC. Cat. 2, CarC. Cat. 3, Mut. Cat. 1, Mut. Cat. 2, Mut. Cat. 3, Repr. Cat. 1, Repr. Cat. 2, and Repr. Cat. 3, which are the classification for the carcinogens, mutagens, and reproductive toxic materials identified in the Annex I of EU Directive 67/548/EEC, shall not be used.

3.1.2

In connection with the emission of hazardous materials during the product usage, spray-typed products shall not use halogenated hydrocarbons and shall meet the following criteria.

hazardous material	VOCs	VACs	chlorinated hydrocarbons	Perfluorinated compounds and their precursors
criteria [weight%]	≤ 10.0	≤ 0.01	≤ 0.01	≤ 0.1

Note 1: The content of 'Chlorinated hydrocarbons' shall be a sum of each content of dichloromethane, chloroform, carbon tetrachloride, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, trichloroethylene, and tetrachloroethylene.

Note 2: The content of 'Perfluorinated hydrocarbons and their precursors' shall be a sum of each content of the following compounds.

CAS No.	Compounds
1763-23-1	perfluorooctanoate (PFOA)
335-67-1	perfluorooctane sulfonate (PFOS)
355-46-4	perfluorohexanesulfonate (PFHxS)
678-39-7	perfluorooctyl ethanol (8 : 2 FTOH)

3.1.3

In regards to water and soil contaminants from the product during the disposal phase, the following criteria shall be met.

3.1.3.1

5 % or more of the raw materials of lubricating oil by weight shall be biodegradable.

Note: This standard tentatively prescribes that a material is considered biodegradable if its biodegradability which follows the applied test method for biodegradability meets the following criteria

biodegradability test method	cultivation period (days)	biodegradability	biodegradability test method	cultivation period (days)	biodegradability

KS I ISO 9439	28	≥ 60 %	OECD 301 B	28	≥ 60 %
KS I ISO 14593			OECD 301 C		
ASTM D 5864			OECD 301 D		
ASTM D 6731			OECD 301 F		

3.1.3.2

With respect to bioconcentration, the bioconcentration factor (BCF) of the raw material which accounts for 1 or higher wt% of the lubricant shall be less than 100 or its octanol-water partition coefficient ($\log k_{ow}$) shall be less than 3.0.

However, any materials whose molecular weight is 700 or more, or whose smallest particle size is 1.5nm or more, shall be considered to meet the criteria.

3.1.3.3

EC50 of 72 hours acute toxicity test using algae or that of 48 hours acute toxicity test using water feal shall be 100 mg/L. or more.

Note: When a normal toxicity test is not available because of certain properties of a product, a toxicity test which follows the OECD Environmental Health and Safety Publications Series on Testing and Assessment No. 23 'OECD Guidance Document on Aquatic Toxicity Testing of Difficult substances and Mixuters' may be used.

3.2 Quality

3.2.1

In case there exists a Korean Industrial Standard among national standards of the product, its quality or performance criteria shall be met except for the provisions under '(1) Environmental'.

3.2.2

In case there exists no Korean Industrial Standard among national standards of the product, quality and performance criteria that are subject to the following order shall be met except for the provisions under the '(1) Environmental'. When the Committee for Establishing Eco Label Certification Criteria determines that the criteria does not suit any particular properties of the product, criteria (test items, test methods, standard values, etc.) which are modified by the Committee to fit for the properties of the product shall be met.

3.2.2.1

National standards other than Korean Industrial Standards

3.2.2.2

Foreign national standards or international standards for quality of the product.

3.2.2.3

Domestic and foreign organizational standards that are being referenced in the current eco label target products and certification criteria.

3.2.2.4

Private standards that are recognized as equivalent to or higher than national standards for the product from its industry.

3.3 Consumer information:

It shall indicate whether the product contributes to any certification grounds (reduction of toxicity to human/ecosystem, high biodegradability, etc.).

4. Test methods

Certification Criteria Components		Test and Verification Methods
Environmental	(a)	Review of submitted documents
	(b)	Review of submitted documents, or the test record from an accredited laboratory according to the following test methods: <ul style="list-style-type: none"> ▪VOCs: KS M ISO 11890-2 (Paints and varnishes – Determination of volatile organic compound(VOC) content – Part 2 : Gas-chromatographic method) ▪VACs, Chlorinated hydrocarbons, Perfluorinated compounds and precursors : KS M 0031 (General rules for gas chromatographic analysis), KS M 0025 (General rules for mass spectrometric analysis), KS M 0033 (General rules for analytical methods in high performance liquid chromatography)
	(c)	1)
		A test record from an accredited laboratory according to one of the following: KS I ISO 7827, KS I ISO 9439, KS I ISO 14593, OECD 301 B, OECD 301 C, OECD 301 D, OECD 301 F, ASTM D 5864, ASTM D 6731 ^{1) or 2)} . Or, review of submitted documents

		2)	Review of submitted documents, or a test record from an accredited laboratory according to the following test methods: ²⁾ <ul style="list-style-type: none"> ▪ Bioconcentration factor: OECD 305(Bioconcentration: Flow-through Fish Test) ▪ Octanol-water partition factor: OECD 107 (Partition Coefficient (n-octanol/water): Shake Flask Method) or 117 (Partition Coefficient (n-octanol/water), High Performance Liquid Chromatography (HPLC) Method)
		3)	Review of submitted documents, or a test record from an accredited laboratory according to the following test methods: ²⁾ <ul style="list-style-type: none"> ▪ OECD 201 (Alga, Growth Inhibition Test) ▪ OECD 202 (Daphnia sp. Acute Immobilisation Test) or a test record from an accredited laboratory according to the official standards of water quality tests(ES 04751.1 Acute Toxicity Test Method using water fleas)
	Quality		A test record from an accredited laboratory according to relevant standards, or a certification of equivalent or higher standards.
	Consumer information		Review of submitted documents

¹⁾ relevant standards

- KS I ISO 9439: Water quality – Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium (carbon dioxide evolution test)
- KS I ISO 14593: Water quality – Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium – a method by analysis of inorganic carbon in sealed vessels (CO₂ headspace test)
- OECD 301 B : CO₂-Evolution Test
- OECD 301 C : Modified MITI-(1)-Test
- OECD 301 D : Closed bottle Test
- OECD 301 F : Manometric Respirometry Test
- ASTM D 5864 :Standard test method for determining aerobic aquatic biodegradation of lubricants to their components
- STM D 6731 : Standard test method for determining the aerobic biodegradability of lubricants or lubricant components in closed respirometer

²⁾ When the applicant intends to demonstrate compatibility by a test record from an accredited domestic or foreign laboratory according to a designated test method or other methods deemed

equivalent (issued within 3 years from the date of eco label application) or by a literature that is judged reliable because of its recorded objective reference, the eco label certification council can determine whether it is compatible or not. If determined not compatible, a test record according to a designated test method shall be provided.

4.1 General

4.1.1

A number of test sample shall be 1 for each applying product except when more than 1 sample is needed.

4.1.2

Samples shall be randomly selected from the products that are on markets or stored in the production sites by the eco label certification body.

4.1.3

Test results shall be rounded according to KS Q 5002 (Statistical interpretation of data - Part 1 : Statistical presentation of data).

5. Grounds for Certification: "reduction of toxicity in human/ecosystem and high biodegradability"

Common Criteria, Notice No. 2012-36, the Ministry of Environment

1. Eco-label products must follow the following provisions with regard to the proper treatment of environmental pollution substances, such as air and water wastes and noxious chemical substances emitted in the process of manufacturing or service operation.

A. When first applying for certification, the product manufacturer should observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located for a period of one year prior to the date of application. Any case of violation of the penalty clause will be verified by confirming documents involved during a period of one year to the date of application. Regarding any violation not related to the penalty clause, confirmation will be made on the completion of appropriate measures.

B. A person who has received a certification of eco-labeling shall observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located during the period of certification. However, regarding any violation besides a penalty, confirmation will be made on the completion of appropriate measures.

2. As a general rule, information for consumers shall be indicated on the surface of the product in such a way not to be easily erased. However, in case that indication on the surface of the product is impossible or undesirable, it can be indicated on the appropriate part such as product packaging, product guidebook and user's manual that consumers can recognize. However, the service information should be indicated inside and outside of the place of service operation. In case that indication inside and outside of the place of service operation is impossible or undesirable, it can be indicated on the appropriate part such as an agreement, letter of delivery, letter of guarantee, and PR materials that consumers can recognize.

3. In order to establish fair trade and to protect consumer, the applicant for eco-label and the holder of eco-label license shall observe the Act on the Fairness of Indication and Advertisement with respect to the environmental aspects of the product.

4. For Various standards referred in the certification criteria by target product, the latest revised edition applies at the date of application, if not specified otherwise.

5. In applying the quality related criteria for each target product, if no standard is available that can be applied as the quality criteria, the president of Korea Environmental Industry & Technology Institute (KEITI) (hereafter referred to as "president of KEITI") may establish and operate the quality criteria for the product involved after review by a competent committee.