

Domestic kitchen equipment —

Part 2: Specification for structural performance requirements and methods of test for fitted kitchen units

ICS 97.040.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee FW/2, Domestic and contract furniture, upon which the following bodies were represented:

- Association of Building Engineers
- Association of Manufacturers of Domestic Electrical Appliances
- Association of Suppliers to the Furniture Industry Ltd.
- BSI Testing Services
- British Association for Accident and Emergency Medicine
- British Coatings Federation Ltd.
- British Contract Furnishing Association
- British Furniture Manufacturers' Federation
- British Laminated Plastics Fabricators' Association Ltd.
- British Plastics Federation
- British Retail Consortium
- British Shops and Stores Association
- British Woodworking Federation
- Castor Manufacturers (UK) Association
- Child Accident Prevention Trust
- Consumer Policy Committee of BSI
- Department of Trade and Industry – Customer Safety Unit
- Federation of the Electronics Industry
- Flat Glass Manufacturers' Association
- Furniture Industry Research Association International Ltd.
- Furniture, Timber and Allied Trades Union
- Glass and Glazing Federation
- ICE (Ergonomics)
- Institute of Trading Standards Administration
- Kitchen Specialists' Association
- LHC Building Components and Services
- Leisure and Outdoor Furniture Association Ltd.
- Mail Order Traders' Association
- Metal Sink Manufacturers' Association
- National Bed Federation Ltd.
- National Federation of Housing Associations
- Royal Society for the Prevention of Accidents
- SATRA Footwear Technology Centre
- Society of British Gas Industries
- Society of Glass Technology

This British Standard, having been prepared under the direction of the Consumer Products and Services Sector Board (W/-), was published under the authority of the Standards Board and comes into effect on 15 June 1997

© BSI 18 January 2002

First published January 1992

The following BSI references relate to the work on this standard:
Committee reference FW/2
Draft for comment 93/313531 DC

ISBN 0 580 27089 0

Amendments issued since publication

Amd No.	Date	Comments
13336	18 January 2002	Indicated by a sideline

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
Introduction	1
1 Scope	1
2 Informative references	1
3 Definitions	1
4 Grades	3
5 Range of units and work tops	3
6 Performance	4
7 Marking and claims of conformity	5
8 Principle	5
9 Samples for testing	5
10 General requirements for tests	6
11 Test report	9
Annex A (normative) Tests on carcass and underframe	10
Annex B (normative) Tests on shelves and horizontal surfaces	10
Annex C (normative) Tests on pivoted doors	12
Annex D (normative) Tests on sliding doors	14
Annex E (normative) Tests on flaps	15
Annex F (normative) Tests on drawers and other runner-supported items	17
Annex G (normative) Determination of the strength of handles	20
Annex H (normative) Drawer slamming apparatus and its calibration	21
Figure B.1 — Impact test on shelf supports	11
Figure C.1 — Static load test on pivoted doors	13
Figure D.1 — Slam open/shut test on sliding doors	15
Figure E.1 — Static load test on flaps	17
Figure F.1 — Downward static load test on drawers	18
Figure F.2 — Slam shut test on drawers	19
Figure F.3 — Retention of the bottom surface of drawers	19
Figure F.4 — Wear and fatigue test on drawers and runners	20
Table 1 — Summary of tests	7
Table 2 — Loads applied to parts other than the part being tested	8
Table 3 — Loads applied to parts being tested	8
Table B.1 — Steel impact plates	11
Table H.1 — Velocities for calibrating drawer slamming apparatus	21
List of references	23

Foreword

This British Standard has been prepared by Technical Committee FW/2. It is a new edition and supersedes BS 6222-2:1992 which is withdrawn. This does not reflect a full review or revision of the standard, which will be undertaken in due course. It specifies structural performance requirements for general domestic use with higher test levels specified for heavy domestic use. It is recognized that accidental overloads occur from time to time but it would be impracticable to specify requirements for units to withstand such accidents.

The tests are designed to be applied to a unit that is fully assembled and ready for use.

This Part of BS 6222 does not include safety requirements. These are specified in BS EN 1153, *Kitchen furniture — Safety requirements and test methods for built-in and free standing kitchen cabinets and work tops*. This is a new edition because of the requirement to remove conflicting parts due to the publication of BS EN 1153:1996.

Other Parts of BS 6222 are as follows:

- *Part 1: Specification for co-ordinating dimensions;*
- *Part 3: Specification for performance requirements for durability of surface finish and adhesion of surfacing and edging materials;*
- *Part 4: Code of practice for protection, storage and installation of fitted kitchen units;*
- *Part 5: Specification for strength requirements and methods of test for peninsular units, island units and breakfast bars.*

Production certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard, based on testing and continuing product surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS EN ISO 9000.

Enquiries as to the availability of a third party certification scheme are forwarded by BSI to the Association of British Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of association members.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 23 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Sidelining in this document indicates when the document was last issued.

Introduction

This Part of BS 6222 specifies requirements for fitted kitchen units which are intended to be able to pass a number of tests without failure or significant damage. Two grades are specified.

The tests are for the repeated operation of drawers, doors and flaps, the loading of storage surfaces and for the exceptional loads that should occur only occasionally.

Carcase handling tests are included to take account of the loads which are likely to be encountered when assembling and installing units.

Tests carried out in accordance with this standard are intended to demonstrate the ability of the item to give satisfactory service in its intended environment. It should be understood that such tests do not ensure that structural failure will not eventually occur as a result of habitual misuse or after an excessively long period of service.

1 Scope

This Part of BS 6222 specifies structural performance requirements and methods of test for fitted kitchen units and does not specify safety requirements which are contained in BS EN 1153.

The requirements apply to all materials and to all types of construction.

The carcase handling test given in Annex A applies to unloaded units tested in the condition in which they are expected to be received on site, and therefore excludes self-assembly units.

This Part of BS 6222 does not specify requirements for assemblies of units forming peninsular units, island units or breakfast bars, which are specified in BS 6222-5, or requirements for free-standing units, which are specified in BS 4875-5 and BS 4875-7.

The tests do not take account of the effects of ageing or chemical degradation.

2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 6222 the following definitions apply.

3.1

units

complete cabinets, including drawers, doors, loose shelves and fixtures

3.2

base unit

unit fitted with or able to support a work top, normally floor standing

3.3

fitted unit

unit intended to be fixed to a wall

3.4

wall unit

unit intended to be wholly suspended by attachment to a wall

3.5

tall unit

unit that normally corresponds in height to the top of a fixed wall unit, and which is normally floor standing

3.6

appliance housing

unit designed to house a specific appliance, e.g. an oven or refrigerator

3.7

pull-out larder unit

larder unit to which access is gained by pulling the interior fitments out of the cabinet, instead of opening a door

3.8

carcase

unit excluding drawers, doors, loose shelves and fixtures

3.9

shelf

continuous horizontal surface intended for storage

3.10

drawer

item supported on runners designed for storage and which may be withdrawn from a cabinet, including trays if supported in this manner

3.11

door

panel structure hinged in the vertical plane or sliding in the vertical plane

3.12

flap

structure similar to a door but hinged in the horizontal plane

3.13

work top

continuous horizontal surface intended for work

3.14

cantilevered work top

projecting moveable or fixed work surface, supported only at one end

3.15

storage fixture

storage component attached to or supported by a unit, e.g. wire baskets

NOTE For the purpose of this Part of BS 6222, the term fixture excludes shelves and drawers.

3.16

special fixture

fixture intended or designed for a particular use

3.17

optional fixture

fixture which may or may not be fitted to a unit

3.18

range of units

design-related group of units with the same basic details of construction

3.19

normal use

level of loading that is likely to occur most frequently

3.20

performance

ability of a unit to withstand working loads over its service life

3.21

strength

ability of a unit to withstand loads

3.22**rigidity**

ability of a unit to resist deflection under applied load

3.23**deflection**

distance through which a specified point moves during or as a result of a test procedure

4 Grades

Fitted kitchen units shall be classified as either grade G (general domestic) or grade H (heavy domestic).

NOTE Grade G is for general domestic situations where users are expected to exercise care. Grade H units are for locations where heavy use is expected or where the users are liable not to exercise care.

5 Range of units and work tops

When a range of units is to be tested, the following units and components shall be submitted for test:

- a) the largest base unit;
- b) the largest wall unit;
- c) the largest tall unit;
- d) the largest appliance housing;
- e) the largest “built under” appliance housing;
- f) the largest pull-out larder unit;
- g) the shelf with the longest span;

NOTE 1 This may be the bottom of a unit.

- h) the work top with the greatest span fully supported by a base unit;
- i) a bridging work top supported at both ends and also one side with the largest span (as recommended by the manufacturer);
- j) the cantilevered work top with the largest projection (as recommended by the manufacturer);
- k) the door that produces the greatest load on its hinge;

NOTE 2 If different types of hinge are used, the doors producing the greatest load on each type of hinge should be submitted for testing.

- l) the largest sliding door;
- m) the largest hinged flap;
- n) the largest drawer;

NOTE 3 If different types of runner are used, the largest drawer with each type should be submitted for test.

- o) a cutlery drawer, or drawer not more than 150 mm deep which could be used for storing cutlery;
- p) the fixtures included in the range of units.

NOTE 4 Other components that form part of the range and that could be tested by the methods given in the annexes or in BS 4875 may also be submitted for test.

6 Performance

6.1 General

A unit or component shall be considered to have passed the tests at the specified grade if, at the completion of the tests, none of the following defects affecting the strength or function of the unit or component are present:

- a) a fracture of any member, joint or component;
- b) any loosening of joints intended to be rigid;
- c) deformation or wear of any component;
- d) loosening of any components fixed to the unit;
- e) drawer(s) have separated from the unit.

NOTE Item e) does not apply when testing in accordance with F.1.

6.2 Individual units

For an individual unit to be described as conforming to grade G or grade H of this Part of BS 6222, its components shall conform to 6.4.

6.3 Range of units

For a range of units to conform to grade G or grade H of this Part of BS 6222, all types of units and components as listed in clause 5 shall conform to 6.4.

If one type of unit or component does not conform to 6.4 then the whole range of units shall be deemed to have failed.

If all unit types and components conform to grade H except one, which conforms to grade G, the range of units shall be described as conforming to grade G.

6.4 Criteria for conformity

6.4.1 When tested in accordance with Annex A, to the test levels of either grade G or grade H given in Table 1, the carcass of the base unit shall conform to 6.1.

6.4.2 When tested in accordance with Annex B, to the test levels of either grade G or grade H of Table 1, shelves and the tops and bottoms of wall units shall conform to 6.1.

Shelves and the tops and bottoms of wall units shall be considered to conform to B.2, at the appropriate grade, if no deflection greater than span/200 for particleboard, span/150 for wood or span/100 for other materials is recorded.

6.4.3 All types of work top shall be tested by the method given in B.3 to the test levels for either grade G or grade H given in Table 1, and shall conform to 6.1.

Bridging work tops shall be tested with both ends and only one side supported. Hinged and sliding work tops shall be additionally tested for wear and fatigue in accordance with E.3 and F.4, respectively, and to the test levels for either grade G or grade H given in Table 1.

6.4.4 Pivoted doors shall be tested for static load, slamming, and wear and fatigue, in accordance with C.1, C.2 and C.3, respectively, to the test levels for either grade G or grade H given in Table 1, and shall conform to 6.1.

6.4.5 Up-and-over doors shall conform to 6.4.7.

6.4.6 Sliding doors shall be tested for wear and fatigue and slamming by the test methods given in D.1 and D.2, respectively, to the test levels for either grade G or grade H given in Table 1, and shall conform to 6.1.

6.4.7 Flaps shall be tested for static load, slamming, and wear and fatigue, by the test methods given in E.1, E.2 and E.3, respectively, to the test levels for either grade G or grade H given in Table 1, and shall conform to 6.1.

Top hinged flaps with no locking device shall be tested for wear and fatigue only.

6.4.8 Drawers and sliding shelves shall be tested for downward static loading, slamming, and wear and fatigue, by the methods given in **F.1**, **F.2** and **F.4**, respectively.

The retention of drawer bottoms shall be tested in accordance with **F.3**. The items shall be tested to the test levels for either grade G or grade H given in Table 1, and shall conform to **6.1**.

Drawers and sliding shelves shall be considered to conform to **F.4**, at the appropriate grade, if, after the test, the force required to move the drawer or sliding shelf does not exceed 70 N and the force required to maintain this movement does not exceed 45 N.

6.4.9 When tested in accordance with Annex G, to the test levels given in Table 1, handles shall conform to **6.1**.

7 Marking and claims of conformity

For each unit for which conformity to this British Standard is claimed, the following information shall be made available to the purchaser:

- a) the name, trademark or other means of identification of either the UK manufacturer, UK distributor or UK retailer;
- b) the description or name of the range of units of which it is part (if applicable);
- c) the number and date of this British Standard, i.e. BS 6222-2:1997¹⁾, indicating that conformity refers only to the structural performance requirements;
- d) the grade, i.e. grade G or grade H.

NOTE An example of suitable wording is:

“The structural performance of this base unit conforms to grade G of BS 6222-2:1997.”

Any claim that a range of units conforms to this standard shall include a list of the types of unit and components that have been tested.

8 Principle

The structural performance of a fitted unit is determined by applying, to various parts, loads that would be expected to be applied to the unit in normal use, in accordance with the grade (i.e. grade G or grade H). The tests are:

- a) a handling test to assess the ability of an unloaded base unit to withstand handling prior to fixing;
- b) static load tests to assess the static strength of the unit or component under the high levels of loading that occur only occasionally;
- c) wear and fatigue tests to assess the durability of the component parts of the unit under the repeated operations, movement, or application of loads that occur during daily use;
- d) impact tests to assess the residual strength of the unit or component under the rapid rates of loading that occur only occasionally.

NOTE A summary of the tests is given in Table 1.

9 Samples for testing

Each sample for testing shall be representative of the production unit. If there is a range of units, the units and components listed in clause 5 shall be tested.

¹⁾ Marking BS 6222-2:1996 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.