



Designation: F2559/F2559M – 21

Standard Guide for Writing a Specification for Sterilizable Peel Pouches¹

This standard is issued under the fixed designation F2559/F2559M; 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.

1. Scope

1.1 This guide defines the requirements and considerations for flexible peel pouches with one open, unsealed end that are intended to be sterilized containing medical devices. These are also known as preformed sterile barrier systems.

1.2 Pouch styles are categorized as chevron, header, and corner peel. These pouches are typically manufactured by heat sealing, or in some cases, by cohesive cold sealing. The sealing bond is intended to be peeled open to aseptically dispense the contents.

1.3 Pouch materials may be either porous, nonporous, or any combination of the two.

1.4 This guide addresses some critical printing requirements on the pouch.

1.5 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This guide is under the jurisdiction of ASTM Committee F02 on Primary Barrier Packaging and is the direct responsibility of Subcommittee F02.50 on Package Design and Development.

Current edition approved Oct. 1, 2021. Published November 2021. Originally approved in 2006. Last previous edition approved in 2015 as F2559/F2559M – 06 (2015). DOI: 10.1520/F2559_F2559M-21.

2. Referenced Documents

2.1 ASTM Standards:²

E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process

F17 Terminology Relating to Primary Barrier Packaging

F88 Test Method for Seal Strength of Flexible Barrier Materials

F1140 Test Methods for Internal Pressurization Failure Resistance of Unrestrained Packages

F1886 Test Method for Determining Integrity of Seals for Flexible Packaging by Visual Inspection

F2054 Test Method for Burst Testing of Flexible Package Seals Using Internal Air Pressurization Within Restraining Plates

F2097 Guide for Design and Evaluation of Primary Flexible Packaging for Medical Products

F2203 Test Method for Linear Measurement Using Precision Steel Rule

F2250 Practice for Evaluation of Chemical Resistance of Printed Inks and Coatings on Flexible Packaging Materials

F2475 Guide for Biocompatibility Evaluation of Medical Device Packaging Materials

2.2 TAPPI Standards:³

T213 Dirt in Pulp – Chart Method

T437 Dirt in Paper and Paperboard

T564 Transparent Chart for the Estimation of Defect Size

2.3 ISO Standards:⁴

ISO 11607-1 Packaging for terminally sterilized medical devices — Part 1: Requirements for materials, sterile barrier systems, and packaging systems

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.

³ Available from Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, <http://www.tappi.org>.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

ISO 11607-2 Packaging for terminally sterilized medical devices — Part 2: Validation requirements for forming, sealing, and assembly processes

3. Terminology

3.1 *Definitions*—For definitions and terms used in this guide, see Terminology **F17**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *pouch, n*—a flexible package constructed of one or more materials sealed together to form a preformed sterile barrier system. When purchased, one end or side is open to allow for product loading and final sealing.

3.2.2 *specification, n*—an explicit set of requirements to be satisfied by a material, product, system, or service. Examples of specifications include, but are not limited to, requirements for; physical, mechanical, or chemical properties, and safety, quality, or performance criteria. A specification identifies the test methods for determining whether each of the requirements is satisfied.⁵

4. Summary

4.1 This guide provides guidance for writing a peel pouch material specification. Materials, method of manufacture, physical properties, performance requirements, dimensioning, appearance, and printing are all issues that need to be addressed in a peel pouch specification. Appropriate requirements and test methods are suggested for preparing a specification.

5. Significance and Use

5.1 Medical device peel pouches are universally used by the industry and produced by a myriad of suppliers. They may be constructed of many different materials including films, foils, paper, nonwovens such as Tyvek, and combinations thereof. However, even with the diversity of materials, there are still basic requirements that all pouches should exhibit. Above all, the pouches must contain and protect the device while maintaining sterility during all physical handling.

5.2 Pouch requirements may be divided into two categories, initial pouch and material qualification, and routine production and receipt requirements to ensure the purchaser receives exactly what is ordered. While all requirements should be included in the written specification, initial qualification tests may only be needed prior to the first order. Routine production and receipt requirements should be adhered to on every order. Initial qualification requirements are indicated within each clause, where applicable.

5.3 This guide provides an understanding of the requirements needed for the manufacture, purchase, and acceptance of a preformed peelable pouch. Appropriate test methods for compliance are also cited.

NOTE 1—All test methods for a particular requirement may not be cited due to specific or unique circumstances. For additional guidance on applicable methods, refer to Guide **F2097**.

5.4 The specification and its requirements should be mutually agreed to by the supplier and purchaser of pouches. This helps ensure that pouches will comply to specified requirements.

5.5 Standards such as ISO 11607-1 and ISO 11607-2 have established criteria for consideration in material testing and for validation. This guide supports the expectations of appropriate materials and package testing occurring within a system of validations supporting demonstration of compliance to ISO 11607-1 and ISO 11607-2.

6. Specification

6.1 *Classification:*

6.1.1 *Style:*

6.1.1.1 Chevron pouch (see **Fig. 1**),

6.1.1.2 Corner peel pouch (see **Fig. 2**), and

6.1.1.3 Header bag (see **Fig. 3**).

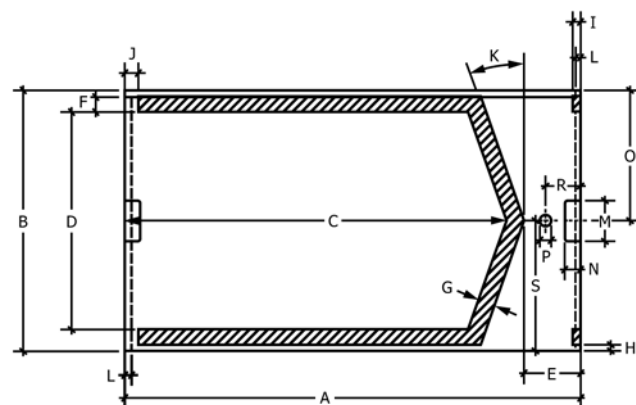
6.2 *Materials and Manufacture:*

6.2.1 Materials used in the construction of medical device peel pouches should be specified as non-toxic, providing a microbial barrier and any other appropriate physical barrier (oxygen, water vapor, light, and so forth), and being compatible with the intended sterilization process. These requirements should be evaluated during the initial package qualification and are not typically performed on a routine production basis.

NOTE 2—There are numerous test methods associated with determining physical and chemical properties of flexible materials used in the fabrication of pouches. Care should be taken in selecting the most appropriate test for the user's particular application and use. For guidance in determining which methods to use, refer to Guide **F2097**.

6.2.2 The ability of the materials to demonstrate compliance with predetermined requirements may be addressed by either the certification from raw or component materials supplier or by actual testing performed by the pouch manufacturer in compliance with quality systems. These requirements are often evaluated during the initial package qualification and not typically performed on a routine production basis.

6.2.3 Pouches should be manufactured within a formal quality system.



NOTE 1—Dimension “I” or “J” but not both.

FIG. 1 Chevron Pouch

⁵ In accordance with ASTM International *Form and Style for ASTM Standards*.