

Workmanship on building sites —

Part 7: Code of practice for glazing

CAWS L40

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Committees responsible for this British Standard

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- Building Employers' Confederation
- Chartered Institute of Building
- Consumer Policy Committee of BSI
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- Federation of Associations of Specialists and Sub-Contractors
- Institute of Clerks of Works of Great Britain Inc
- Institution of Civil Engineers
- Institution of Structural Engineers
- National Building Specification Ltd.
- National Council of Building Materials Producers
- National House Building Council
- Royal Institute of British Architects
- Royal Institution of Chartered Surveyors
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Foreword

This part of BS 8000 has been prepared under the direction of the Council for Building and Civil Engineering. It makes recommendations and gives guidance on basic workmanship for conventional types of building work.

The recommendations given are not necessarily comprehensive; particular project documents, e.g. project specifications, may need to cover particular recommendations not dealt with by this code of practice.

This code of practice is unique in that, unlike other British Standards, it draws together recommendations given in other codes of practice.

The purpose of this code of practice is to encourage good workmanship by providing the following:

- a) the most frequently required recommendations on workmanship for building work in a readily available and convenient form to those working on site;
- b) assistance in the efficient preparation and administration of contracts;
- c) recommendations on how designer's requirements for workmanship may be satisfactorily realized;
- d) definitions of good practice on building sites for supervision and for training purposes; this guidance is not intended to supplant the normal training in craft skills;
- e) a reference for quality of workmanship on building sites.

It is recognized that design, procurement and project information should be conducive to good workmanship on site.

During the preparation of this code of practice the Building Industry's Co-ordinating Committee for Project Information (CCPI) produced a Common Arrangement of Work Sections (CAWS) for building work. This code of practice has generally been arranged in accordance with the Common Arrangement so that it can be used easily with project specifications and bills of quantities using this arrangement. Other major documents are being restructured in accordance with the Common Arrangement.

NOTE The CCPI was sponsored by the Association of Consulting Engineers, the Building Employers' Confederation, the Royal Institution of Chartered Surveyors and the Royal Institute of British Architects.

When complete BS 8000 will comprise the following parts.

- *Part 1: Code of practice for excavation and filling;*
- *Part 2: Code of practice for concrete work;*
- *Part 3: Code of practice for masonry;*
- *Part 4: Code of practice for waterproofing;*
- *Part 5: Code of practice for carpentry, joinery and general fixings;*
- *Part 6: Code of practice for roof, slate, tile covering and cladding;*
- *Part 7: Code of practice for glazing;*
- *Part 8: Code of practice for plasterboard partitions and dry linings;*
- *Part 9: Code of practice for cement/sand floor screeds and concrete floor toppings;*
- *Part 10: Code of practice for plastering and rendering;*
- *Part 11: Code of practice for wall and floor tiling;*
- *Part 12: Code of practice for decorative wallcoverings and painting;*
- *Part 13: Code of practice for above ground drainage and sanitary appliances;*
- *Part 14: Code of practice for below ground drainage;*
- *Part 15: Code of practice for hot and cold water services (domestic scale).*

Technical Committee ECB/4, Glazing in buildings, has also participated in the preparation of this part of BS 8000 and the content is based on and consistent with that of BS 6262. However, BS 6262 covers the subject matter more comprehensively and includes design, materials, safety and other related aspects in addition to workmanship on site.

The text of this part of BS 8000 includes commentaries and figures. These commentaries are separately identified and are intended to be for guidance only and do not form part of the recommendations. They refer, unless otherwise stated, to the clause which immediately precedes each commentary.

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 to iv, pages 1 to 34, an inside back cover and a back cover.

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

Section 1. General

1.1 Scope

This part of BS 8000 gives recommendations on basic workmanship on building sites and covers those tasks which are frequently carried out in relation to glazing.

This code does not cover off-site glazing (e.g. factory glazing), specialist glazing techniques or systems (e.g. patent glazing), specialist applications (e.g. greenhouses and barriers/balustrades), roof glazing and glazing of furniture and fittings. Additionally it does not apply to bent, profiled and corrugated glass/plastics sheet material, or to glass blocks or lens lights.

For design aspects of glazing, including safety, reference should be made to BS 6262.

NOTE This code of practice includes supplementary elements in the form of commentaries to assist in its use and understanding. Compliance with the commentaries is not necessary in order to be able to claim conformity with the standard.

1.2 References

1.2.1 Normative references

This part of BS 8000 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revision of, any of these publications apply to this part of BS 8000 only when incorporated in it by amendment or revision.

1.2.2 Informative references

This part of BS 8000 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.

1.3 Definitions

For the purposes of this part of BS 8000, the definitions given in BS 6100-1.3.5:1988 and BS 6100-1.4.1:1990 apply.

Section 2. Materials handling and preparation

2.1 Checking, handling and site storage of materials

2.1.1 Checking

Check delivery tickets and certificates against specification and examine marks and labels and condition of materials and components. If not satisfied, refer to the supplier immediately.

In particular check glazing sheets and units as follows.

- a) Generally inspect glass cut edges for excessive feathering or shelling.
- b) Generally inspect edges of plastics sheets for splits.
- c) Generally inspect all surfaces for signs of damage by etching or any mechanical damage.
- d) Check if there is moisture between individual sheets.
- e) Inspect edge tapes for damage when supplied on flush-edged insulating units where the tapes are intended to serve as a barrier to moisture. Similarly inspect edge tapes for damage on stepped edge insulating units. Ensure that damaged tapes on such units are repaired before units are used for glazing.

COMMENTARY. Because thermal breakage of glass normally results from the development of tensile stress in, and parallel to, the glass edge, the resistance of glass to breakage is frequently dependent on the extent and position of flaws in the edges.

Any glass stock that shows signs of dampness should be separated and dried as moisture trapped between sheets may rapidly become alkaline and attack the surfaces. However, if the condition has existed for more than a few weeks, irreversible damage may already have occurred.

Edge tapes supplied on flush-edged insulating glass units are normally only intended to facilitate handling. It is the responsibility of the manufacturer to advise if tapes on such units are intended to serve as moisture barriers. Tapes on stepped edge units are intended to protect the seal from the effects of ultraviolet radiation to which it will usually be exposed in service.

2.1.2 Handling

Handle all units and sheets carefully to avoid breaking or chipping the glazing materials and injury to people on site. Use serviceable equipment. Upon receipt of the consignment read carefully any warning labels affixed and take action accordingly.

COMMENTARY. Comprehensive advice on handling, storage and transport of glass is given in the code of practice booklet: [1] issued by the Glass and Glazing Federation.

Glazing materials by their nature are vulnerable until fixed. It is of prime importance therefore that facilities for handling and hoisting and scaffolding provisions are safe and adequate. Appropriate safety clothing should be worn and safe working practices followed by operatives at all times.

2.1.3 Storage of material

2.1.3.1 Storing units and glazing sheets

Prepare storage area and store units and sheets as agreed. Generally:

- a) ensure that the area is level and adequately firm to support the weight;
- b) locate the storage area so that the units and sheets are not liable to accidental damage and are not a hazard to the site;
- c) provide shade and shelter from the sun and rain, and keep insulating glass units and plastics glazing sheets away from heat sources;
- d) store all units and all types of sheets on edge within 10° of a vertical position on adequate wood bearers or platform clear of hard ground so that the edges are not damaged, and provide soft support at the rear bearing;
- e) do not allow units or sheets to come in contact with hard materials such as concrete, brick and steel or with alkaline materials such as cement and lime;
- f) ensure that the units or sheets are kept dry and that moisture is not trapped between them in store;
- g) follow the manufacturer's sitework instructions for storage requirements over and above those given.

2.1.3.2 Storing associated bedding and sealing materials

Store materials under cover and in accordance with the manufacturer's sitework instructions.

COMMENTARY. *Generally the materials will need to be stored in the dry, kept out of direct sunlight and at temperatures not exceeding 25 °C. See also 2.2.6.*

2.2 Preparation of work, materials and components

NOTE Recommendations for a basic range of glazing techniques with varieties of materials used for bedding and sealing single glass sheets, insulating units and plastics glazing sheets are included in section 3 of this part of BS 8000. General items in this clause apply to all these installation techniques including minor variants of technique which might be specified for the project. Bedding and sealing material references are identified in Table 1.

2.2.1 General

In order that the technical requirements for satisfactory glazing may be correctly carried out and to ensure that window openings are ready for glazing check that:

- a) frame fixing is completed, and all the beads and other materials and fittings required for glazing are available on site;
- b) protective coatings or tapes have been removed from the frame;
- c) rebates are free from obstruction and debris;
- d) timber frames and concrete surrounds are free from excessive moisture content; suspend glazing until drying out has occurred;
- e) for drained glazing all fabrication holes and frame section junctions are properly sealed and drain holes and channels are clear to operate;
- f) when required, appropriate and safe scaffolding and hoisting provisions have been made.

2.2.2 Compatibility of materials

When using materials specified by general description ensure that they are compatible for use in the particular glazing system or technique used. Refer to the material manufacturers and follow their sitework instructions on the use of their products.

COMMENTARY. *Edge seals of insulating units can be attacked by certain solvents contained in glazing materials. Likewise certain glazing materials can cause deterioration of the interlayer used in laminated glass. Whereas deterioration of the edge of laminated glass having a thin interlayer is limited to a few millimetres and hidden within the rebate cover, on thicker interlayers greater penetration can occur. Plastics glazing sheets and frames may also be attacked by certain solvents in compounds. Similarly the use of plasticized polyvinyl chloride (PVC) glazing blocks with plastics glazing sheets should be specifically checked.*

2.2.3 Preparation of surrounds

2.2.3.1 General

Clean and dry surround surfaces in contact with glazing materials. Remove all spillage and contamination and any protective tape. Where required, prime or seal all surfaces of rebate, bead and glass in contact with bedding material. Allow to dry. Use cleaners, primers and sealers that are compatible with the glazing system and follow the manufacturer's sitework instructions.

COMMENTARY. *The general requirements for priming, sealing or other preparation are to provide surfaces suitable for adhesion, setting or curing as the case may be for the variety of bedding and sealant materials.*

2.2.3.2 Wood priming and sealing

Prime softwood rebates, and beads where used, if not already primed or when the primer applied has been damaged or weathered away. Allow to dry before glazing.

If not already sealed, seal rebates and beads of hardwood with one or two coats of sealer as directed and in accordance with the sitework instructions of the manufacturer of the bedding material to be used. Allow to dry between coats and before glazing.

COMMENTARY. *Primer for putty type 0 (see Table 1) is used to reduce the absorbency of softwoods but not to the point that it prevents or excessively retards setting of the putty. See 2.2.6.2.*

2.2.3.3 Metals

First check with the bedding manufacturer if degreasing, priming or sealing is advised for the particular situation and choice of materials, then apply in accordance with the manufacturer's sitework instructions.

Check that any primer that has been applied is sufficiently dry before glazing. Test with a rag and white spirit; primer is sufficiently dry if none is removed when lightly rubbed with white spirit on the rag.

Similarly check galvanized steel priming and then use putty type 1 (see Table 1).

COMMENTARY. Rebates do not have to be primed to receive putty if galvanized protection is sound and is dulled by natural weathering or has been passivated.

2.2.3.4 Concrete

Carefully inspect concrete surfaces and remove all loose and weak friable material by wire brushing or mechanical abrasion and clean away particles. Make good to blow holes and like imperfections with an external quality filler or cement mortar with a polymer additive and allow to dry. Prepare and prime/seal rebate, bead and glass contact surfaces to compounds and sealants with cleaners and primers supplied by the manufacturer of the particular sealant or compound used and in accordance with the manufacturer's sitework instructions.

2.2.3.5 Plastics

Prepare plastics surrounds in accordance with the frame manufacturer's sitework instructions.

Table 1 — Bedding and sealing materials

Type	Description	Basic components	Uses	Wind pressure resistance (single glazing) (see note 1)	Comments
0	Linseed oil putty	Linseed oil	Bedding and fronting	Up to 2 000 N/m ²	Paint protection essential. Life dependent on paint maintenance.
1	Metal casement putty	Drying oils	Bedding and fronting	Up to 2 000 N/m ²	Paint protection essential. Life dependent on paint maintenance.
2a	Non-setting compound	Oils, plasticizers, polymers	Bedding glass and beads	Up to 2 300 N/m ²	Paint protection not essential, but painting prolongs life. Inspect and maintain as necessary. Sealer required for porous surround.
2b	Preformed mastic tape (non-load bearing)	Oils, plasticizers, polymers	Bedding	Up to 2 300 N/m ²	Limited load bearing capability. Use with distance pieces.
3	Gun-grade sealant, solvent release type	Synthetic rubber and plasticizers	Heel bead or bedding beads	Up to 2 000 N/m ²	
4a	Preformed mastic tape load bearing	Synthetic rubber and plasticizers	Bedding glass	Generally exceeds 2 300 N/m ² , and varies according to design and materials	Effective drainage is generally required for insulating glass units and laminated glass.
4b	Solid sections	Vulcanized synthetic rubber or PVC	Bedding glass	Generally exceeds 2 300 N/m ² , and varies according to design and materials	Effective drainage is generally required for insulating glass units and laminated glass. Life varies according to materials: consult manufacture.
4c	Expanded section	PVC, or neoprene, or polyurethane	Bedding glass	Generally exceeds 2 300 N/m ² , and varies according to design and materials	
5a	Curing gun-grade sealant, one-part	Solvent release acrylic sealants, polysulphide, silicone, polyurethane	Heel bead and capping	Generally exceeds 2 300 N/m ² , and varies according to design and materials	Cure may be slow owing to concealed position of sealant.
5b	Curing gun-grade sealant, two-part	Polyurethane, polysulphide, flexibilized epoxide	Heel bead and capping	Generally exceeds 2 300 N/m ² , and varies according to design and materials	cure is unaffected by being in concealed positions.
6	Two-part rubberizing compound	Synthetic rubber, plasticizers	Bedding glass and beads	Generally exceeds 2 300 N/m ² , and varies according to design and materials	Compound is load bearing when cured.

Table 1 — Bedding and sealing materials (*concluded*)

Type	Description	Basic components	Uses	Wind pressure resistance (single glazing) (see note 1)	Comments
7	Reinforced mastic tap	Foil or fabric, coated or impregnated with mastic compound	covering joints	Up to 1 000 N/m ²	Generally used as a repair system, lapped over glass and frame.
8a	Extruded sections structural gaskets	Vulcanized synthetic rubber	Bedding glass	Varies according to design and materials	Effective drainage is generally required for insulating glass units and laminated glass.
8b	Extruded sections non-structural gaskets	Vulcanized synthetic rubber or PVC	Bedding glass	Varies according to design and materials	Effective drainage is generally required for insulating glass units and laminated glass. Joint should be sealed.
9a	Self-adhesives fabric tape	Cotton or other fibre	Bedding glass	Internal use only	
9b	Self-adhesives velvet tape	Velvet	Bedding glass	Internal use only	
9c	Extruded mastic tape	Vegetable oils	Bedding glass	Internal use only	
9d	Fire resisting tape	Calcium silicate or other suitable materials	Bedding	Normally internal use only	Used in glazing of fire doors and partitions usually incorporating a suitable mastic sealant.
10	Fire resisting channel	Calcium silicate or other suitable materials	Bedding	Normally internal use only	Used in glazing of fire doors and partitions usually incorporating a suitable mastic sealant.
NOTE 1 These figures refer to situations where the glazing materials are used individually. Higher limits may be accepted when various glazing materials are used in combination.					
NOTE 2 For large panes, lower wind loading limits may apply and the glazing material manufacturer should be consulted.					
NOTE 3 For insulating glass units, lower wind loading limits may apply and the insulating glass manufacturer and the glazing material manufacturer should be consulted.					