Henkel KGaA

Department of ecology

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Ecological certificate

for

Dermasil plus

Status: May 2000

Ecological product evaluation for Dermasil plus

Status: May 2000

Ecological tests are carried out in the ecological institute at Henkel according to official and international OECD test methods. The ecological institute works in accordance with the OECD guideline for "Good Laboratory Practice" (GLP).

1.1 Application area and properties

- Dermasil plus is a highly effective surfactant booster for the professional user. Dermasil plus is especially suitable for heavily soiled textiles with oily and fatty stains on a natural basis. It can be used on washer extractors and CBWs to improve the washing result. It produces minimal foam and is especially effective at temperatures of 70°C. In addition delicate textiles like microfibre and laminate can be treated with Dermasil plus.

2.0 Product composition

- Dermasil plus contains: > 30% non-ionic surfactants, > 5-15% amphoteric surfactants and organic solvents

3.0 Ecological evaluation of the ingredients

3.1 Non-ionic Surfactants

Non-ionic surfactants on the basis of synthetic raw materials are contained. They are very well degradable (primary degradation); their degradability is considerably better than required for the primary degradability of the surface active substances in the EEC-Detergent directive.

The primary degradation step is followed by further degradation into carbon dioxide and water (final degradation/mineralisation). According to the international criteria of the Organization for Economic Co-operation and Development (OECD) all these substances are classified as "easily and quickly degradable under real environmental conditions" (readily biodegradable).

Test data

- Primary degradability (loss of washing activity, analytical detectability and surfactant characteristics): > 95 %.

  Council Directive 73/404/EEC on the approximation of the laws of the member states relating to detergents and amendments for the biodegradability testing 82/243/EEC (anionic surfactants) and 82/242/EEC (non-ionic surfactants)

- Degradation into carbon dioxide and water:

  According to the internationally valid criteria of the OECD and the test methods used here, these components are classified as easily degradable and classified as readily biodegradable since the limit values and kinetics (10 day-window) according to the OECD are accomplished.

  (OECD - Guidelines for Testing of Chemicals - OECD 301 A-F: e.g. Closed Bottle Test, Modified OECD Screening Test and/or Manometric Respirometry-Test: EEC-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and 7th amendment EEC-Directive 92/69/EWG, Annex V, Part C: Biodegradation.)

3.2 Amphoteric surfactant

The product contains an amphoteric surfactant whose biodegradability is not subject to any legal regulation. Therefore there is no regulation requiring the testing of the primary biodegradability as in the case of the anionic and non-ionic surfactants. For the assessment, the mineralisation into carbon dioxide and water can be used. This compound is easily degradable into carbon dioxide, and water.
Beyond this official classification, the formation of a recalcitrant degradation product intermediate was excluded for this substance by means of the "test on recalcitrant metabolites", i.e. the complete biodegradability under sewage treatment conditions was proved.

Test data

- Degradation into carbon dioxide and water: well degradable
  According to the internationally valid criteria of the OECD and the test methods used here, the limit values according to the OECD are exceeded. Because of failing the" time window" a classification as "easily and quickly degradable" (readily biodegradable) are not given.

  (Closed Bottle Test and/or Modified OECD Screening Test: EEC-Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (Off. J. 196, 16.08.1967, p. 1) and 6th amendment EEC-Directive 84/449/EWG, Annex V, Part C: Biodegradation.)

- Ultimate biodegradability: the complete biodegradability without building of recalcitrant metabolites was proved.

  Publikation P. Gerike, W. Holtmann und W. Jasiak: "A test for detecting recalcitrant metabolites". Chemosphere 13, 121 - 142 (1984).

3.3 Alcohols

The product contains water soluble, alcoholic compounds. These alcohols are very easily degradable into carbon dioxide and water, and according to the criteria of the OECD they are considered as easily and quickly biodegradable under environmental conditions (readily biodegradable).

Test data

- Degradation into carbon dioxide and water:

  According to the internationally valid criteria of the OECD and the test methods used here, these components are classified as easily degradable and classified as readily biodegradable since the limit values and kinetics (10 day-window) according to the OECD are accomplished.

  (OECD - Guidelines for Testing of Chemicals - OECD 301 A-F: e.g. Closed Bottle Test, Modified OECD Screening Test and/or Manometric Respirometry-Test: EEC-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and 7th amendment EEC-Directive 92/69/EWG, Annex V, Part C: Biodegradation.)

3.4 Water soluble solvent

The product contains a water soluble ethylene glycol derivate on a petrochemical basis. It is degraded into carbon dioxide and water, and fulfils the requirements of the "Organization for Economic Co-operation and Development" (OECD) for classification as "easily and quickly degradable" (readily biodegradable).

- Degradation into carbon dioxide and water:

  According to the internationally valid criteria of the OECD and the test methods used here, these components are classified as easily degradable and classified as readily biodegradable since the limit values and kinetics (10 day-window) according to the OECD are accomplished.

  (OECD - Guidelines for Testing of Chemicals - OECD 301 A-F: e.g. Closed Bottle Test, Modified OECD Screening Test and/or Manometric Respirometry-

Test: EEC-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and 7th amendment EEC-Directive 92/69/EWG, Annex V, Part C: Biodegradation.)

4.0 Overall evaluation

In Germany and in other European countries municipal and commercial sewage is cleaned in biological sewage treatment plants, before it enters into river water. Depending on biodegradability (break down) or mechanical elimination of substances in the waste water there remains a more or less residual load for the self purification process in the river. For an ecological evaluation therefore information on the biodegradability and elimination are important criteria.

The degradability values of all individual organic components are added up, taking into consideration the proportions in the present product (see individual evaluation). It is then determined which degradation value would be obtained if the product as a whole was tested in an OECD test on ready biodegradability. If the limit for classification as "readily biodegradable" is exceeded, this product is classified as "biodegradable". Consequently, the BOD/COD ratio is > 60 %. However, it is still possible that some individual components contained in small quantities do not attain this limit while others contained in greater quantities exceed this limit to such an extent that they conceal the first-mentioned. Therefore, we also inform about the quantity of these smaller fractions by differentiating the term "biodegradable" in the overall evaluation.

We also provide information if the ingredients are not classified as "readily biodegradable", but are almost as well removable in sewage treatment plants as communal mixed sewage. For these fractions, the BOD/COD ratio is < 60 %.

Dermasil plus is evaluated as follows:

- **The degradation requirements of the Detergents and Cleaners Act respectively the EU Detergent Directives 82/242 (non-ionic surfactants) and 82/243/EEC (anionic surfactants) are exceeded.**
- **Excellently biodegradable**
- **It fulfils the voluntary industrial agreement to renounce APEO.**

(Dr. Harald Berger)

(Dipl.Ing.K.Richterich)