

Chapter 7 . . . GENERAL ADHESIVES, AND GLAZING AND SEALING COMPOUNDS

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Introduction

1. This chapter contains information on various adhesives and glazing and sealing compounds, which are classified according to the purpose for which they are used. Some general notes concerning all the materials are followed by details of the method of application of each.

Adhesives

2. Adhesives are used for affixing rubber, fabric, and similar materials to themselves and to metal. The following are generally used:—

- (i) Bostik-C adhesive compound (Stores Ref. 33C/605).
- (ii) Holdtite general purpose adhesive (Stores Ref. 33C/685).

Compounds

3. Various forms of compounds are available and should be used only for those purposes for which they are intended, as follows:—

- (i) GASKET SEALING COMPOUNDS.—These are used for coating gaskets to ensure that good

joints are formed. The following compounds are available:—

- (a) Grafix sealing compound (Stores Ref. 33C/682).
- (b) Engine jointing compound (Stores Ref. 33C/525/524).

(ii) WINDSCREEN GLAZING COMPOUNDS.—

The compounds used for glazing windscreens are as follows:—

- (a) Bostik-B glazing compound (Stores Ref. 33C/591).
- (b) Nobel 153-522 glazing compound (Stores Ref. 33C/686).
- (c) BB pressure plastic No. 810 (Stores Ref. 33C/889).

(iii) SHELL PLATE SEALING COMPOUNDS.—

These compounds are used on the overlapping surfaces of metal-to-metal joints such as on seaplane floats, etc., to make them watertight.

- (a) Bostik Cement No. 321 (Stores Ref. 33C/594).

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(b) Pigmented varnish jointing compound (Stores Ref. 33C/885/886).

(iv) PRESSURE CABIN SEALING COMPOUNDS.—

These compounds are applied to the inner or pressure side of the cabin only, and are available as follows:—

(a) Pressure cabin compound (Medium) (Stores Ref. 33C/779/780).

(b) Pressure cabin compound (Thick) (Stores Ref. 33C/781/782).

(c) Pressure cabin compound (Thin). (Stores Ref. 33C/783/784).

General procedure

Cleanliness

4. The vital importance of absolute cleanliness in the application of these materials cannot be over-emphasized. An adhesive is no stronger than the surface to which it is applied. Thus, if it is applied on a film of dirt, the strength of the ensuing bond is no greater than the strength of the dirt on the material. It is essential, therefore, that before any work is commenced, the surfaces should be cleaned as follows:—

(i) Carefully remove every trace of dirt, oil, grease, paint, or old compound.

(ii) If a liquid such as petrol or a degreasing liquid is used for cleaning, dry the surfaces thoroughly with a soft clean cloth.

(iii) Do not touch or handle a cleaned surface. Even the slight trace of grease which is left by the finger tips would be sufficient to spoil the joint.

Application conditions

5. The application of these compounds and adhesives should be effected in a good light, and there should be sufficient room to enable every part of the job to be reached comfortably. They should preferably be applied at a workshop temperature of not less than 65°F. At temperatures much below this, difficulty may be experienced in application. *Proximity to a naked flame is extremely dangerous and must be avoided.*

Protection against fuel and oil

6. If protection is required against the action of fuel or oil, or both, the joint should be painted with Boscolyn lacquer No. 103 or 104 (Stores Ref. 33C/590 or 33C/668). Boscolyn lacquer No. 103 is intended for internal use, and the No. 104 for external use as it is aluminium pigmented. Two or three coats should be applied, each one being allowed to dry thoroughly before the next is added. These lacquers should on no account be used for

adhesive purposes. They are intended solely for protecting joints against oil and fuel, and are useless for any other purpose.

Care of brushes

7. All brushes must be thoroughly cleaned and dried after use, otherwise they may be rendered useless for future work. Bostik cleaner (Stores Ref. 33C/589) is suitable for cleaning brushes.

Bostik materials

Method of application

8. Details of the methods of using the three Bostik materials are available in Chap. 6 of this Section and also on A.D.2487.

Holdtite general purpose adhesive

Method of application

9. This adhesive is used in the same way as Bostik-C, but requires only 15 minutes drying time, compared to the 30 minutes required for Bostik-C.

Gasket sealing compounds

Method of application

10. The liquids should be thoroughly stirred or shaken before use and should be kept well mixed during the period of application. A coat of the compound should be applied with a clean brush to each of the mating surfaces and to each side of the gasket and should be allowed to dry. A second liberal coat should then be applied to the underside of the gasket, which should immediately be placed in position. A second liberal application should then be made to the upper surface of the gasket. The bolts should be dipped into the compound or the studs coated and the joint immediately bolted up.

Nobel 153-522 glazing compound

Method of application

11. The compound should be applied with a palette or other suitable knife and the same precautions should be observed as for Bostik-B. Irregular dabs of the compound are useless, and a continuous bead must be applied.

BB pressure plastic No. 810

Description

12. The pressure plastic is a blue compound similar to putty in appearance. It can be moulded by hand and will stick to metal and other surfaces. The plastic is used for various

purposes—for instance, as a filler for glazing channels, especially where heavy bullet-proof windscreens are to be mounted. It forms a more or less resilient bead for the glass block and is used as a substitute for rubber channelling. It is also used as a filler for other similar deep or wide crevices, such as the transport joints found in certain wooden aircraft.

Preparation of surface

13. Any surface to which the plastic is to be applied should be clean and dry. Oil, grease, mud, and other dirt should be scraped away and the surface wiped and then well scoured with waste moistened in petrol. Any parts of the surface which cannot be reached with the waste should be cleaned with a small stiff brush dipped in petrol. Particles of grit may be removed from surfaces to be cleaned by a small pad moulded from the plastic. This pad, however, must not be used afterwards in the actual application.

Preparation of plastic

14. Before the plastic is used it should be well kneaded. This is simplified if the plastic is softened by being immersed in hot water for 15 to 20 minutes. After it is kneaded, the material should be rolled out into a strip of the required thickness. A small metal roller kept wet with water should be used for this purpose.

Method of application

15. To ensure good adhesion, a thin layer of the plastic should first be applied to the cleaned surfaces. This layer should be pressed on rather than spread over the surface. The remainder of the plastic should be built up on or around the component by progressive small additions, each addition being pressed and not spread on to the previous one. Any small gaps which may be left should be filled in with small pieces of the compound pressed into position with a spatch knife. Finally, any surplus or untidy compound should be trimmed away with a sharp wet knife.

Mounting glazing panels in cast frames

16. The plastic may be used for mounting glazing panels on cast frames where no rubber glazing channel is fitted. The plastic should be prepared as described in para. 15 and strips of suitable dimensions pressed on the frame as shown at A, fig. 1. The inner glazing frame, see sketch B, should then be placed in position and bedded well down into the plastic.

17. Further prepared strips of plastic should be pressed on the inner glazing frame and the

glazing panels should be fitted as shown at C. The panels should be bedded well down into the plastic, strips of which should be pressed along the surfaces of the panels and into any cavities, as shown at D.

18. Finally, the outer glazing frame should be placed in position and the assembly bolted up, see sketches E and F. This will cause the plastic to extrude from the joints and the surplus should be neatly trimmed away with a sharp wet knife.

Mounting and sealing glazing panels

19. In the following examples of glazing, the pressure plastic is employed as the foundation, which is finally sealed by a layer of Bostik-B glazing compound.

20. The plastic should be prepared as described in para. 14 and a strip of suitable dimensions, see A, fig. 2, pressed lightly on the glazing frame. A bead of Bostik-B should be extruded liberally along the outer edge of the plastic as shown in sketch B and the glazing panel should be bedded down on the plastic. The panel should be so fitted that the Bostik-B forms a complete seal as at C. After 24 hours, any surplus Bostik-B may be trimmed off with a sharp wet knife.

21. Two similar examples of glazing and sealing are shown in fig. 3. Where the assembly is similar to that illustrated at A the fillet of Bostik-B is applied after the glazing panel has been pressed into the plastic. Where a cover plate is used as at B, the plate should be fitted before the strips of plastic are attached to the glazing panel. This is necessary so that the operator may judge the amount of plastic required. After the plastic has been attached to the panel, the bead of Bostik-B should be inserted and the cover plate mounted.

22. The method of mounting glazing panels on glazing strip is illustrated in fig. 4. A strip of plastic, prepared as described in para. 14, should be laid along the glazing strip, as at A, and pressed down lightly. The panels should be placed in position and bedded down into the plastic as shown at B. This causes the plastic to be forced up between the panels and it should if necessary be trimmed away with a sharp wet knife to about halfway up the edge of the panel. A gouge or drill should be passed through the bolt-holes to clear away the plastic so that the bolts can be inserted easily.

23. A continuous bead of Bostik-B should be extruded along the centre gap so that it overflows and covers the upper edge of the panels as shown at C. The cover strip should be

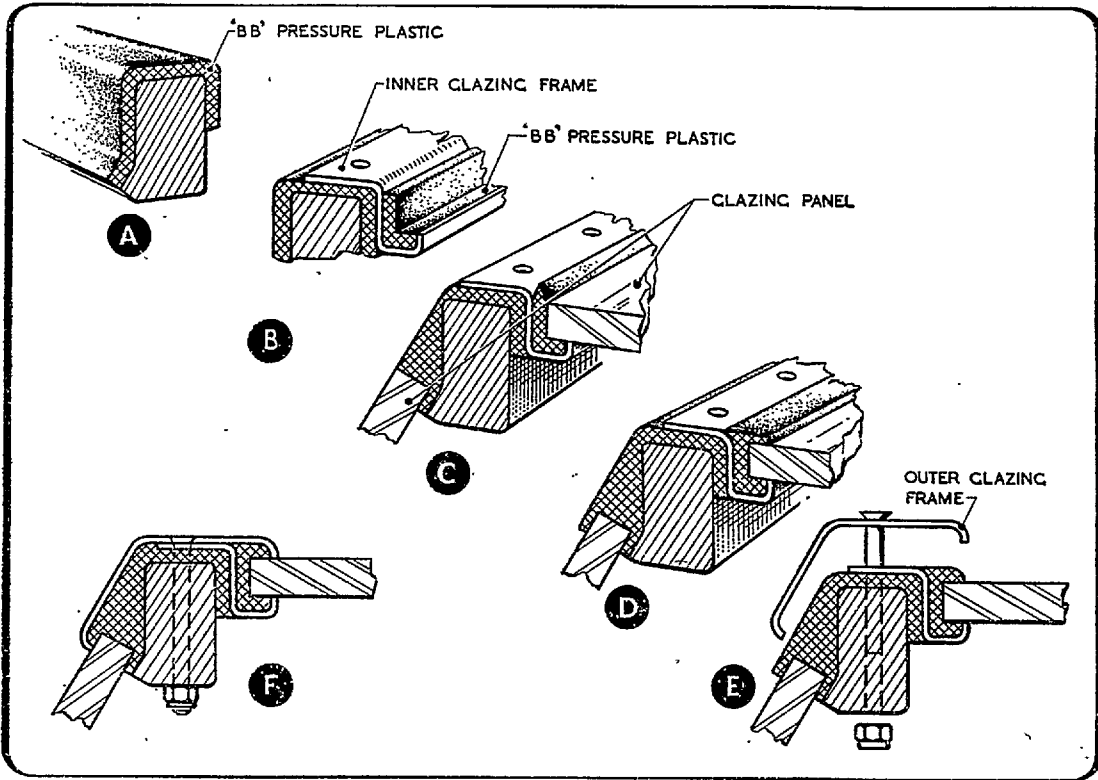


Fig. 1.—Mounting glazing panels in cast frames

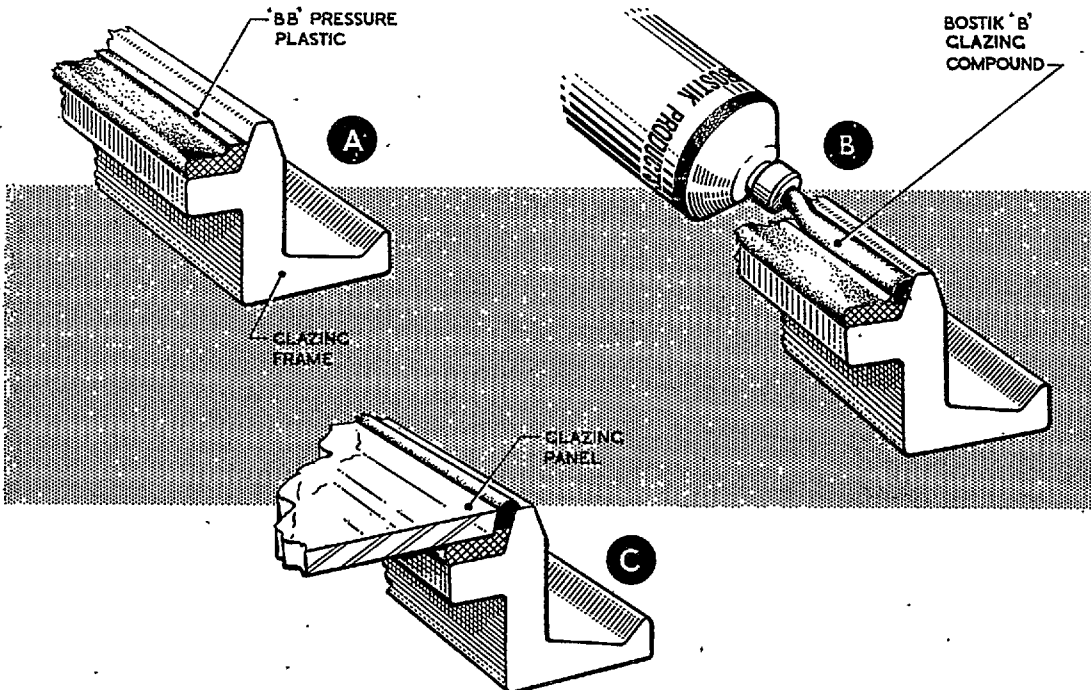


Fig. 2.—Mounting and sealing glazing panels

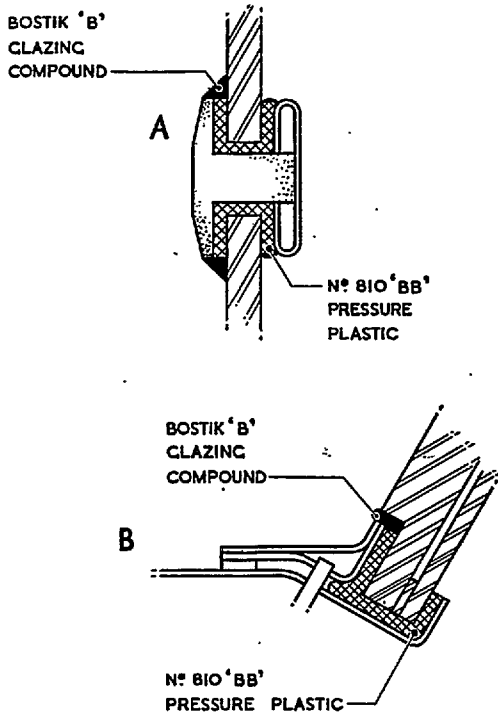


Fig. 3.—Further examples of mounting and sealing

placed in position and the bolts inserted and tightened so that the cover strip is pressed down on to the glazing compound, see sketch D. After 24 hours, the surplus compound should be trimmed off with a sharp wet knife.

Shell plate sealing compounds

Method of application

24. These compounds should be freely applied with a stiff bristle brush to each of the borders forming the mating surfaces of the joint to be made, and the parts should be immediately bolted together.

Pressure cabin sealing compounds

Method of application

25. Pressure cabin sealing compounds are applied to prevent the leakage of air under pressure through the joints of the pressure cabin to the rarefied external atmosphere. The compounds should only be used on the inner or pressure side of the cabin. They are useless if applied to the outside of the cabin because they will be blown off the joint as soon as air pressure is applied. The methods of application adopted for the various types of joints are shown in fig. 5.

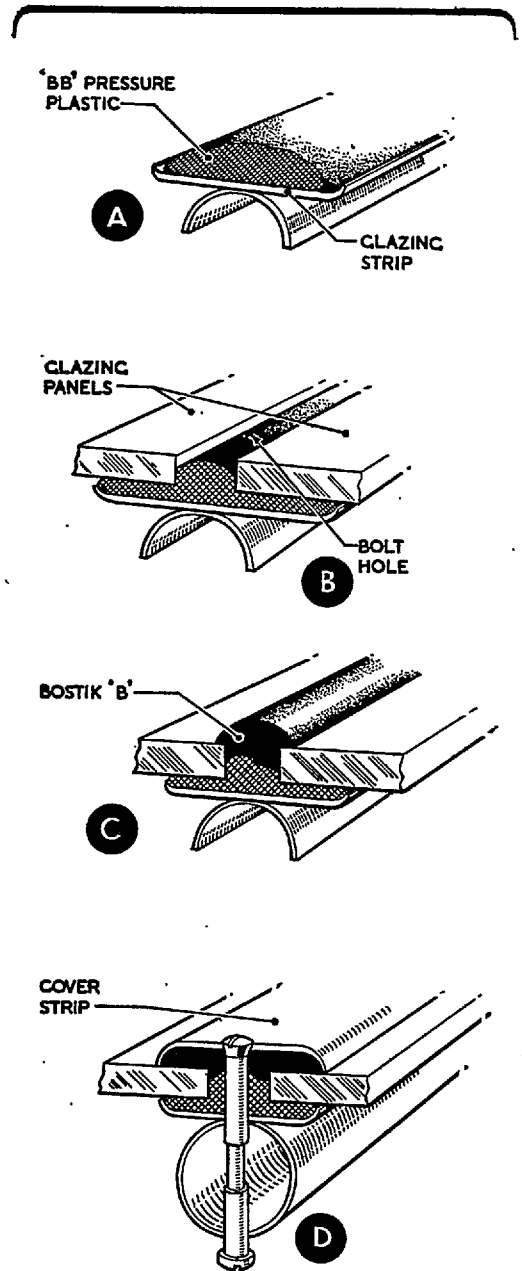


Fig. 4.—Mounting glazing panels on glazing strip

26. Leaks may occur at stringers, seams, rivets and other joints. When the leak has been located, the old compound should be cleared away and the metal surfaces round and near the leak thoroughly cleaned and dried. Containers

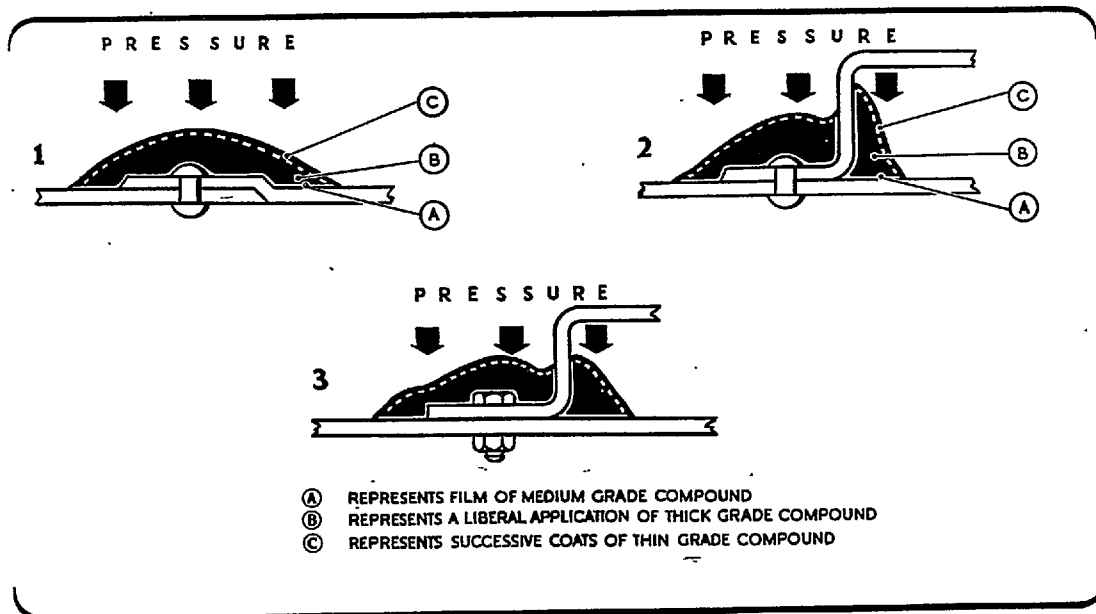


Fig. 5.—Typical applications of compounds to pressure cabin joints

of the three grades of compound should be ready to hand, with a clean stiff bristle brush for each. The compounds should be thoroughly stirred before application.

27. A uniform film of the medium grade compound should first be applied along the whole length of the seam, the coating being extended for an inch each side and at the ends. This film should be allowed to dry and a second coat applied on top of the first.

28. A liberal fillet of the thick grade compound

should next be applied along and into the seam, and this in turn should be allowed to dry. The joint should be finished by successive coats of the thin grade compound over those already applied, each coat being allowed to dry before the next is added. In this way, the material is gradually built up on top of the joint and until all the interstices are completely filled and the original lines of the joint are completely hidden under a smooth surface of compound. For all three grades it will be found that the best results are obtained if the brush is used with a stippling instead of a painting motion.



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