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English Version

**Characterization of waste - Sampling of waste materials - Part 4:  
Guidance on procedures for sample packaging, storage,  
preservation, transport and delivery**

Caractérisation des déchets - Prélèvement des déchets -  
Partie 4: Guide relatif aux procédures d'emballage, de  
stockage, de conservation, de transport et de livraison des  
échantillons

Charakterisierung von Abfall - Probenahme - Teil 4:  
Verpackung, Lagerung, Konservierung, Transport und  
Lieferung von Proben

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## Foreword

This Technical Report (CEN/TR 15310-4:2006) has been prepared by Technical Committee CEN/TC 292 "Characterization of waste", the secretariat of which is held by NEN.

This Technical Report has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This Technical Report is one of a series of five, dealing with sampling techniques and procedures, which provide essential information for the application of the EN-standard:

EN 14899 Characterisation of Waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan

The principal component of the EN standard is the mandatory requirement to prepare a Sampling Plan. This EN 14899 standard can be used to:

- produce standardised sampling plans for use in regular or routine circumstances (i.e. the elaboration of daughter/derived standards dedicated to well defined sampling scenarios);
- incorporate specific sampling requirements into national legislation;
- design and develop a Sampling Plan on a case by case basis.

The Technical Reports display a range of potential approaches and tools to enable the project manager to tailor his sampling plan to a specific testing scenario (i.e. a 'shop shelf' approach to sampling plan development for waste testing). This approach allows flexibility in the selection of the sampling approach, sampling point, method of sampling and equipment used.

This Technical Report describes the boundary conditions and procedures, appropriate for application in the field, for the packaging, preservation, short-term storage and transport of samples to assist in maintaining their integrity prior to delivery at the laboratory. The laboratory facility should be consulted in the selection of the most appropriate procedure to ensure compatibility with the chosen analytical methodology and parameters to be tested as defined in EN 14899 - Framework standard.

This report does not attempt to provide a definitive procedure for each and every situation that may arise from sampling a given waste type or specific analytical requirement, rather it aims to expose the factors that influence the selection of these practical field activities to ensure the most appropriate procedure is selected for any given sampling scenario. The most appropriate approach, tools, and methodology, in the absence of an existing recognised Sampling Plan should be chosen on a scenario-specific basis. However, this does not present a barrier to technical innovation, and there is no reason why methodologies other than those detailed in this Technical Report cannot be substituted.

## Introduction

Wastes are materials, which the holder discards, or intends or is required to discard, and which may be sent for final disposal, reuse or recovery. Such materials are generally heterogeneous and it will be necessary therefore to specify in the testing programme the amount of material for which the characteristics of interest need to be defined. The testing of wastes allows informed decisions to be made on how they should be treated (or not), recovered or disposed. In order to undertake valid tests, some sampling of the waste is required.

The principal component of the standard EN 14899 is the mandatory requirement to prepare a Sampling Plan, within the framework of an overall testing programme as illustrated in Figure 1 of EN 14899:2005. This standard can be used to:

- produce standardised sampling plans for use in regular or routine circumstances (i.e. the elaboration of daughter/derived standards dedicated to well defined sampling scenarios);
- incorporate specific sampling requirements into national legislation;
- design and develop a Sampling Plan on a case by case basis.

The development of a Sampling Plan within this framework involves the progression through three steps or activities.

- 1) Define the Sampling Plan;
- 2) Take a field sample in accordance with the Sampling Plan;
- 3) Transport the laboratory sample to the laboratory.

This Technical Report provides information to support Key Steps 2 and 3 of the Sampling Plan process map and elaborates on methods and boundary conditions for preserving, packaging and storing samples to preserve their integrity, in addition to the transportation and delivery of a sample to the designated analytical facility.

Sample integrity may be compromised if insufficient attention is paid to correct packaging, preservation, and storing and transport techniques. This may result in a sample, which is not representative of the sample population. The selection of the most appropriate procedure should be in collaboration with the laboratory facility designated to undertake testing to ensure compatibility with the chosen analytical methodology and parameters to be tested. Specifically this Technical Report supports 4.2.8.3 of the Framework Standard.

This Technical Report should be read in conjunction with the Framework Standard for the preparation and application of a Sampling Plan as well as the other Technical Reports that contain essential information to support the Framework Standard. The full series comprises:

EN 14899 Characterization of waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan;

CEN/TR 15310-1, Characterization of waste – Sampling of waste materials – Part 1: Guidance on selection and application of criteria for sampling under various conditions;

CEN/TR 15310-2, Characterization of waste – Sampling of waste materials – Part 2: Guidance on sampling techniques;

CEN/TR 15310-3, Characterization of waste – Sampling of waste materials – Part 3: Guidance on procedures for sub-sampling in the field;

CEN/TR 15310-4, Characterization of waste – Sampling of waste materials – Part 4: Guidance on procedures for sample packaging, storage, preservation, transport and delivery;

CEN/TR 15310-5, Characterization of waste – Sampling of waste materials – Part 5: Guidance on the process of defining the Sampling Plan.

The Technical Reports contain procedural options (as detailed in Figure 2 of EN 14899:2005) that can be selected to match the sampling requirements of any testing programme.

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## 1 Scope

This Technical Report describes procedures for the packaging, preservation, short-term storage and transport of both solid and liquid waste samples, including paste-like substances and sludges. Where available and appropriate for field application, requirements for specific storage conditions and/or preservation methods should be selected from the chosen analytical standard and collaboration with the testing laboratory.

NOTE 1 This Technical Report provides a shop shelf of example sampling techniques that can be selected to meet a wide range of sampling situations. For a specific situation one of the presented procedures may be appropriate.

NOTE 2 The procedures listed in this Technical Report reflect current best practice, but these are not exhaustive and other procedures may be equally relevant.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13965-1:2004, *Characterization of waste - Terminology - Part 1: Material related terms and definitions*

EN 13965-2:2004, *Characterization of waste - Terminology - Part 2: Management related terms and definitions*

## 3 Terms and definitions

For the purposes of this Technical Report, the terms and definitions given in EN 13965-1:2004 and EN 13965-2:2004 and the following apply..

### 3.1

#### **analytical laboratory**

identified laboratory, which is to undertake the chemical, biological or physical analysis of samples

### 3.2

#### **constituent**

property or attribute of a material that is measured, compared or noted

### 3.3

#### **delivery**

transfer of custody of the sample

### 3.4

#### **field sample**

quantity (mass or volume) of material obtained through sampling without any sub-sampling

### 3.5

#### **laboratory sample**

sample(s) or sub-sample(s) sent to or received by the laboratory.

[IUPAC, definition 2.5.5]

NOTE 1 When the laboratory sample is further prepared (reduced) by subdividing, mixing, grinding, or by combinations of these operations, the result is the test sample. When no preparation of the laboratory sample is required, the laboratory sample is the test sample.