

Abrisa has the ability to comply with many industry quality standards. These include ANSI, ASME, ASTM, NCSL, ISO, MIL, DIS, JAN and SAE. In addition, ZC&R meets many military specifications for coatings. See below a small list of optical thin film specifications. The documents are provided by the Defense Standardization Program which is part of the U.S. Department of Defense. If you have questions regarding MIL specs for coatings, call ZC&R Coatings for Optics directly at 800-426-2864.

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ANSI Z97.1-1984 SAFETY GLAZING MATERIALS USED IN BUILDINGS

ANSI/NCSL Z540-1-1994

**For more information** on ANSI Standards, <http://www.ansi.org>

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ASME Y14.36M-1996

ASME Y14.38-1999 ABBREVIATIONS AND ACRONYMS

ASME Y14.5M-1994

**For more information** on ASME Standards, <http://www.asme.org/>

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ASTM C 1422-99 CHEMICALLY STRENGTHENED FLAT GLASS

ASTM C 1048-97B HEAT TREATED FLAT GLASS

ASTM C 1036-91 STANDARD SPECIFICATION FOR FLAT GLASS

**For more information** on ASTM Standards, <http://www.astm.org/>

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BS 3193:1993 THERMALLY TOUGHENED GLASS PANELS FOR USE IN DOMESTIC APPLIANCES

C22.2 NO.30-M1986 CALIBRATION LABORATORIES AND MEASURING AND TEST EQUIPMENT

DD-G -1403 Rev B GLASS, FLOOR, SHEET FIGURED, COATED (Heat Strengthened and Tempered)

DD-G 451 D GLASS, FLOAT OR PLATE, SHEET FIGURED DIMENSIONING AND TOLERANCING  
FB-P-AP-MS-004 FORD MATERIAL SPECS FOR BOROFLOAT PYREX WAFERS

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ISO 10012-1 QUALITY ASSURANCE REQUIREMENTS FOR MEASURING EQUIPMENT  
ISO 9211-4 OPTICS AND OPTICAL INSTRUMENTS- OPTICAL COATINGS  
ISO GLASS AND GLASS CERAMICS- KNOOP HARDNESS TEST  
ISO/DIS 9022-2 OPTICS AND OPTICAL INSTRUMENTS: SALT MIST  
ISO/DIS 9022-4 OPTICS AND OPTICAL INSTRUMENTS: COLD, HEAT AND HUMIDITY

**For more information** on ISO Standards, [http:// www.iso.org/](http://www.iso.org/)

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JAN-G-174 GLASS, OPTICAL  
JAN-P-49 PROJECTION EQUIPMENT, SOUND MOTION PICTURE, 16-MM, CLASS I  
MIL-C-45662A CALIBRATION SYSTEM REQUIREMENTS (2-9-62)  
MIL-C-7989B COVER, LIGHT-TRANSMITTING, FOR AERONAUTICAL LIGHT, GENERAL SPECIFICATION  
MIL-DTL-24560 LIGHTS AND GLASSWARE FOR NAVIGATION, SIGNAL  
MIL-F-13926A(MU) FIRE CONTROL MATERIAL: GENERAL SPECIFICATION GOVERNING THE MANUFACTURE AND INSPECTION  
MIL-G-174B GLASS, OPTICAL (1998)  
MIL-G-25667B GLASS, MONOLITHIC, AIRCRAFT GLAZING (2-16-71)  
MIL-G-81704 GLASS, AIRCRAFT INSTRUMENT, LIGHTING WEDGE AND COVER (3-24-69)  
MIL-I-45208A INSPECTION SYSTEM REQUIREMENTS  
MIL-M-13508(ORD) OPTICAL COMPONENTS FOR FIRE CONTROL INSTRUMENTS; GENERAL SPECIFICATION GOVERNING THE MANUFACTURE AND INSPECTION  
MIL-O-13830A OPTICAL COMPONENTS FOR FIRE CONTROL INSTRUMENTS; GENERAL SPECIFICATION GOVERNING THE MANUFACTURE, ASSEMBLY, AND INSPECTION  
MIL-P-49C PROJECTION SETS, MOTION PICTURES, SOUND 16MM AND COMPONENT PARTS

MIL-PRF-47033	GLASS, BOROSILICATE
MIL-Q-9858A	QUALITY PROGRAM REQUIREMENTS
MIL-R-6771B	REFLECTOR; GUNSIGHT GLASS
MIL-STD-120	GAUGE INSPECTION
MIL-STD-1242(CRD)	MACHINING STANDARDS FOR FIRE CONTROL MATERIAL
MIL-STD-150	PHOTOGRAPHIC LENSES
MIL-STD-45662A	CALIBRATION SYSTEMS REQUIREMENTS
MIL-T-10646B (ORD)	TELESCOPES, STRAIGHT; M90 SERIES
MIL-W-1366F	WINDOWS, OPTICAL SENSOR
SAE AS 25050	COLORS, AERONAUTICAL LIGHTS, SURFACE TEXTURE SYMBOLS

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#### MILITARY SPECIFICATIONS FOR THIN FILM COATINGS

Military coating specification documents are used (correctly and incorrectly) in many optical drawings and documents. These specifications are very useful when used correctly and with an understanding of their intended purpose. Below are a few links to commonly used military specifications for optical thin film coatings.

The documents are provided by the Defense Standardization Program <http://www.dsp.dla.mil/> which is part of the U.S. Department of Defense. If you have questions regarding MIL specs for coatings, call ZC&R Coatings for Optics at 800-426-2864.



MIL-C-675C	MgF2 SINGLE LAYER ANTI-REFLECTION THIN FILM COATING.
<b>MIL-C-14806A</b>	ANTI-REFLECTION COATINGS APPLIED TO INSTRUMENT COVER GLASSES AND LIGHTING WEDGES.
<b>MIL-C-48497A</b>	INTERFERENCE COATINGS USED INSIDE SEALED OPTICAL SYSTEMS.
<b>MIL-PRF-13830B</b>	FINISHED OPTICAL COMPONENTS FOR FIRE CONTROL INSTRUMENTS (LENSES, PRISMS, MIRRORS, RETICLES, WINDOWS, ETC.)
<b>MIL-M-13508C</b>	FRONT SURFACE PROTECTED ALUMINUM MIRRORS.
<b>MIL-F-48616</b>	GENERAL PERFORMANCE AND DURABILITY REQUIREMENTS FOR THIN FILM COATINGS USED FROM 0.7 $\mu$ m TO 50.0 $\mu$ m.