

**Ministry of Defence
Defence Procurement Agency, ADRP2
Abbey Wood
Bristol
BS34 8JH**

OBSOLESCENCE NOTICE

All DTD specifications were declared obsolescent from 1st April 1999. All DTD 900 series approvals also lapsed at that time. The standards will no longer be updated but will be retained as obsolescent documents to provide for the servicing of existing equipment.

Further Guidance

The aim in declaring the specifications obsolescent is to recognise that the documents are not being updated and thus should be used with care by both purchaser and supplier. For example, a specification could contain valid technical information but may also contain type approval clauses that contradict procurement policy and/or use materials that do not comply with environmental legislation. The obsolescent specification can still be used as a basis for a purchase provided that the supplier and purchaser agree suitable changes to the specification within the purchase order/contract.

For the DTD 900 system, each specification has provided an MoD approved material and process. For these items, the declaration of obsolescence will constitute the termination of both the extant MoD approval and the continuing MoD assessment that had underpinned those approvals. Again, the technical content of the document remains valid and can be used by both purchaser and supplier as a basis for a contract but an acceptable (to the parties) approval/assessment procedure would be required.

**Aerospace Material Specification
GLAZING COMPOUNDS**

Delete Note 2

Clause 4 Drying Time

delete present clause

insert “The material shall be free from tack in not more than 45 minutes when tested by the method described in Appendix II.”

Clause 8 Resistance to De-Icing Fluids, line 2

add “. . . except that a slight loss of gloss shall be permissible.”

Appendix II, line 6

delete “. . . for 6 minutes . . .”

insert “. . . for 45 minutes . . .”

Appendix II, line 7

delete “. . . by method No. 7 of Specification DEF/1053.”

insert “. . . by the method given in part C2 of BS 3900.”

Appendix III, line 3

delete “. . . by method No. 13 of Specification DEF/1053 . . .”

insert “. . . by the method given in part E1 of BS 3900 . . .”

Appendix 4, line 4

delete “. . . by method No. 13 of Specification DEF/1053.”

insert “. . . by the method given in part E1 of BS 3900.”

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Aircraft Material Specification
GLAZING COMPOUND

NOTE 1. - This specification is one of a series issued by the Ministry of Supply either to meet a limited requirement not covered by any existing British Standard Specification or to serve as a basis for inspection of materials, the properties and uses of which are not sufficiently developed to warrant submission to the British Standards Institution for standardisation.

NOTE 2. - Specification D.E.F./1053 Standard Methods of Testing Paint Varnish Lacquer and Related Products is published for the Ministry of Defence by H.M.S.O. and is on sale to the public.

1. **Scope.** - The material shall be suitable for the glazing of windows and windscreens on pressurised aircraft.
2. **Description.** - The material shall consist of a thick black solution or paste of compounded natural rubber in light petroleum solvent. The consistency shall be such that the material may readily be extruded from collapsible metal tube containers.
3. **Solid Content.** - The material shall contain not less than 70 per cent nor more than 76 per cent of non-volatile solid matter when tested by the method described in Appendix I.
4. **Drying Time.** - The material shall be free from tack in not more than *45 mins* when tested by the method described in Appendix II.
5. **Flexibility at Low Temperature.** The material shall not crack or become detached from the metal panel when tested by the method described in Appendix III.
6. **Resistance to Accelerated Ageing.** - The material shall not crack or become detached from the metal plate when tested by the method described in Appendix IV.
7. **Freedom from Water-soluble Corrosive Impurities.** - The material shall contain not more than 0.1 per cent by weight of chloride (calculated as Cl) or more than 0.1 per cent by weight of sulphate (calculated as SO₄) when determined by the method described in Appendix V (a). The pH value of an aqueous extract of the material shall be not less than 6 nor more than 8 when tested by the method described in Appendix V (b).
As an alternative to the determination of sulphate and chloride the resistivity of an aqueous extract may be determined by the method described in Appendix IV (c). The resistivity shall be not less than 8,500 ohm-cm.
8. **Resistance to De-icing Fluids.** - The material shall be unaffected by alcohol when tested by the method described in Appendix VI(a).
The material shall be unaffected by De-icing Fluid when tested by the method described in Appendix VI(b).
9. **Freedom from crazing Action.** - The material shall be free from crazing action on polymethyl methacrylate sheet when tested by the method described in Appendix VII.
10. **Keeping Qualities.** - The keeping qualities of the material shall be such that, when stored in its original sealed containers the material shall retain the properties detailed above for not less than the following periods after the date of delivery:-
(a) two years in temperate climates.
(b) one year in tropical climates.

APPENDIX I

Method for the Determination of Solids Content

Weigh approximately 5 grams of the material accurately (to the nearest 0.001 gram) into a flat bottomed shallow dish. Dilute with 5 ml. of benzene, A.R. quality. Heat the dish and contents in an oven at 100°C. ±2°C for 3 hours, cool to room temperature and reweigh.

APPENDIX II

Method for the Determination of Drying Time

A panel of smooth (i.e. unabraded) hard aluminium to B.S. 1470, grade S.I.C-H of 22 S.W.G. shall be cleaned in trichlorethylene to B.S. 580 Type C and rubbed dry with a clean dry cloth. The panel shall be fitted with detachable $\frac{1}{2}$ inch wide metal strips, $\frac{1}{16}$ inch thick, parallel to the long edges. A bead of the compound shall be extruded along the central longitudinal axis of the panel and quickly adjusted to $\frac{1}{16}$ inch thickness by means of a scraper and the strips.

The panel shall be kept in a horizontal position at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 6 minutes with the film uppermost. It shall then be tested for surface dryness by method No. 7 of Specification DEF/1053.

APPENDIX III

Method for the Determination of Flexibility

A panel of smooth (i.e. unabraded) soft aluminium to B.S.1470, grade S.I.C-O of 30 S.W.G. shall be cleaned and coated with the material as described in Appendix II. The panel shall be allowed to dry at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 72 hours. It shall then be tested for resistance to bending by Method No. 13 of Specification DEF/1053 using a mandrel of $\frac{3}{4}$ inch diameter. The chamber shall be kept closed during the test and shall be maintained at -40°C.

APPENDIX IV

Method for the Determination of Resistance to Accelerated Ageing

A panel coated with the material shall be prepared by the method described in Appendix III and shall be allowed to dry at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ in a horizontal position for 72 hours. The panel shall then be aged for 168 hours at 70°C. and conditioned at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$, according to the Oven Method of B.S. 903. It shall then be bent double round a mandrel $\frac{1}{4}$ inch diameter at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ by Method No. 13 of Specification DEF/1053.

APPENDIX V

Method for the Preparation of an Aqueous Extract and the Determination of Water-soluble

Corrosive Impurities

Beads of the material, approximately $\frac{1}{16}$ inch thick, shall be allowed to dry at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for at least 72 hours. 15 grams of the dried material shall be cut into pieces $\frac{1}{2}$ inch square and boiled for 1 hour in 300 ml. of distilled water in a chemically resistant glass flask fitted with a reflux condenser having a ground glass connection. The flask shall then be stoppered and allowed to cool to room temperature.

- (a) A portion of the aqueous extract shall be rapidly decanted for determination of pH value at 20°C. This value shall be determined electrometrically with a glass electrode or colourimetrically using a comparator and standard buffer tubes arranged to compensate for any colouration originally present in the extract.
- (b) Portions of the aqueous extract shall be used for the determination of chlorides and sulphates. In case of dispute, chlorides shall be determined gravimetrically by precipitation as silver chloride after acidifying with nitric acid and filtering if necessary, and sulphate by precipitation as barium sulphate after acidifying with hydrochloric acid and filtering if necessary.
- (c) The temperature of the aqueous extract shall be adjusted to 20°C. and a portion decanted rapidly for measurement of electrical resistivity in a suitable cell with an alternating current bridge. The bridge shall be calibrated by means of a test made on a solution of known resistivity (e.g. N potassium

chloride solution). A blank determination shall be made on the distilled water and the extraction apparatus by boiling 100 ml. of distilled water for 1 hour in the apparatus. The flask shall then be stoppered and the contents cooled to 20°C. The resistivity of the blank shall be not less than 500,000 ohm-cm.

APPENDIX VI

Method for the Determination of Resistance to De-icing Fluids

- (a) A panel coated with the material shall be prepared by the method described in Appendix III and shall be allowed to dry at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ in a horizontal position for 72 hours. It shall then be immersed in Ethyl Alcohol to B.S. 507 at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 24 hours. It shall then be examined visually and manually. It shall again be examined after removal from the liquid and allowing to dry at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 24 hours.
- (b) A panel coated with the material shall be prepared and dried as described at (a) above. It shall then be immersed in Propellor De-icing Fluid to D.T.D. 406A at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 24 hours. It shall then be examined visually and manually.

APPENDIX VII**Method for the Determination of Freedom from Craze Action**

A strip of clear polymethyl methacrylate, to DTD 5544 6 inches long and 1 inch wide, shall be cut from a flat sheet of the cast material, $\frac{1}{8}$ inch thick. The protective paper shall be removed and the strip freed from any residual adhesive by soaking in distilled water at room temperature for approximately 30 minutes. The strip shall then be rinsed with distilled water, allowed to dry in air at room temperature and lightly wiped with a clean, dry polishing cloth.

The strip shall then be stressed by clamping it lightly at each end so that it is bent flatwise round a suitable mandrel of radius 30 inches. A liberal application of the material shall be made to the outer (tension) side of the strip and the assembly shall be kept at $20^{\circ}\text{C.} \pm 2^{\circ}\text{C.}$ for 24 hours.

The strip shall then be removed from the clamps and the mandrel. The material shall be removed from the strip, exposing the original surface. Solvents shall not be used for this purpose. The strip shall be examined visually by transmitted light, at varying angles of incidence, for crazing which appears in a direction perpendicular to the applied stress.

Approved for Issue,

H. SUTTON

Director of Materials Research and Development (Air)
