

# Environmental Safety Assessment

Ecological Product Certificate

of

**Incidin Pro**

Environmental-Consulting Dr. Berger

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## ***Ecological product evaluation for Incidin Pro***

Status: August 2013

Ecological assessments are carried out by Environmental Consulting Dr. Berger on the basis of ecological raw-material data. These data are generated according to official and international standard test-methods.

### **1.0 Application area and properties**

- liquid surface disinfectant concentrate for cleaning and disinfection all types of surfaces
- disinfectant based on quaternary ammonium compounds and amine with broad efficacy spectrum and good cleaning properties against soil and blood
- the product is to be applied in working solutions containing up to 3 %

### **2.0 Product composition**

- ***Incidin Pro*** contains: Quaternary ammonium compound, alkylamine, glycol ether, alkylpolyglucosides, pH-regulator, complexing agent and corrosion inhibitor.
- 100 g ***Incidin Pro*** contains as active ingredients:  
7.5 g quaternary ammonium compound, 8.0 g alkylamine and 10.0 g glycol ether.

### **3.0 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 "well biodegradable" or better. 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 %.

***Incidin Pro* is evaluated as follows:**

- **Excellently biodegradable**
- **The antimicrobial active substances fulfil the stringent requirements of the OECD for a classification as "readily biodegradable", i.e. they are readily and eventually completely biodegradable in the environment**

#### **4.0 Compatibility of the product in aerobic sewage treatment plants**

The compatibility of the product in sewage treatment plants is dependent on its bacteria toxicity. It was shown that the respiration inhibition test with *Pseudomonas putida* (DIN 38412 part 27, corresponding to OECD-guideline 209), an acute bacteria test with a 30 minutes incubation of the test substance, is especially suited for predicting limit concentrations in sewage treatment plants.

The bacterial toxicity of the product is calculated assuming additivity of the toxic properties of the individual raw materials.

For this product the toxic threshold concentration for sewage treatment plants, which must not be exceeded, is approx. 30 mg/l.

Under normal application conditions this concentration is not attained in sewage. Under unfavourable conditions, e.g. intermittent release of great quantities of the products and at the same time small sewage treatment plants, disturbances of the function of the treatment plant cannot be excluded if the above-mentioned limit-concentration is exceeded. Therefore concentrates may not be discharged into the wastewater.

These data only correspond to **aerobic** wastewater treatment plants.

For **anaerobic** wastewater treatment no data are available. If you have questions, please contact our account manager.

## **5.0 Packaging material:**

The package is made of polyethylene or polypropylene plastics. It is exclusively produced by brand manufacturers and is made of non-recycled new raw materials in order to guarantee the necessary quality, which is required in the field of medicine and food technology.

The cartons consist of natural-coloured, unbleached and largely recycled paper. The used adhesive tape locks consist of polypropylene.

Both under dump conditions and during combustion these emptied packages are disposed without difficulty.

The plastic packages are labelled in order to facilitate recycling of the material. They are inert to ground water and satisfy the requirements concerning the improvement of thermal combustion by avoiding pollutants impairing flue gas utilisation as well as heavy metal compounds in combustion residues.

This also includes the decoration, as labels and direct printing.

## **6.0 Ecological evaluation of the ingredients**

### **6.1 Surface active ingredients**

#### **6.1.1 Quaternary ammonium compound (QAC)**

The used QAC is an antimicrobial active substance which at the same time displays cationic surfactant characteristics. It is degraded into carbon dioxide, inorganic nitrogen compounds and water. According to the international criteria of the Organization for Economic Co-operation and Development (OECD) the used QAC is classified as "easily and quickly degradable under real environmental conditions" (readily biodegradable).

The biodegradability of the surfactants contained in the product is in accordance with the requirements of the European Detergents Regulation No. 648/2004.

#### Test data

- Degradation into carbon dioxide, inorganic nitrogen compounds 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 are surpassed.

(OECD - Guidelines for Testing of Chemicals - OECD 301 A-F: e.g. Closed Bottle Test, Modified OECD Screening Test and/or Manometric Respirometry-Test: EU-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification,

packaging and labelling of dangerous substances and 7th amendment EU-Directive 92/69/EWG, Annex V, Part C: Biodegradation.)

In sewage treatment plants a part of the QAC is adsorbed at the sludge and enters the sludge digestion together with the sludge. This part entering the sludge digestion leaves the digester unchanged. Together with the sludge it is mostly discharged by means of combustion or regulated dump and, for a smaller proportion, through agricultural use (approx. 35 % in Germany). Since the QACs are degradable in the presence of oxygen, the biodegradation process can be expected to continue in the case of agricultural sludge utilization. According to previous tests, disturbances of the soil respiration by QACs in the case of agricultural use of such sludges have not been encountered and are therefore not expected.

### **6.1.2 Alkylamine**

The contained alkylamines have antimicrobial properties. They are degraded into carbon dioxide, inorganic nitrogen compounds and water. 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).

The biodegradability of the surfactants contained in the product is in accordance with the requirements of the European Detergents Regulation No. 648/2004.

#### Test data

- Degradation into carbon dioxide, inorganic nitrogen compounds 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 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: EU-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and 7th amendment EU-Directive 92/69/EWG, Annex V, Part C: Biodegradation.)

### **6.1.3 Alkylpolyglucosides**

The product contains alkylpolyglucosides as non-ionic surfactants. Non-ionic surfactants are particularly effective against oily or fatty soil. They are above all insensitive to hard water. The raw material basis of alkylpolyglucosides is sugar and coconut oil. Alkylpolyglucosides are very well biodegradable and fulfil the requirements of the OECD for a classification as „readily biodegradable“.

The biodegradability of the surfactants contained in the product is in accordance with the requirements of the European Detergents Regulation No. 648/2004.

#### 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 are surpassed.

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

### **6.2 Glycol ether**

The product contains as another active component a glycol ether, which is very easily degradable into carbon dioxide and water, and according to the criteria of the OECD is 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: EU-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and 7th amendment EU-Directive 92/69/EEG, Annex V, Part C: Biodegradation.)

### **6.3 pH-regulator**

The product contains a nitrogen-containing compound which is very well biodegradable into carbon dioxide, water and inorganic nitrogen compounds. According to the criteria of the OECD it is classified as easily and quickly biodegradable (readily biodegradable).

### Test data

- Degradation into carbon dioxide and water and inorganic nitrogen compounds:

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 are surpassed.

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

## **6.4 Complexing agent**

The product contains as a complexing agent a nitrogen-containing compound which is easily degradable into carbon dioxide, water and inorganic nitrogen compounds. According to the criteria of the OECD it is regarded as easily and quickly biodegradable under environmental conditions (readily biodegradable).

### Test data

- Ultimate degradation:

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

(OECD - Guidelines for Testing of Chemicals - Ready Biodegradability: OECD 301 A-F: e.g. Closed Bottle Test, Modified OECD Screening Test and/or Manometric Respirometry Test: EU-Directive on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (84/449/EEC) and 7th amendment EU-Directive 92/69/EEC, Annex V, Part C.4: Biodegradation.)

## **6.5 Corrosion inhibitor**

The product contains low concentrations of an aromatic nitrogen-containing compound which is poorly degradable. As a corrosion inhibitor, this compound adsorbs at surfaces.

Its high elimination from waste-water was demonstrated in the Zahn-Wellens-Test (OECD 302B) with ca. 90% DOC-removal.

Therefore a similarly high elimination in sewage treatment plants is to be expected.

## **7.0 pH-value adjustment**

When properly used, this product does not enter sewage. In case of unintended discharge the following evaluation might be helpful:

The pH-value adjustment of the product requires special evaluation. Strongly acid or strongly alkaline sewage can cause damage at the point of discharge into a channel system if it contains concrete as a channel material. Therefore, a pH range is prescribed for sewage discharge, mostly pH 6-10 (e. g. in Germany ATV Arbeitsblatt A 115).

- The undiluted product has a pH value of 11.0 .
- Through discharge of smaller quantities of this product the sewage will not exceed the limiting values if the product is discharged together with sufficient quantities of sewage. In this case there is no danger to the channel system. Strong peak loads must be avoided.

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*Computer based transfer of the ecological expertise. The content is mandatory also without signature and company stamp.*