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ISO RECOMMENDATION
R 57

SPECIFICATION FOR BLEACHED LAC

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BRIEF HISTORY

The ISO Recommendation R 57, *Specification for Bleached Lac*, was drawn up by Technical Committee ISO/TC 50, *Lac*, the Secretariat of which is held by the Indian Standards Institution (ISI).

This Technical Committee decided to place on its program of work the question of Bleached Lac and the ISO/TC 50 Secretariat submitted a first draft proposal based on the studies made previously by the Indian Member Body.

This draft proposal was discussed at the first meeting of Technical Committee ISO/TC 50, held in New Delhi, in January 1950. A second draft proposal, which took into account the resolutions adopted at this meeting, was then circulated to the members of the Technical Committee and discussed at the second meeting of Technical Committee ISO/TC 50, held in New York, in June 1952. A major change was made at this meeting; the title of the subject was changed to "Bleached Lac", and a working document submitted by the United Kingdom was taken into consideration. A revised third draft proposal for Bleached Lac was then formulated. Some changes were made in this document at the third meeting of the Technical Committee, held in London, in October 1954 and the Technical Committee adopted the document thus revised, as a Draft ISO Recommendation.

On 12 September 1956, the Draft ISO Recommendation (No. 100) was distributed to all ISO Member Bodies and was approved, subject to modifications, by the following 21 (out of a total of 37) Member Bodies:

*Australia	Hungary	Spain
Austria	*Ireland	*Sweden
*Bulgaria	Netherlands	Turkey
*Canada	Pakistan	Union of South Africa
*Denmark	Poland	United Kingdom
France	Portugal	U.S.A.
*Greece	Romania	*U.S.S.R.

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in December 1957, to accept it as an ISO RECOMMENDATION.

* These Member Bodies stated that they had no objection to the Draft being approved.

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FOREWORD

I. This ISO Recommendation is based on the decisions arrived at in the first three meetings of the Technical Committee on Lac of the International Organization for Standardization (ISO/TC 50) which were held in New Delhi, India, on January 16, 17, 18 and 19, 1950; in New York, U.S.A., on June 23, 24 and 25, 1952; and in London, United Kingdom, on October 11, 12 and 13, 1954, respectively.

II. Hitherto the material dealt with in this ISO Recommendation has been called bleached shellac. The name is due to the fact that it was manufactured formerly by bleaching shellac, which alone was the common article exported from India. Now, however, bleached lac is manufactured generally by bleaching seedlac or sometimes shellac and the old name is, therefore, incorrect and misleading. The new name introduced in this ISO Recommendation, "Bleached Lac", is therefore not a misnomer and it will, at the same time, avoid confusion between the ordinary shellac and the bleached product.

This ISO Recommendation covers bone-dry bleached lac, an intermediate surface-dry (air-dry) bleached lac, and wet bleached lac, the three differing in their requirements in the moisture content. No distinction is sought to be introduced between bone-dry, kiln-dry or vac-dry bleached lac or between the various designations of the intermediate type covering dried, crushed hanks, or flats in granules or flakes, or between wet bleached lac in hank, bar or any other form. Only three conditions, i.e. bone-dry, surface-dry (air-dry) and wet, and two types in each condition, namely (*a*) regular bleached lac (cloudy or waxy), and (*b*) refined bleached lac (transparent or wax-free), more briefly indicated as "regular" and "refined", are recognized.

III. Notwithstanding the extensive activities of the Indian Lac Cess Committee concerning the rationalization of production and marketing of lac products in India and abroad, through the Indian Lac Research Institute, Namkum, Bihar, India, and the London Shellac Research Bureau, and in spite of the interest taken in this matter by the United States Shellac Importers' Association, the American Bleached Shellac Manufacturers' Association, and the American Society for Testing Materials, considerable confusion and disagreement still exist in the various specifications on seedlac and shellac that have been evolved and are in use in different countries by different agencies. Bleached lac, on the other hand, does not present the same difficulties. There is a considerable degree of uniformity and unanimity of opinion on the requirements for bleached lac, and international acceptance of agreed standards should not, therefore, present any difficulty.

IV. At the second and third meetings of ISO/TC 50, it was decided that the position regarding limits of variation of certain requirements should be indicated in the Foreword for the guidance of the contracting parties. These decisions are given below.

V. No limit has been prescribed for the chlorine content of bleached lac. Normally the chlorine content of bleached lac varies between 1.5 and 4.5 per cent on moisture free material, but ISO/TC 50 has decided to place it on record that it is desirable to maintain it at a low value (say at 3 per cent, maximum).

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VI. Likewise, no limit has been prescribed for the acid value of bleached lac. This depends on the technique of bleaching. The acid value of a good bleached lac is normally between 65 and 100 on the moisture-free material. ISO/TC 50 considers it desirable to retain the acid value at as low a value as possible below 105.

VII. Similarly the mineral acid content of bleached lac should also be as low as possible, requiring for neutralization under the conditions specified in Appendix M not more than 82 ml of 0.1 N sodium hydroxide per 100 g of the moisture-free material which is equivalent to 0.4 per cent of mineral acid calculated as sulphuric acid (H_2SO_4).

VIII. The question of requirements and methods of test for non-volatile matter soluble in cold alcohol is under consideration by ISO/TC 50, for which separate ISO Recommendations may be issued in due course. Pending this, the limits and methods of test have been made subject to agreement between the purchaser and the vendor. The two methods for cold alcohol solubles under study by the Committee are contained in the following documents:

(1) ISO/TC 50 (Secretariat—50) 83,

(2) ISO/TC 50 (Secretariat—51) 84.

IX. The maximum limit for the volatile matter (moisture) in the bone-dry material has been specified as a mandatory requirement, i.e. a maximum of 6 per cent (see Section 6.) In so far as surface-dry (air-dry) and wet bleached lacs are concerned, the actual limits have been made the subject of agreement between purchaser and vendor. The normal moisture content of the surface-dry (air-dry) material does not exceed 12 per cent, that of wet bleached lac does not exceed 30 per cent.

X. In pursuance of the resolution passed at the second and third meetings, the mesh sizes of sieves given in the text of this ISO Recommendation have been indicated in terms of aperture dimensions, and a note, giving number designations of approximately equivalent sieves of U.S.A., United Kingdom, France, India and other countries has been added for the sak of convenience.

XI. Acknowledgement is due for the assistance that has been derived from the specifications and publications of the United States Shellac Importers' Association, the American Bleached Shellac Manufacturers' Association, the British Standards Institution, and the Indian Lac Research Institute, more particularly from "A Handbook of Shellac Analysis" by M. Rangaswami and H.K. Sen, issued by the Indian Lac Research Institute, which gives a critical review of the characteristics and methods of tests of lac and lac products and which was designed by the authors to serve as an approach to international agreement on standardization in this field. The comments received from the American Standards Association, the British Standards Institution, Association Française de Normalisation, and the Indian Standards Institution, which were forwarded for the consideration of ISO/TC 50, are also acknowledged.

XII. For the purpose of deciding whether a particular requirement of this ISO Recommendation is complied with, the final value observed or calculated, expressing the result of test or analysis shall be rounded off to the same number of places as that in the specified value; it being always understood that the analyst will carry out his determination to at least one place more than in the specified value.

XIII. In order to facilitate cross references to clauses of the different appendices in this ISO Recommendation, the clauses in each appendix bear, besides the serial number, a letter prefix corresponding to the letter number of the appendix. Thus reference to A-2 or B-3 means that clause 2 of Appendix A or clause 3 of Appendix B is under reference.

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ISO Recommendation R 57 December 1957

SPECIFICATION FOR BLEACHED LAC

1. SCOPE

1.1 This ISO Recommendation prescribes the requirements and methods of test for Bleached Lac in any form that may be agreed upon between the purchaser and the vendor.

1.2 This ISO Recommendation is intended chiefly to cover the technical provisions for guiding the purchase of the material, but does not include all the necessary provisions of a contract.

1.3 The limits prescribed in this ISO Recommendation are limits for rejection.

2. TERMINOLOGY

2.1 For the purposes of this ISO Recommendation, the following definitions apply:

(*a*) *Sticklac* is the natural product of lac insects.

(*b*) *Seedlac* is the product obtained by washing crushed sticklac.

(*c*) *Shellac* is the product obtained by refining seedlac by heat processes or by both heat and solvent processes.

(*d*) *Bleached lac* is the product obtained by subjecting seedlac or shellac in solution to a process of bleaching and then recovering the product in a solid form.

(*e*) *Regular (cloudy or waxy) bleached lac* is the ordinary type of bleached lac from which wax has not been removed.

(*f*) *Refined (transparent or wax-free) bleached lac* is the type of bleached lac from which wax has been removed during the process of manufacture.

(*g*) *Approved sample* is the sample agreed upon between the purchaser and the vendor as the standard for colour.

3. SAMPLING

3.1 Samples are taken in the manner prescribed in Appendix A.

4. FORM

4.1 The form of bleached lac is subject to agreement between the purchaser and the vendor.

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5. CONDITIONS AND TYPES

5.1 There shall be three conditions of bleached lac, namely:

(*a*) bone-dry,

(*b*) surface-dry (air-dry) and

(*c*) wet.

5.2 There shall be two types under each of these conditions, namely:

(*a*) regular (cloudy or waxy), and

(*b*) refined (transparent or wax-free).

6. VOLATILE MATTER (moisture)

6.1 Bone-dry bleached lac shall contain not more than 6 per cent of volatile matter (moisture), as determined by the method prescribed in Appendix B.

6.2 The percentage of volatile matter (moisture) present in surface-dry (air-dry) bleached lac is subject to agreement between the purchaser and the vendor and is determined by the method prescribed in Appendix B (see Foreword, clause IX).

6.3 The percentage of volatile matter (moisture) in wet bleached lac is subject to agreement between the purchaser and the vendor and is determined by the method prescribed in Appendix B (see Foreword, clause IX).

7. MATTER INSOLUBLE IN HOT ALCOHOL

7.1 Bleached lac shall not contain matter insoluble in hot alcohol, computed on the basis of moisture-free material, in excess of the limits given below:

regular: 1.1 per cent

refined: 0.2 per cent

7.1.1 Matter insoluble in hot alcohol is determined by either of the methods prescribed in Appendix C, as agreed between the purchaser and the vendor.

8. COLOUR

8.1 The appearance and colour of bleached lac shall not be inferior to that of the approved sample when judged by visual examination. Alternatively the colour in solution may be tested by either of the methods prescribed in Appendix D, as agreed between the purchaser and the vendor.

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9. WAX

9.1 Bleached lac shall not contain wax, as determined by the appropriate method prescribed in Appendix E and computed on the basis of moisture-free material, in excess of the limits given below:

regular:	5.5 per cent
refined:	0.2 per cent

10. ASH

10.1 Bleached lac shall not leave ash, as determined by the method described in Appendix F and computed on the basis of moisture-free material, in excess of the limits given below:

regular:	1.0 per cent
refined:	0.5 per cent

11. ROSIN AND COPALS

11.1 Bleached lac shall contain no rosin, as tested by the method described in Appendix G.

11.2 Bleached lac shall contain no copals, as tested by the method described in Appendix H.

12. MATTER SOLUBLE IN WATER

12.1 Bleached lac shall not contain matter soluble in water, as determined by the method prescribed in Appendix J and computed on the basis of moisture-free material, in excess of the limits given below:

regular:	1.0 per cent
refined:	0.3 per cent

13. CHLORINE CONTENT

13.1 The chlorine content of bleached lac is subject to agreement between the purchaser and the vendor and, when specified, it shall be determined by the method prescribed in Appendix K (see Foreword, clause V).

14. ACID VALUE AND MINERAL ACID

14.1 The acid value of bleached lac is subject to agreement between the purchaser and the vendor and, when specified, it is determined by the method prescribed in Appendix L (see Foreword, clause VI).

14.2 The mineral acid content of bleached lac is subject to agreement between the purchaser and the vendor and, when specified, it is determined by the method prescribed in Appendix M (see Foreword, clause VII).

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15. NON-VOLATILE MATTER SOLUBLE IN COLD ALCOHOL

15.1 The limits and methods of test for non-volatile matter soluble in cold alcohol are subject to agreement between the purchaser and the vendor (see Foreword, clause VIII).

16. CHARACTER OF REQUIREMENTS

16.1 The character of requirements for bleached lac is given in table 1, below.

16.1.1 The optional requirements are subject to agreement between the purchaser and the vendor.

17. TESTS

17.1 Except where otherwise indicated, calculations regarding bleached lac in any form or condition shall be made in terms of the moisture-free materials.

17.2 All analytical work on bleached lac except the determination of volatile matter (moisture) content is carried out on the "prepared sample" obtained as described under clause A-3.1 (Appendix A).

17.2.1 The volatile matter (moisture) content of the "prepared sample" is determined by the method described in Appendix B and this figure is used to correct the analytical results, other than for volatile matter (moisture), to terms of moisture-free material.

TABLE 1

Requirements for Bleached Lac

Clause Reference	Character of Requirement	Characteristic	Maximum Limits for Type		Method of Testing Reference to Appendix
			Regular	Refined	
6	Essential	Volatile matter (moisture) per cent			B
		Bone-dry	6.0	6.0	
		Other conditions	As agreed between purchaser and vendor		
7	Essential	Matter insoluble in hot alcohol, per cent*	1.1	0.2	C
8	Essential	Colour	Close visual match to the approved sample		D
9	Essential	Wax, per cent*	5.5	0.2	E
10	Essential	Ash, per cent*	1.0	0.5	F
11.1	Essential	Rosin	Nil	Nil	G
11.2	Essential	Copals	Nil	Nil	H
12	Essential	Matter soluble in water, per cent*	1.0	0.3	J
13	Optional	Chlorine content*	As agreed between purchaser and vendor (*see* Foreword, clause V)		K
14.1	Optional	Acid value*	As agreed between purchaser and vendor (*see* Foreword, clause VI)		L
14.2	Optional	Mineral acid*	As agreed between purchaser and vendor (*see* Foreword, clause VII)		M
15	Optional	Non-volatile matter soluble in cold alcohol*	As agreed between purchaser and vendor (*see* Foreword, clause VIII)		

* To be calculated on a moisture-free basis.

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Appendix A

(Section 3)

SAMPLING OF BLEACHED LAC

Note. — It is essential that the operations described for the drawing, reduction and preparation of analysis samples are carried out as expeditiously as possible in order to minimize loss of moisture.

A-1. DRAWING OF SAMPLES

A-1.1 Only original, unopened packages of bleached lac are sampled.

A-1.2 Not less than ten per cent of the packages, selected at random from each lot, are sampled.

A-1.3 For this purpose a lot does not exceed 200 packages.

A-1.4 Unused portions of samples are sent to the purchaser on request.

A-1.5 FREE-FLOWING BLEACHED LAC. Samples are taken 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. The material is then thoroughly mixed and heaped and quartered along two diameters which intersect at right angles, and two opposite quarters are mixed. One half of the material may, if necessary, be further subdivided by the normal process of quartering to form a number of samples which serve separately as "original observation samples" and "samples for the determination of volatile matter (moisture)". These samples are placed in air-tight containers, sealed and labelled accordingly. The samples labelled "for the determination of volatile matter (moisture)" are treated as prescribed in clause A-3.2. The other half of the material is treated as described under clause A-2.1 to form the "analysis sample".

A-1.6 BLOCKY OR MATTED BLEACHED LAC. Samples are taken 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. The material is then thoroughly mixed and heaped and quartered along two diameters which intersect at right angles, and two opposite quarters are mixed. One half of the material may, if necessary, be further subdivided by the normal process of quartering to form a number of samples which serve separately as "original observation samples" and as "samples for the determination of volatile matter (moisture)". These samples are placed in air-tight containers, sealed and labelled accordingly. The samples labelled "For the determination of volatile matter (moisture)" are treated as prescribed in clause A-3.2. The other half of the material is roughly ground so as to pass a sieve having a nominal aperture of 6.3 mm (see clause A-4.1) and is then treated as prescribed under clause A-2.1 to form the "analysis sample".

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