SINGAPORE STANDARD

# SS 348 : 1990

(ICS 11.040.70)

SPECIFICATION FOR

# Anti-reflection coatings on ophthalmic lenses of glass material

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# SPECIFICATION FOR ANTI-REFLECTION COATING ON OPHTHALMIC LENSES OF GLASS MATERIAL

## FOREWORD

This Singapore Standard was drawn up by the Technical Committee on Anti-reflection Coating on Ophthalmic Lenses of Glass Material under the authority of the Chemical Product Standards Committee.

In preparing this specification, reference was made to the following publications:

| | |
|---|---|
| ASTM B 117-73 | Standard Method for Salt Spray (Fog) Testing |
| FED SPECS A-A-113 B : 1982 | Tape, Pressure-sensitive Film, Office Use |
| FED SPECS CCC-C-440 : 1976 | Cloth, Cheesecloth, Cotton Bleach and Unbleached |
| ISO 4854-1981 | Test for Quality of Material and Surface |
| MIL-C-675C : 1980 | Coating of Glass Optical Elements (Anti-reflection) |
| MIL-E-12397 : 1954 | Eraser, Rubber-pumice for Testing Coated Optical Elements |
| MIL-0-13830 : 1963 | General Specification Governing the Manufacture, Assembly and Inspection of Optical Components for Fire Control Instruments |
| MIL-STD-1241A : 1967 | Optical Terms and Definitions |

Acknowledgement is made for the use of information from these publications.

**NOTE**

1. Singapore Standards are subject to periodical review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue either of amendment slips or of revised editions.

2. Compliance with a Singapore Standard does not exempt users from legal obligations.

## 1. SCOPE

1.1 This specification establishes the optical and durability requirements for interference films used as anti-reflection coating on ophthalmic lenses of glass material.

## 2. DEFINITIONS

2.1 **Optical Terms And Definitions.** Terms and definitions of optics as used herein are defined in MIL-STD-1241A.

## 3. GENERAL REQUIREMENTS

3.1 The coating shall be uniform in quality and shall show no evidence of physical defects such as flaking, peeling, cracking or blistering and no visual defects such as stains, smears, streaks or cloudiness etc when examined by the method of 5.2.3.1.

## 4. REQUIREMENTS

4.1 **Coated Area.** Lenses shall be uniformly coated. Any uncoated holding area shall not exceed 1.5 mm from the edge of the lens.

4.2 **Surface Defects (Scratches and Digs).** When examined in accordance with 5.2.3.2, the coated lens shall conform to the following requirements:

4.2.1 Each coating spatter and hole shall be considered as a dig. The maximum size of scratches and digs allowable shall be of No. 60-S and No. 20-D respectively. There shall be not more than 2 of each of the maximum size of the scratches and digs within 20 mm diameter from the centre of the lens, and not more than 4 of each of the maximum size of the scratches and digs on the whole of the coated lens.

4.2.2 The combined length of maximum size scratches shall not exceed 1/2 the diameter of the lens.

4.3 **Transmission.** The increase in transmission of the lens after coating as determined by 5.2.4 shall be equal to or greater than the value specified in Figure 1, as applicable to the substrate's refractive index and surface(s) coated.

4.4 **Reflectance (At The Minimum Point).** The magnitude of the specular reflectance for the coated surface at the minimum point on the spectral reflectance curve as determined by 5.2.5 shall not exceed the value shown in Figure 2, as applicable to the substrate's refractive index. (This test is applicable only to the witness piece).

4.5 **Durability**

4.5.1 **Salt solubility.** After immersion in a saline solution for a period of 24 hours in accordance with 5.2.6, the coated surface shall meet the physical defects requirement of 3.1 and the abrasion resistance requirement of 4.5.4.

4.5.2 **Humidity.** After exposure to an atmosphere of 50 ± 2°C and 95% to 100% relative humidity for a period of 24 hours in accordance with 5.2.7, the coated surface shall meet the physical defects requirement of 3.1 and the abrasion resistance requirement of 4.5.4.