|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | **Questionaire for supplier on aquatic toxicity and biodegradability of lubricant ingredients (Annex 5)** | |  |
|  |  |  |  |
|  | **DE-UZ 178 – Edition January 2022** | Biodegradable Lubricants and Hydraulic Fluids |  |
|  |  |  |  |

**Company details**

|  |  |
| --- | --- |
| Company name: |  |
| Full address: |  |
|  |  |
|  |  |

**Contact**

|  |  |
| --- | --- |
| Name: |  |
| Function: |  |
| Phone number: |  |
| E-mail address: |  |

**Product details**

|  |  |
| --- | --- |
| Trade name of the product: |  |
| For the following lubricant manufacturer: |  |

**► Please submit test reports or robust study summaries with respect to each point!**

The component to be tested is a:

|  |  |
| --- | --- |
|  | **single-component substance** |
|  | **multi-component substance** |
|  | **UVCB** |
|  | **mixture** |

**Further information about the component:**

|  |  |
| --- | --- |
| H phrases: |  |
| WHC (water hazard class): |  |

**Composition:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substance No.** | **Substance name** | **CAS No.** | **H phrases** | **Propor-tion [%]** |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

**The mixture includes the following exemption(s) (cf. para. 3.5):**

|  |  |  |
| --- | --- | --- |
|  | **Exemption** | **Substance No.** |
|  | inorganic additives (mineral additives) |  |
|  | inorganic thickeners (mineral thickeners) |  |
|  | thickeners made of water-insoluble biopolymers (from naturally occurring components, such as polysaccharides, waxes and resins) |  |
|  | mineral thickeners or thickeners made of chemically modified biopolymers, which are non-biodegradable and, at the same time, immobile (leachability by water from the lubricant < 1 mg/l) |  |
|  | polymers if water solubility L < 1 mg/l and the percentage of molecules with a molecular weight ≤ 1000 g/mol is less than 1 % |  |
|  | substances with a solubility < 10 μg/l |  |
|  | substances unlikely to cross biological membranes. This would be the case if the molar mass (MM) > 1100 g/mol and the molecule diameter > 1.7 nm (> 17 Å) |  |

**Further information:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Are impurities contained? | Yes |  | No |  |
| Following substances are impurities: Substance-No. |  | | | |

***1. Acute Aquatic Toxicity (Paragraph 3.4.2)***

Data are to be submitted regarding the acute aquatic toxicity of the component for following the trophic levels: **algae**, **daphnia** and **fish embryos**. Only (72h)ErC50 will be accepted for **algae,** only (48h)EC50 will be accepted for **daphnia** and only (96h)LC50 will be accepted for **fish**.

The tests are carried out in accordance with the following guidelines and by use of the laboratory species mentioned therein:

|  |  |
| --- | --- |
| **Algae:** | * OECD 201 * Part C.3 of the Annex to Regulation (EC) No 440/2008 |
| **Daphnia:** | * OECD 202 * Part C.2 of the Annex to Regulation (EC) No 440/2008 |
| **Fish embryos:** | * OECD 236 * Part C.49 of the Annex to Regulation (EC) No 440/2008 |

If a test report according to OECD 203 or Part C.1 of the Annex to Regulation (EC) No 440/2008 already exists such report may also be used for compliance verification with the requirement.

***Table 1: Algae Test Data***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Test method** | **(72h)ErC50 [mg/l]** | **Test species** | **Testing laboratory** |
| **Component** |  |  |  |  |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***Table 2: Daphnia test data***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Test method** | **(48h)EC50 [mg/l]** | **Test species** | **Testing laboratory** |
| **Component** |  |  |  |  |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***Table 3: Fish embryo test data***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Test method** | **(96h)LC50 [mg/l]** | **Test species** | **Testing laboratory** |
| **Component** |  |  |  |  |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***2. Chronic Aquatic Toxicity (Paragraph 3.4.2)***

As an alternative to data on the acute aquatic toxicity, data on the chronic aquatic toxicity may be provided for the following trophic levels: **daphnia and fish**. NOEC data (No Observed Effect Concentration) will be accepted for both levels.

The tests are carried out in accordance with the following guidelines and by use of the laboratory species mentioned therein:

|  |  |
| --- | --- |
| **Daphnia:** | * OECD 211 * Part C.20 of the Annex to Regulation (EC) No 440/2008 |
| **Fish:** | * OECD 210 * Part C.47 of the Annex to Regulation (EC) No 440/2008 * OECD 212 * Part C.15 of the Annex to Regulation (EC) No 440/2008 * OECD 215 * Part C.14 of the Annex to Regulation (EC) No 440/2008 |

***Table 4: Daphnia test data***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Test method** | **NOEC [mg/l]** | **Test species** | **Testing Laboratory** |
| **Component** |  |  |  |  |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***Table 5: Fish test data***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Test method** | **NOEC [mg/l]** | **Test species** | **Testing Laboratory** |
| **Component** |  |  |  |  |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***3. Exemptions (Paragraph 3.5)***

As regards biodegradability and bioaccumulation potential no compliance verifications need to be submitted for the following substance groups:

1. inorganic additives (mineral additives),
2. inorganic thickeners (mineral thickeners)38,
3. thickeners made of water-insoluble biopolymers (from naturally occurring components, such as polysaccharides, waxes and resins),
4. mineral thickeners or thickeners made of chemically modified biopolymers, which are non-biodegradable and, at the same time, immobile (leachability by water from the lubricant < 1 mg/l),
5. polymers if water solubility L < 1 mg/l and the percentage of molecules with a molecular weight ≤ 1000 g/mol is less than 1 %,
6. substances with a solubility < 10 μg/l,
7. substances unlikely to cross biological membranes. This would be the case if the molar mass (MM) > 1100 g/mol and the molecule diameter > 1.7 nm (> 17 Å).

All substances listed in the exemption must meet the requirements for **"not toxic" in accordance with Paragraph 3.4.2** of the Basic Criteria.

**Test reports on the aquatic toxicity are to be presented for these substances.**

In addition, compliance is to be verified for the following:

|  |  |
| --- | --- |
| d), f) | * OECD 105 * Part A.6 of the Annex to Regulation (EC) No 440/2008 |
| e) | * OECD 105 * Part A.6 of the Annex to Regulation (EC) No 440/2008   **and**   * Verification of the low-molecular proportions in accordance with the relevant material-specific DIN ISO or DIN EN standards. |
| g) | * Molar mass and molecular diameter data |

***4. Biodegradability (Paragraph 3.5.1)***

The biodegradability of a substance is determined in 28-day test.   
**Test reports of mixtures will not be accepted.**

The tests are to be carried out in accordance with the following guidelines:

|  |  |
| --- | --- |
| **Ultimate biodegradability (point 1):** | * OECD 301 (B,C,D,F) * Part C.4 C-F of the Annex to Regulation (EC) No 440/2008 * OECD 306 * Part C.42 of the Annex to Regulation (EC) No 440/2008 * OECD 310 * Part C.29 of the Annex to Regulation (EC) No 440/2008 |
| **Inherent biodegradability (point 2.a):** | * OEC 302 B * Part C.9 of the Annex to Regulation (EC) No 440/2008 * OECD 302 C |
| **Inherent biodegradability (point 2.b):** | * OECD 301 (B,C,D,F) * Part C.4 C-F of the Annex to Regulation (EC) No 440/2008 * OECD 306 (closed bottle) * Part C.42 of the Annex to Regulation (EC) No 440/2008 * OECD 310 * Part C.29 of the Annex to Regulation (EC) No 440/2008. |

***Table 6: Test data on biodegradability***

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Value after 28 days**  **[%]** | **Test method** | **Testing laboratory** |
| **Substance 1** |  |  |  |
| **Substance 2** |  |  |  |
| **Substance 3** |  |  |  |
| **Substance 4** |  |  |  |
| **Substance 5** |  |  |  |
| **Substance 6** |  |  |  |
| **Substance 7** |  |  |  |
| **Substance 8** |  |  |  |

***5. Bioaccumulation Potential (Paragraph 3.5.2)***

If the substance is inherently biodegradable or non-biodegradable the bioaccumulation potential is to be determined.

The tests are to be carried out in accordance with the following guidelines:

|  |  |
| --- | --- |
| **Bioconcentration factor (BCF):** | * OECD 305 * Part C.13 of the Annex to Regulation (EC) No 440/2008 |
| **Octanol/water partition coefficient  (log KOW):** | ► for organic compounds only!   * OECD 107 * OECD 117 * OECD 123 * Part A.8 of the Annex to Regulation (EC) No 440/2008 |
| **Surface tension in an aqueous solution in the measurement range  of 1 g/l:** | * OECD 115 * Part A.5 of the Annex to Regulation (EC) No 440/2008 |

***Table 7: Test data on the bioaccumulation potential***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **BCF [l/kg]** | **log KOW** | **Surface tension**  **[mN/m]** | **Test method** | **Testing laboratory** |
| **Substance 1** |  |  |  |  |  |
| **Substance 2** |  |  |  |  |  |
| **Substance 3** |  |  |  |  |  |
| **Substance 4** |  |  |  |  |  |
| **Substance 5** |  |  |  |  |  |
| **Substance 6** |  |  |  |  |  |
| **Substance 7** |  |  |  |  |  |
| **Substance 8** |  |  |  |  |  |

If the log KOW value cannot be experimentally determined it may be determined by use of the following methods:

* CLOGP
* LOGKOW
* KOWWIN
* SPARC

***Table 8: Calculation of the Log KOW value(s)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **CLOGP** | **LOGKOW** | **KOWWIN** | **SPARC** |
| **Substance 1** |  |  |  |  |
| **Substance 2** |  |  |  |  |
| **Substance 3** |  |  |  |  |
| **Substance 4** |  |  |  |  |
| **Substance 5** |  |  |  |  |
| **Substance 6** |  |  |  |  |
| **Substance 7** |  |  |  |  |
| **Substance 8** |  |  |  |  |

***6. Test Reports***

The following test reports are attached:

|  |  |
| --- | --- |
|  | Test reports on the **acute aquatic toxicity** |
|  | for **algae** |
|  | for **daphnia** |
|  | for **fish embryos** |
|  | for **fish** (already existed) |
|  |  |
|  | Test reports on the **chronic aquatic toxicity** |
|  | for **daphnia** |
|  | for **fish** |
|  |  |
|  | Test report(s) on **biodegradability** |
|  |  |
|  | Test report(s) on the **bioaccumulation potential** |
|  | for the **BCF value** |
|  | for the **surface tension in an aqueous solution in the measurement range of 1 g/l** |
|  | for the **Log KOW value** |
|  | the **Log KOW value** has been determined. |
|  |  |
|  | Supplementary test report(s) on the **exemption according to 3.5 d) and f)** |
|  | for the **elutriation with water from the lubricant** |
|  |  |
|  | Supplementary test report(s) on the **exemption according to 3.5 e)** |
|  | for **water solubility** |
|  | for the **low-molecular proportion of polymers** |
|  |  |
|  | Supplementary test report(s) on the **exemption according to 3.5 g)** |
|  | to the **molar Mass** |
|  | to the **molecule diameter** |

***7. Comments***

|  |
| --- |
|  |

**Annex 5 and the test reports can also be submitted to RAL gGmbH directly by e-mail to** [**umweltzeichen@ral.de**](mailto:umweltzeichen@ral.de) **with the subject "DE-UZ 178".**

Telephone number for queries: 0228/68895-190

|  |  |  |  |
| --- | --- | --- | --- |
| Place: |  |  |  |
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| Date: |  |  |
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|  |  |  | (Authorized signature and company stamp) |