

BRITISH STANDARD 3280 : 1960

[UDC 668.447 : 667.621]
CONFIRMED MAY 1991

**SPECIFICATION FOR
HAND-MADE
SHELLAC**

SPECIFICATION FOR HAND-MADE SHELLAC

B.S. 3280 : 1960

BRITISH STANDARDS INSTITUTION

Incorporated by Royal Charter

THIS BRITISH STANDARD, having been approved by the Pigments, Paints and Varnishes Industry Standards Committee and endorsed by the Chairman of the Chemical Divisional Council, was published under the authority of the General Council on 31st October, 1960.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 3000, indexed and cross-indexed for reference, together with an abstract of each standard, will be found in the Institution's Yearbook.

This standard makes reference to the following British Standards:

B.S. 410 Test sieves.

B.S. 576 Acetic acid.

B.S. 1957 Presentation of numerical values (fineness of expression; rounding of numbers).

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following B.S.I. references relate to the work on this standard:
Committee reference PVC/4 Draft for comment A(PVC) 3702

CONTENTS

Co-operating organizations	Page 5
Foreword	6

SPECIFICATION

MANDATORY CLAUSES

1. Scope	7
2. Appearance and colour	7
3. Sample	7
4. Matter insoluble in hot alcohol	7
5. Orpiment	8
6. Rosin	8
7. Expression of analytical results	8

OPTIONAL CLAUSES

8. Colour index	8
9. Volatile matter	8
10. Matter soluble in water	8
11. Non-volatile matter soluble in cold alcohol	9
12. Ash	9
13. Grit	9
14. Wax	9
15. Flow	10
16. Life under heat	10
17. Acid value	10
18. Iodine value	10
19. Arsenic	10
20. Lead	10

APPENDICES

A. Sampling	11
B. Method for the determination of matter insoluble in hot alcohol	11
C. Method for the detection of orpiment	15
D. Method for the detection of rosin (Halphen-Hicks)	15
E. Method for the determination of colour index	16

	Page
F. Method for the determination of volatile matter	17
G. Method for the determination of matter soluble in water	18
H. Method for the determination of non-volatile matter soluble in cold alcohol	18
I. Method for the determination of ash	19
J. Method for the determination of grit	20
K. Method for the determination of wax	21
L. Method of conditioning for the determination of flow and life under heat	23
M. Method for the determination of flow	23
N. Method for the determination of life under heat	26
O. Method for the determination of acid value	28
P. Methods for the determination of iodine value	29
Q. Method for the determination of arsenic	31
R. Methods for the determination of lead	35

CO-OPERATING ORGANIZATIONS

The Pigments, Paints and Varnishes Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Admiralty
 Air Ministry
 Association of British Chemical Manufacturers
 *Board of Trade
 British Colour Makers' Association
 British Railways, The British Transport Commission
 Building Industry Distributors
 Crown Agents for Oversea Governments and Administrations
 D.S.I.R.—Building Research Station
 *D.S.I.R.—Laboratory of the Government Chemist
 Incorporated Institute of British Decorators
 Lead Oxide Convention
 London County Council
 *Ministry of Aviation
 Ministry of Works
 National Paint Federation
 *Oil and Colour Chemists' Association
 Paint Manufacturers' and Allied Trades Association
 Post Office
 Research Association of British Paint, Colour and Varnish Manufacturers
 Royal Institute of British Architects
 *Society of British Paint Manufacturers Ltd.
 Titanium Pigment Manufacturers' Technical Committee
 White Lead Convention
 Zinc Development Association
 Zinc Pigment Development Association

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the Committee entrusted with the preparation of this British Standard:

British Electrical and Allied Industries Research Association
 British Electrical and Allied Manufacturers Association
 British Hat and Allied Feltmakers Research Association
 London Chamber of Commerce, Incorp.
 London Shellac Trade Association
 Society for Analytical Chemistry
 Tropical Products Institute
 Individual manufacturers

BRITISH STANDARD SPECIFICATION FOR HAND-MADE SHELLAC

FOREWORD

During recent years, lac has been studied internationally through the International Organization for Standardization (ISO), by various Research Institutions and Trade Organizations in different parts of the world.

It has been decided to split the subject matter of B.S. 954, the previous British Standard for all types of lac other than bleached lac, into three parts, covering seedlac, hand-made shellac and machine-made shellac, and to publish these as separate documents. Advantage has been taken of the work done at the ISO level, and the Committee responsible for the preparation of this standard desires to acknowledge its indebtedness to the sources of information thus utilized.

The usual trade descriptions of the various grades of shellac, as recognized in the United Kingdom, have been used throughout. These trade descriptions are well known internationally, and are recognized standards of the London Shellac Trade Association. An attempt has been made, however, to correlate these with the designations of the Recommendations of the International Organization for Standardization: the approximate correspondence for hand-made shellac is as follows:

U.K. grading	Approximate ISO grading
Kusmi Lemon	Special
Lemon No. 1	A
Lemon No. 2	B
Standard No. 1	C
Pure T.N.	D
No equivalent	E

The mandatory requirements included in this specification are those for appearance and colour, matter insoluble in hot alcohol, absence of rosin and absence of orpiment, and methods of test are given for these. Also included are optional clauses and methods of test, operative only by agreement between purchaser and vendor, for colour index, volatile matter, ash, grit, non-volatile matter soluble in cold alcohol, matter soluble in water, flow, life under heat, acid value, iodine value, wax, lead and arsenic.

It will be noted that no specific requirement is given for the absence of visible impurities. This is considered to be covered by the requirements of Clauses 2 and 4.

SPECIFICATION

MANDATORY CLAUSES

SCOPE

1. This British Standard specifies requirements for hand-made shellac, the product obtained by refining seedlac by a process of filtration in the molten state, as practised traditionally in Indian villages.

Five grades are specified as follows:

Kusmi Lemon
Lemon No. 1
Lemon No. 2
Standard No. 1
Pure T.N.

APPEARANCE AND COLOUR

2. The material shall be in the form of flakes, sheets or buttons, or any other form agreed between purchaser and vendor. The appearance and colour of the material shall be not inferior to those of an agreed sample, when judged by visual examination.

SAMPLE

3. For the purpose of examination under this specification samples shall be drawn, parted, and prepared in the manner described in Appendix A. Only original unopened packages of shellac shall be sampled.

Not less than 10 per cent of the packages, selected at random from each lot of not more than 200 packages, shall be sampled.

MATTER INSOLUBLE IN HOT ALCOHOL

4. The material shall not contain more than the following specified limits of matter insoluble in hot alcohol, when tested in the manner described in Appendix B. By agreement between purchaser and vendor this limit may be relaxed but under no circumstances shall it exceed the relaxed limit.

Grade	Limit	Relaxed limit
per cent by weight		
Kusmi Lemon } Lemon No. 1 }	1.0	2.0
Lemon No. 2 } Standard No. 1 }	1.5	2.5
Pure T.N.	2.5	3.5

ORPIMENT

5. The material shall not show the presence of orpiment when tested in the manner described in Appendix C.

ROSIN

6. The material shall not show the presence of any rosin when tested in the manner described in Appendix D.

EXPRESSION OF ANALYTICAL RESULTS

7. The results of analyses performed in accordance with the appendices to this standard shall be expressed to the number of significant figures indicated in the specification requirements. The principles embodied in B.S. 1957, 'Presentation of numerical values (fineness of expression; rounding of numbers)', apply to such results.

OPTIONAL CLAUSES

COLOUR INDEX

8. When agreed between purchaser and vendor, the colour index of the materials, when determined in the manner described in Appendix E, shall not exceed the following limits:

Grade	Limit
Kusmi Lemon	6.0
Lemon No. 1	8
Lemon No. 2	10
Standard No. 1	15
Pure T.N.	22

VOLATILE MATTER

9. When agreed between purchaser and vendor, the material shall not yield more than 2.0 per cent by weight of volatile matter when tested in the manner described in Appendix F.

MATTER SOLUBLE IN WATER

10. When agreed between purchaser and vendor, the material shall not contain more than 0.5 per cent by weight of matter soluble in water when determined in the manner described in Appendix G.

NON-VOLATILE MATTER SOLUBLE IN COLD ALCOHOL

11. When agreed between purchaser and vendor, the material shall contain not less than the following amounts of non-volatile matter soluble in cold alcohol when tested in the manner described in Appendix H:

Grade	Limit
	per cent by weight
Kusmi Lemon } Lemon No. 1 }	92.0
Lemon No. 2 } Standard No. 1 }	91.0
Pure T.N.	90.0

ASH

12. When agreed between purchaser and vendor, the material shall not leave more than the following amounts of ash when tested in the manner described in Appendix I.

Grade	Limit
	per cent by weight
Kusmi Lemon } Lemon No. 1 }	0.5
Lemon No. 2 } Standard No. 1 }	0.8
Pure T.N.	1.0

GRIT

13. When agreed between purchaser and vendor, the material shall not contain grit in excess of the percentage agreed between purchaser and vendor when determined in the manner described in Appendix J.

WAX

14. *a.* When agreed between purchaser and vendor, the material shall not contain more than 5.5 per cent by weight of wax, determined in the manner described in Appendix K.

b. Further requirements, for wax in shellac for electrical uses, may be inserted here.

FLOW

15. When agreed between purchaser and vendor, the material, previously conditioned as described in Appendix L, shall have a flow within an agreed range when tested in the manner described in Appendix M.

LIFE UNDER HEAT

16. When agreed between purchaser and vendor, the material, previously conditioned as described in Appendix L, shall give an agreed polymerization time when tested in the manner described in Appendix N.

ACID VALUE

17. When agreed between purchaser and vendor, the acid value of the material, determined in the manner described in Appendix O, shall not exceed an agreed figure.

IODINE VALUE

18. When agreed between purchaser and vendor, the iodine value of the material determined by one of the methods described in Appendix P, shall not exceed an agreed figure.

ARSENIC

19. When agreed between purchaser and vendor, the material shall not contain arsenic in excess of an agreed content, calculated as arsenic, As, and determined in the manner described in Appendix Q.

LEAD

20. When agreed between purchaser and vendor, the material shall not contain lead in excess of an agreed content, calculated as lead, Pb, and determined in the manner described in Appendix R.

APPENDIX A. SAMPLING

Drawing of samples. *Free-flowing shellac.* Take samples from different places in each package by means of a suitable tryer so as to yield a total of 5 kg (or 10 lb) of material consisting of approximately equal portions from each package sampled. Thoroughly mix the material and heap and quarter along two diameters which intersect at right angles. Mix two opposite quarters and preserve in air-tight containers, seal and label as the 'Original observation sample'. If necessary, further sub-divide by quartering to form a number of original observation samples. Part the other two quarters of the material as described below to form the analysis sample.

Blocky or matted shellac. Take small pieces (not more than 1.2 in (3 cm) across) from different places in each package by chipping or other suitable means so as to yield a total of 5 kg (or 10 lb) of material consisting of approximately equal portions from each package sampled. Thoroughly mix the material and heap and quarter along two diameters which intersect at right angles. Mix two opposite quarters and preserve in air-tight containers, seal and label as the 'Original observation sample'. If necessary, further sub-divide by quartering to form a number of original observation samples. Part the other two quarters of the material as described below to form the analysis sample.

Preparation of samples. *For the determination of grit.* Use the 'original observation sample' without further preparation for the determination of grit.

For all determinations other than that for grit. Thoroughly mix the material obtained above, and heap and quarter along two diameters which intersect at right angles.

Mix two opposite quarters and grind the mixture to pass entirely through an 8 mesh B.S. test sieve*. Thoroughly mix and twice divide by quartering into four samples, each of approximately 300 g (or 11 oz). Place these samples in airtight containers, seal and label each as 'Analysis sample'.

Grind an adequate amount (40 to 50 g) of the 'Analysis sample' so that it passes entirely through a 22 mesh B.S. test sieve. Transfer to an air-tight container, seal and label as 'Prepared sample, for all determinations other than that for grit'.

APPENDIX B. METHOD FOR THE DETERMINATION OF MATTER INSOLUBLE IN HOT ALCOHOL

Apparatus. *a. Siphon tube*†, of glass, of the Knoefler type, having minimum internal dimensions of 52 mm height and 32 mm diameter, resting in an adaptor

* B.S. 410, 'Test sieves'.

† The type of extraction apparatus used is not critical provided that it is of such a design as to ensure a continuous series of extractions at approximately the boiling temperature of the solvent.