

Test for Inherent Biodegradability of Products

- 1 Sample designation:** "Metallbearbeitungsflüssigkeiten DPI – SMF/SGF"
- 1.1 Sample-No.: 010/9682343
- 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.: 25-Jan-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 28 days. The reaction mixture is kept at 20 - 25 °C. At fixed intervals, samples are taken from the reaction vessel and examined for DOC- or COD-content. The decrease in DOC or COD is a measure for the biodegradability of the test item.

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: 50 mL / 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
25.01.2010	0	2.7	273.7	271.1	-
25.01.2010	0+3h	2.7	284.3	281.6 ^{*)}	-
26.01.2010	1	3.8	244.3	240.6	15
28.01.2010	3	6.1	224.5	218.4	22
01.02.2010	7	9.6	149.6	140.0	50
04.02.2010	10	8.5	100.9	92.4	67
09.02.2010	15	10.3	90.6	80.2	75
15.02.2010	21	10.4	63.7	53.3	81
22.02.2010	28	10.8	39.0	28.2	90

^{*)} 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 90 % 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.

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Graphical Representation of the Results

