AnoxKaldnes

Report

Test Report 15-109-1

Evaluation of the Aerobic Biodegradability of Organic Compounds

EuroAd

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2031
ISO/IEC 17025

RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Accredited Laboratory

15-109-1/nitri

Summary

According to SS-EN ISO 9408:2000, the test is valid if the degradation of the reference compound in the control bottle exceeds 60 % after 14 days, if the degradation of the reference compound exceeds 40 % in the inhibition bottle and if the pH values in the test bottles are between 6 and 8.5. All these criteria are fulfilled.

The test article "EuroAd" was degraded by approximately 63% after 28 days and can be regarded as inherent, ultimate biodegradable according to OECD Guidelines for the testing of chemicals (23 March 2006), Section 3, Part 1, §36, p 7.

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Evaluation of the Aerobic Biodegradability of Organic Compounds

Introduction

This report presents the results from a 28-day study on aerobic biodegradability of an organic compound by determination of the oxygen demand in a closed respirometer according to the methods SS-EN ISO 9408:2000/OECD 301 F Manometric Respirometry Test, 1992.

Sponsor

Emission Particle Solution AB
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Technical Performance

Carolina Shew Cammernäs and Charlotte Carlsson,

Study Time Line

17 April - 15 May 2015

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Inoculum

Activated sludge from Kävlinge waste water plant, Sweden, was used as inoculum. The inoculum was not pre-adapted. The final concentration of suspended solids in the mediums was 30 mg/l.

Test Equipment

For the study a closed manometric respirometer (BOD Direct, BSB-System) made by Hach Lange was used. The equipment contained six bottles and each of them was connected to a manometer. The contents in the bottles were stirred with a magnetic stirrer.
During the degradation organic material was reduced, oxygen was consumed and carbon dioxide was produced. Since the produced carbon dioxide was trapped in potassium hydroxide the oxygen consumption led to a decrease in the pressure, which was monitored by the manometer.
Pressure changes within the closed manometric system were displayed directly in milligrams per litre (mg/l) Biochemical Oxygen Demand (BOD) on a pre calibrated scale. Four respectively seven direct-reading scales were provided with the apparatus. The required volume of medium and the required scale depended on the test article´s expected BOD value.

Test

Four different types of bottles were prepared.

Blank

This was set up in duplicate. It was used to measure the oxygen demand of the inoculum. 428 ml blank medium was used for each bottle.

Control

This bottle was used to check the activity of the inoculum. 244 ml control medium was used.

Test

This was set up in duplicate. It was used to measure the biodegradability of the test article. 244 ml test medium was used for each bottle. 8,0 mg test article EuroAd was added to the bottle called Test 1 and 8,3 mg test article EuroAd was added to the bottle called Test 2.

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Conclusions

According to SS-EN ISO 9408:2000, the test is valid if the degradation of the reference compound in the control bottle exceeds 60 % after 14 days, if the degradation of the reference compound exceeds 40 % in the inhibition bottle and if the pH values in the test bottles are between 6 and 8.5. All these criteria are fulfilled.

The pass levels are lower in respirometric methods since some of the carbon from the test chemical is incorporated into new cells and the degradation of the test article cannot reach 100%.

According to SS-EN ISO 9408:2000 and OECD 301F the test is valid if the difference of the replicate values of the removal of the test article is less than 20%. In this case the difference is 19% at the end of the test.

The degradation taken place in the bottle Inhibition indicates that the test article was not toxic to the inoculum.

The test article had not reached its plateau by day 28, when the test was ended. The degradation may have continued beyond day 28.

The test article was degraded with a mean value of 63% after 28 days and can be regarded as inherent, ultimate biodegradable according to OECD Guidelines for the testing of chemicals (23 March 2006), Section 3, Part 1, §36, p 7.

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Charlotte Carlsson