



BSI Standards Publication

Biotechnology — Biobanking — Requirements for deep-sea biological material

National foreword

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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**Biotechnology — Biobanking
— Requirements for deep-sea
biological material**

*Biotechnologie — Biobanking — Exigences relatives aux
matériaux biologiques d'eau profonde*

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General requirements	2
5 Collection and processing of deep-sea biological material on a marine vessel	3
5.1 General	3
5.2 Deep-sea biological material collection plan	3
5.3 Preparation of deep-sea biological material processing	4
5.4 Deep-sea biological material collection	4
5.5 Deep-sea biological material processing on a marine vessel	4
5.6 Traceability of deep-sea biological material and associated data	5
6 Preservation of deep-sea biological material on a marine vessel	5
6.1 General	5
6.2 Preservation methods for downstream applications	5
6.2.1 General	5
6.2.2 Treatment methods for different deep-sea biological material	5
7 Transport	5
7.1 General	5
7.2 Packaging and transport	6
8 Storage	6
8.1 General	6
8.2 Storage conditions	6
8.3 Monitoring	6
9 Information collection	6
Annex A (informative) Examples of collection tools for different deep-sea biological material	8
Annex B (informative) Examples of preservation methods for different downstream applications	9
Annex C (informative) Examples of packaging methods and transport conditions for deep-sea biological material from different sources	11
Bibliography	12

Foreword

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This document was prepared by Technical Committee ISO/TC 276, *Biotechnology*.

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Introduction

The collection and accession management of deep-sea biological material is concerned with the scientific research of deep-sea genetic resources. Organisms living in deep-sea environments are commonly reported as extremophiles that inhabit deep-sea extreme conditions and play an important role in both research and industry. In addition to exploring the biological origin and evolution of these organisms, this work has led to innovations in material science, pharmacology, and energy generation. Deep-sea biological materials have many distinctive characteristics encompassing a wide variety of organisms and complex living environments.

The collection of deep-sea biological material requires the use of special pressure-resistant deep-sea equipment. Such equipment is usually deployed into the deep-sea through a variety of platforms such as landers, and human-occupied or unoccupied submersibles. The procedure of material collection varies depending on the nature of the deep-sea biological material. In some cases, deep-sea biological material is collected using special equipment such as pushcores and slurp guns, where the deep-sea biological material remains in the equipment. In other cases, deep-sea biological material is collected directly using a manipulator and placed properly in equipment such as a biobox for temporary storage. The processing and preservation of deep-sea biological material is carried out when the platform and equipment are recovered to the research vessel.

Deep-sea biological material can be associated with water, sediments, rocks, living organisms and complex habitats. Collection techniques, processing, transportation, and storage methods and needs for these deep-sea biological materials vary greatly according to their types and uses. Biological collections can include frozen deep-sea biological material, deep-sea biological material preserved in liquid (such as cetyltrimethylammonium bromide, ethanol or other preservatives), or extracted biomolecules. Standardized biological material processing and storage approaches are needed to maintain high-quality collections and ensure fit-for-purpose deep-sea biological material and associated data.

The implementation of this document will improve the quality and utilization of deep-sea biological material for biomolecular analysis and accelerate the related scientific research and industry use.