SINGAPORE STANDARDS COUNCIL

SS 357 : Part 1 : 1991 (2011)

(ICS 55.040; 83.140)

SINGAPORE STANDARD

Specification for cushioning forms

– Part 1 : Polystyrene

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– Part 1 : Polystyrene

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This Singapore Standard having been approved by the Packaging Materials Product Standards Committee was endorsed by the Standards Council on 30 June 1991.

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The Packaging Materials Product Standards Committee appointed by the Standards Council consists of the following members:

		Name	Organisation
Chairman	:	Dr Whang Sun Tze	Standards Council
Deputy Chairman	:	Mrs Lee-Ying Adams	Singapore Institute of Standards and Industrial Research
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The Technical Committee, appointed by the Packaging Materials Product Standards Committee and responsible for the preparation of this standard, consists of representatives from the following organisations:

		Name	Organisation
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Secretary	:	Miss Florence Tan Poh Choo	Singapore Institute of Standards and Industrial Research
Members	:	Mr Ronnie Ee Tian Phong	Singapore Manufacturers' Association
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Co-opted Member	:	Mr Chui Tau Siong	Insulpack Industries (Pte) Ltd

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SPECIFICATION FOR CUSHIONING FOAMS PART 1 : POLYSTYRENE

FOREWORD

This Singapore Standard was prepared by the Technical Committee for Cushioning Foams under the direction of the Packaging Materials Product Standards Committee. It is a Part of the Singapore Standard 357 on "Cushioning Foams".

In preparing this specification, reference was made to the following standards:

DIN 50014 - 1975	Atmospheres and their technical application standard atmospheres
DIN 55471 - 1983	Cellular polystyrene for packaging requirements, testing
ISO 844 - 1978	Cellular plastics - Compression test for rigid materials
ISO 845 - 1977	Cellular rubbers and plastics - Determination of apparent density
ISO 1209 - 1976	Rigid cellular plastics - Bending test
ISO 1923 - 1981	Cellular plastics and rubbers - Determination of linear dimensions
JIS Z 1536 - 1975	Polystyrene foam for package cushioning

Acknowledgement is made for the use of information from the above references.

NOTE

1. Singapore Standards are subject to periodical review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue either of amendment slips or of revised editions.

2. Compliance with a Singapore Standard does not exempt users from legal obligations.

1. SCOPE

This standard specifies expandable polystyrene foam used as package cushioning material. It does not cover polystyrene foam in chip or granular form. The foam shall consist of closed-cell, expanded polystyrene particles. The particles are bonded tightly to each other.

2. DEFINITIONS

For the purpose of this standard, the following definitions shall apply:

2.1 Compressive Strength. It is the measure of the compressibility of the foam which is defined as the maximum compressive force F_M, reached when the relative deformation ϵ is < 10%, divided by the initial surface area of the cross-section of the test specimen. The relative deformation corresponding to σ_M is noted as ϵ_M.

2.2 Compressive Stress At 10% Relative Deformation. It is the compressive force F_{10} at 10% relative deformation (ϵ_{10}) divided by the initial surface area of the cross-section of the test specimen.

2.3 Density. It is defined as the mass of the cellular material per unit volume.

2.4 Flexural Strength. It is the measure of resistance to bending and is defined as the flexural moment in the centre of the test specimen at break divided by its section modulus.

2.5 Polystyrene Foam. Cushioning material which is made by foaming expandable polystyrene resin and used to mitigate shock applied to packaged content or to hold the content, as well as to prevent local concentration of stress on the content.