



Designation: E 1565 – 00

Standard Guide for Inventory Control and Handling of Biological Material Maintained at Low Temperatures¹

This standard is issued under the fixed designation E 1565; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

The stability of biological material stored at low temperatures is dependent on proper handling procedures and the development of adequate safeguards. Because of the sensitivity of many biological materials, care must be taken that critical temperatures are not compromised during retrieval and other activities involving handling of the material. Safeguards must also be established to ensure both adequate temperatures at all times during storage and that inventory control provides a mechanism for ease of retrieval.

1. Scope

1.1 This guide covers recommended procedures for handling material stored at low temperatures in mechanical freezers and liquid nitrogen freezers.

1.2 This guide covers recommendations for implementing procedures for ensuring adequate inventory control.

1.3 This guide covers recommendations for implementing procedures for safeguarding material stored at low temperatures.

1.4 This guide does not cover the development or maintenance of equipment and facilities for low-temperature storage which are covered in Guide E 1564.

1.5 This guide does not cover practices for preservation by freezing which are covered in Practice E 1342.

1.6 The values stated in SI units are to be regarded as the standard.

1.7 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

¹ This guide is under the jurisdiction of ASTM Committee E48 on Biotechnology and is the direct responsibility of Subcommittee E48.02 on Characterization and Identification of Biological Systems.

Current edition approved Sept. 10, 2000. Published December 2000.

Originally published as E1565-93. Last previous edition E1565-93.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E 1342 Practice for Preservation by Freezing, Freeze-Drying, and Low Temperature Maintenance of Bacteria, Fungi, Protista, Viruses, Genetic Elements, and Animal and Plant Tissues

E 1564 Guide for Design and Maintenance of Low Temperature Storage Facilities for Maintaining Cryopreserved Biological Materials

E 1566 Guide for Handling Hazardous Biological Materials in Liquid Nitrogen

3. Terminology

3.1 Definitions:

3.1.1 *cryogenic temperatures*—temperatures below or equal to -100°C .

3.1.2 *liquid nitrogen freezers*—freezers that operate by a refrigeration system in which cooling is provided by a refrigerant such as liquid nitrogen.

3.1.3 *mechanical freezers*—freezers that operate by a refrigeration system in which cooling is provided by mechanical means such as a compressor.

4. Significance and Use

4.1 The proper handling of material stored at low temperatures ensures that the stability of sensitive biological materials is not compromised.

4.2 Properly designed inventory control systems ensure the maximum use of freezer space, that all material can be located easily, and that any item is retrieved easily without compromising the stability of other items in the freezer.