



JAPANESE
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STANDARD

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JIS Z 0403-2 : 1999

**Corrugated fibreboard—
Part 2 : Determination of edgewise
crush resistance**

ICS 85.060

Descriptors : corrugated, board (paper), compressive strength, compression testing

Reference number : JIS Z 0403-2 : 1999 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

By this establishment, **JIS Z 0401 : 1995** was withdrawn and replaced by **JIS Z 0403-1** and **JIS Z 0403-2**.

JIS Z 0403 consists of the following 2 parts under the general title *Corrugated fibreboard*.

Part 1 : Determination of flat crush resistance

Part 2 : Determination of edgewise crush resistance

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In the event of any doubts arising as to the contents,
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Corrugated fibreboard— Part 2 : Determination of edgewise crush resistance

Introduction This Japanese Industrial Standard consists of the text and the annex; the text specifies “method A”, the determination method of edgewise crush resistance from the former Standard (JIS Z 0401 : 1955), and the annex specifies “method B”, based on the third edition of the corresponding International Standard, **ISO 3037** *Corrugated fibreboard—Determination of edgewise crush resistance (Unwaxed edge method)* published in 1994 without modifying the technical contents.

Portions underlined with dots in annex are the matters not specified in the corresponding International Standard.

1 Scope This Standard specifies a method of the determination (method A) of the edgewise crush resistance of single-faced, single-wall (double-faced), double-wall (double-double-faced) and triple-wall (double-double-double-faced) corrugated fibreboard.

Remarks : The International Standard corresponding to this Standard shall be as follows:

ISO 3037 : 1994 *Corrugated fibreboard—Determination of edgewise crush resistance (Unwaxed edge method)*

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards shall be applied.

JIS P 8110 *Paper and board—Sampling for testing*

Remarks : **ISO 186** : 1994 *Paper and board—Sampling to determine average quality* is equivalent to the said standard.

JIS P 8111 *Paper, board and pulps—Standard atmosphere for conditioning and testing*

Remarks : **ISO 187** : 1990 *Paper, board and pulps—Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples* is equivalent to the said standard.

3 Principle Subjection of a test piece of the corrugated fibreboard, placed between the platens of a crush tester with the flutes perpendicular to the surfaces of the platens, to a compressive force until failure occurs. Measurement of the maximum force sustained by the test piece.

4 Apparatus

4.1 Flat crush tester The flat crush tester shall be a motor-driven, platen-type crush tester.

4.1.1 Compression section The compression section shall be so constructed that it consists of a pair of parallel platens in the upper and lower side and at least one

of them is capable of moving up and down and the surface is flat⁽¹⁾ and robust. The platens shall meet the following requirements:

- deviation from parallel not greater than 1 : 1 000 of the dimensions;
- lateral play not exceeding 0.05 mm.

In addition, the platens shall be large enough to take a test piece without the test piece projecting beyond the platens.

Note ⁽¹⁾ The surface of platens shall have projections or roughness, or may be faced with an emery paper to prevent the test piece from being slippery.

4.1.2 Load section The load section shall be so constructed that one of the platens is capable of being moved at a rate of 12.5 mm/min $\pm$ 2.5 mm/min, and shall meet the following requirements.

- a) When using the fixed platen type (load cell type), it shall have the apparatus which is capable of indicating or recording to the nearest 1 N, and correcting accurately with a weight or a dynamometer.
- b) In the case of a flat spring type, the flat spring from which a test result is obtained in 20 % to 80 % of the maximum measuring range shall be used. Furthermore, for this flat spring, the load shall increase at a rate of 110 N/s $\pm$ 10 N/s from the time when the platen comes in contact with the test piece. The tester shall be capable of measuring the load at the time of compression to a value of 5 N or 1 %, whichever is the greater, and comparing with the result in 4.1.2 a).

Remarks : When the flat spring of which the load increases at a rate of 67 N/s $\pm$ 23 N/s is used in 4.1.2 b), it shall be described in the test report.

4.2 Cutting instrument for test piece The cutting instrument for test piece shall be a tool or a cutter furnished with a sharp blade with which the test piece can be cut accurately with the cut edges clean and perpendicular to the facings of the corrugated fibreboard.

4.3 Guide block for test piece The guide block for test piece shall be capable of supporting the test piece vertically at the upper and lower sides and shall be as shown in Fig. 1.