



Standard Specification for Orange Shellac and Other Indian Lacs for Electrical Insulation¹

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1. Scope

1.1 This specification covers the requirements and methods of test for three types and four grades of orange shellac and other lacs, typically used as bonding agents for mica splittings and reconstituted mica paper and as coating for other materials, as follows:

- 1.1.1 *Type I*—Orange Flake Shellac, Grades A, B, C, and D,
- 1.1.2 *Type II*—Button Lac, and
- 1.1.3 *Type III*—Garnet Lac.

1.2 Stick-lac and seed-lac are not covered by this specification.

NOTE 1—ISO Specifications 56-1 and 56-2 cover shellac. However, the equivalency of the ISO specification to this standard is unknown. Direct reference to the ISO standards may be made if it is necessary to determine equivalency.

2. Referenced Documents

2.1 *ASTM Standards*:²

- D 29 Test Methods for Sampling and Testing Lac Resins
- D 411 Test Methods for Shellac Used for Electrical Insulation
- D 1711 Terminology Relating to Electrical Insulation

2.2 *ISO Standards*:

- 56-1 Shellac—Specifications—Part 1: Hand-Made Shellac³
- 56-2 Shellac—Specifications—Part 2: Machine-Made Shellac³

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology D 1711.

¹ This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.01 on Electrical Insulating Varnishes, Powders, and Encapsulating Compounds.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Association, 11 W. 42nd St., New York, NY 10036.

4. Ordering Information

- 4.1 Orders for material covered by this specification shall include the following:
- 4.2 Lot number and supplier's designation,
- 4.3 Type and grade,
- 4.4 Quantity in each bag or container, and
- 4.5 Total quantity.

5. Description of Materials

5.1 Type I is the commercial rosin-free grade of orange flake shellac. Type II customarily occurs in the form of circular disks about 76 mm (3 in.) in diameter and 3 mm ($\frac{1}{8}$ in.) in thickness and is known to the trade as pure button lac. Type III is dark garnet in color and is known to the trade as pure garnet lac. Garnet lac is manufactured in admixture with rosin and as a dewaxed lac. The admixture and dewaxed lac are not covered by this specification.

6. Properties

6.1 The material shall conform to the requirements prescribed in Table 1.

7. Test Methods

7.1 Determine the material sampled and the properties enumerated in this specification in accordance with Test Methods D 29 and D 411.

8. Certification

8.1 When specified in the purchase order or contract, a producer's or supplier's certification shall be furnished to the purchaser that the material complies with the requirements of this specification. A report of the test results shall be furnished when specified in the purchase order or contract.

9. Packaging and Package Marking

9.1 Packaging and marking shall be as agreed upon between the purchaser and the supplier.

10. Keywords

10.1 bonded mica paper; bonded mica splittings; button lac; garnet lac; lac; orange flake shellac

TABLE 1 Requirements for Orange Shellac and Other Lacs

| | Type I | | | | Type II | Type III |
|--|---------|---|---------|---------|---------|----------|
| | Grade A | Grade B | Grade C | Grade D | | |
| Matter insoluble in specified hot solvents, max, % | 1.00 | 1.25 | 1.50 | 3.00 | 1.00 | 0.50 |
| Iodine number, max | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 18.0 |
| Moisture, max, % | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Wax, max, % | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 3.5 |
| Orpiment, max, % (native arsenic trisulfide) | 0.03 | 0.03 | 0.03 | 0.2 | 0.03 | 0.03 |
| Matter soluble in water, max, % | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Ash, max, % | 1.0 | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 |
| Rosin | none | none | none | none | none | ... |
| Color | | when specified, the color shall be no darker than that of a sample agreed upon by the purchaser and the seller ^A | | | | |
| Polymerization time at 150 ±1°C | | when specified, shall be within the maximum-minimum range agreed upon by the purchaser and the seller | | | | |
| Flow test at 100 ±1°C | | when specified, shall be within the maximum-minimum range agreed upon by the purchaser and the seller ^A | | | | |

^A Attention is called to the fact that the purchaser and the seller must agree upon one of the two methods for determining (1) color for Type 1, appearing in Test Methods D 29 and (2) flow test in Test Methods D 411.

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