

## C.5 DEGRADATION -BIOCHEMICAL OXYGEN DEMAND

### 1. METHOD

#### 1.1. INTRODUCTION

The purpose of the method is the measurement of the biochemical oxygen demand (BOD) of solid or liquid organic substances.

Data elaborated with this test pertain to water-soluble compounds; however, volatile compounds and those of low water solubility may also, at least in principle, be tested.

The method is applicable only to those organic test materials which are not inhibitory to bacteria at the concentration used in the test. If the test material is not soluble at the test concentration, special measures, such as the use of ultrasonic dispersion, may have to be employed to achieve good dispersion of test material.

Information on the toxicity of the chemical may be useful to the interpretation of low results and in the selection of appropriate test concentrations.

#### 1.2. DEFINITION AND UNITS

The BOD is defined as the mass of dissolved oxygen required by a specified volume of solution of the substance for the process of biochemical oxidation under prescribed conditions.

The results are expressed as grams of BOD per gram of tested substance.

#### 1.3. REFERENCE SUBSTANCES

The use of a suitable reference substance to check the activity of the inoculum is desirable.

#### 1.4. PRINCIPLE OF THE TEST METHOD

A predetermined amount of the substance, dissolved or dispersed in a well-aerated suitable medium, is inoculated with micro-organisms and incubated at a constant defined ambient temperature in the dark.

The BOD is determined by the difference in dissolved oxygen content at the beginning and at the end of the test. The duration of the test must be at least five days and not more than 28 days.

A blank must be determined in a parallel assay containing no test substance.

#### 1.5. QUALITY CRITERIA

The BOD determination cannot be considered as a valid determination of the biodegradability of a substance. This test may only be regarded as a screening test.

#### 1.6. DESCRIPTION OF THE TEST METHOD

A preliminary solution or dispersion of the substance is prepared to obtain a BOD concentration compatible with the method used. The BOD is then determined following any suitable national or international standardized method.

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This method can be found in Dir 92/69/EEC (O.J. L383 A)  
A complete list of Annex V Testing Methods and the corresponding OJ can be downloaded from a previous page in this site.

## 2. DATA AND EVALUATION

The BOD contained in the preliminary solution is calculated according to the selected normalized method, and converted into grams of BOD per gram of tested substance.

## 3. REPORTING

The method used shall be stated.

The biochemical oxygen demand should be a mean of at least three valid measurements.

All information and remarks relevant for the interpretation of results have to be reported, especially with regard to impurities, physical state, toxic effects and inherent composition of the substance which would affect the results.

The use of an additive to inhibit biological nitrification must be reported.

## 4. REFERENCES

List of standardized methods, for example:

NF T 90 -103: Determination of the biochemical oxygen demand.

NBN 407: Biochemical oxygen demand.

NEN 32355.4: Bepaling van het biochemisch zuurstofverbruik (BZV).

The determination of biochemical oxygen demand, Methods for the examination of water and associated materials, HMSO, London.

ISO 5815: Determination of biochemical oxygen demand after n days.