

Test for Inherent Biodegradability of Products

- 1 Sample designation:** „ISOmist Metallbearbeitungsfluid“
- 1.1 Sample-No.: 100457331
- 1.2 Storage conditions: room temperature
- 2 Sponsor:** Derma Protect + Innovation GmbH
- 2.1 Address: Siemensstraße 6, D-88048 Friedrichshafen, Germany
- 3 Test facility:** SGS INSTITUT FRESENIUS GmbH
- 3.1 Address: Im Maisel 14, D-65232 Taunusstein-Neuhof, Germany
- 3.2 Study Director: Dr. H. Lebertz
- 4 Test Method:** OECD 302 B (Zahn-Wellens/EMPA Test, Version 17.7.92)
- 4.1 Test system (Inoculum): Activated sludge from the waste-water treatment plant at Taunusstein-Bleidenstadt, Lot.-No.: 12-Aug-2010
- 4.2 Control: Sodiumbenzoate
- 5 Detection methods:** Dissolved organic carbon measurement; equipment: HighTOCII; Elementar Analysensysteme

6 Description of method:

0.2 to 1 g of dry matter of activated sludge is mixed together with a mineral nutrient solution and the test item in a 2 litre glass vessel, equipped with stirrer and aerator. The test item is the sole carbon source. Its concentration is chosen in a way to provide an initial DOC-value of 50 to 400 mg/L or 100 to 1000 mg COD/L. The ratio between inoculum and test item should be in the range of 2.5:1 to 4:1.

Duration of the test is normally 28 days, but was stopped after 21 days, as a result >>70% had been measured twice.. The reaction mixture is kept at 20 - 25 °C. At fixed intervals, samples are taken from the reaction vessel and examined for DOC-content. The decrease in DOC is a measure for the biodegradability of the test item. If a degradation value of ≥95% has been measured before the test duration has reached 28d of incubation, the test may be stopped.

6.1 Evaluation:

$$D_T (\%) = \left(1 - \frac{(C_T - C_B)}{(C_A - C_{BA})} \right) \times 100$$

where D_T = percentage of eliminated DOC at date t

C_A = DOC-value (or COD-value) of the test soln. with the item (mg/L) at $t_{3h \pm 30 \text{ min}}$

C_{BA} = DOC-value (or COD-value) of the blank (mg/L) at $t_{3h \pm 30 \text{ min}}$

C_T = DOC-value (or COD-value) of the test item at date t (mg/L)

C_B = DOC-value (or COD-value) of the Blank at date t (mg/L)

7 Test Report

Sample ID: 010/9682343
 Initiation of the study: 25.01.2010
 Completion of the study: 22.02.2010
 Sample pretreatment: Dilution with deionized water
 Concentration of Test Item: 1220 mg / 2 L
 Concentration of activated sludge: 2 g / 2 L (equivalent of dry matter)

Date	Time (d)	DOC _{Blank} [mg/L]	DOC _{measured} Test Item [mg/L]	Net-DOC (Test Item-Blank)	% Degradation
12.08.2010	0	3,437	291,96	288,52	-
12.08.2010	0+3h	3,515	282,10	278,59	-
13.08.2010	1	4,331	189,03	184,70	34
16.08.2010	4	5,082	161,59	156,51	44
19.08.2010	7	6,414	139,22	132,81	52
23.08.2010	11	6,381	101,53	95,15	66
26.08.2010	14	6,007	95,16	89,16	68
01.09.2010	20	5,707	52,63	46,93	83
06.09.2010	25	7,614	16,98	9,36	97
09.09.2010	28	7,144	15,26	8,11	97

*) Basis for calculation of degradation values

8 Results:

- 8.1 Control: DOC-Elimination of 100 % after 7 days (values not shown in a table)
- 8.2 Test Item: DOC-Elimination of 97 % after 28 days
- 8.3 Assessment: The test item was degraded >>70%. Therefore, it must be considered "inherently degradable" according to the definitions given by the OECD test guideline 302B. The test is considered valid because the control item sodium benzoate was degraded 100% within 7 days.

SGS INSTITUT FRESENIUS GmbH
 - Bioanalytics -
 65232 Taunusstein, 09-Sep-2010

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Dr. R.G. Weyandt
 (Project management)

Dr. H. Lebertz
 (Study director)

Graphical Representation of the Results

