

Approved
Minutes
ASC OP/TF 2, Performance Based Optical Imperfections Task Force Draft Standard Meeting
January 20, 2008
Fairmont Hotel, California Room
170 South Market Street
San Jose, CA 95113

Present	Attendees (13 of 17 Entities)	Representing
<input checked="" type="checkbox"/>	Committee Members	
<input checked="" type="checkbox"/>	David Aikens	Savvy Optics Corporation
<input checked="" type="checkbox"/>	Gordon Boulton	JDSU Corporation
<input checked="" type="checkbox"/>	Andrei Brunfeld	Xyrtext
<input type="checkbox"/>	Benjamin Catching (Alternate)	JDSU Corporation
<input checked="" type="checkbox"/>	David Corridon	Individual
<input checked="" type="checkbox"/>	Walter Czajkowski	APOMA (Edmund Optics)
<input checked="" type="checkbox"/>	Frank Dombrowski (by phone)	Gage-Line Technology, Inc.
<input checked="" type="checkbox"/>	Marla Dowell	IEEE/LEOS (NIST)
<input checked="" type="checkbox"/>	Lincoln Endelman	SPIE, (Endelman Enterprises)
<input checked="" type="checkbox"/>	Charles Gaugh (by phone)	Davidson Optronics, Inc.
<input checked="" type="checkbox"/>	Krishna Gupta	Zygo Corporation
<input type="checkbox"/>	John Hamilton	Northrop Grumman
<input checked="" type="checkbox"/>	Hal Johnson	Harold Johnson Optical Lab
<input type="checkbox"/>	Rudolf Hartman	Retired
<input checked="" type="checkbox"/>	Alan Krisiloff	Triptar Lens Co., Inc.
<input checked="" type="checkbox"/>	Jonathan McGuire (Alternate)	Northrop Grumman Laser Systems
<input type="checkbox"/>	Michael Morrill	Lockheed Martin Space Systems Company
<input type="checkbox"/>	Bruce Netherton	Lockheed Martin Coherent Technologies
<input type="checkbox"/>	Sam Richman (Alternate)	Research Electro-Optics, Inc.
<input type="checkbox"/>	William Royall (by phone)	Eastman Kodak Company, Retired
<input checked="" type="checkbox"/>	Trey Turner	Research Electro-Optics, Inc.
<input type="checkbox"/>	Steve VanKerkhove	Corning Tropel
<input checked="" type="checkbox"/>	Ray Williamson	Ray Williamson Consulting
	Observers (1)	
<input checked="" type="checkbox"/>	Gene Kohlenberg	OEOSC

Auditor's Summary of Meeting

A representative from Northrop Grumman reported that they were preparing a paper describing test results of operator performance for visually rating optical surface imperfections. This paper may be given at the August SPIE conference.

The foreword for the revised standard was reviewed and approved. The original foreword will be kept for historical reference.

The original military specifications did not provide for scratches that are smaller than 5 µm or digs that are smaller than 50 µm. The Task Force agreed to add a number following the letter A to indicate the measured width of the scratch or dig.

Annex C of the updated draft was edited. The group agreed that the annex was not normative, and inserted a statement explicitly stating that fact.

Clause 3.1.6 was revisited to determine if the value quoted was correct. After re-examining the military specification, the value quoted was deemed to be correct; however, the number was converted from English units to metric units.

The draft as edited, will now be balloted to the members of the Task Force. Following approval by the Task Force another ballot will be submitted to all of the members of ASC OP for final approval.

1. Welcome and Introductions

G. Boulton opened the meeting at 8 40a.m. He called for a round of introductions.

2. Adoption of Agenda

G. Boulton asked for a motion to approve the draft agenda. R. Williamson made the motion and H. Johnson seconded it. The motion carried unanimously.

3. Approval of the Monday, Sunday August 26, 2007 ASC OP/SC 1, BSR/OEOSC-OP1.002, Optics and Electro-Optical unanimously. Instruments – Optical Elements and Assemblies — Appearance Imperfections Draft Review Minutes

D. Aikens moved that the draft minutes be approved as written. M. Dowell seconded the motion. G. Boulton said that there were three typographical errors that should be corrected. Matt Young's name has a double "t" in it. "SCM" should be "SEM" for scanning electron microscope. which carried unanimously. The word "new" in the last line of the paragraph that starts with, "G. Boulton said that the Task Force needs to anticipate the questions..." should be "knew." With these changes, D. Aikens modified his motion to include the corrections for the typographical errors and M. Dowell seconded the modified motion. The motion carried unanimously.

4. Northrop Grumman Laser Systems Gage R&R Report

J. McGuire said that there are two items he wants to address before releasing the paper. J. McGuire and J. Hamilton will have the paper vetted through Northrop Grumman and have ready for SPIE August 2008 meeting in San Diego. D. Aikens suggested that it be published in Optical Fabrication and Testing of OSA; the next step could be Optical Engineering Magazine (SPIE). G. Boulton asked if the document would be distributed to OP/TF 2 before the public presentation. J. McGuire said that he would defer to J. Hamilton for that decision. C. Gaugh said he would like to see the paper before it is presented in San Diego.

J. McGuire said that there are two items that he wants to address: 1) conduct another round of inspections using the ISO 10110-7 method 2; 2) submit samples to A. Siletz from CCDMETRIX to see how they correlate on the Siletz machine to what Brysen calls 20, 40, 60, and 80.

5. Review of Revised OP1.002

a) Foreword to the Second Edition

D. Aikens wrote a forward to the second edition to indicate how the new document differs from the original document. The new foreword will indicate the members of the current Task Force. The original foreword will be preserved for historical record.

F. Dombrowski asked about the use of apparent brightness versus visibility. D. Aikens said that visibility is used.

D. Aikens moved that the draft of the Foreword to the Second Edition be approved; R. Williamson seconded the motion, which carried unanimously.

b) Draft proposal for imperfections smaller than the current artifact range

The Task Force discussed using a two-letter designation for artifacts smaller than those listed in Tables 1 and 2.

D. Corridon asked about the rationale for using different designations for the two size ranges in Tables 1 and 2.

G. Boulton said that the letter designations and sizes came out of the military specification, which traditionally has used different sizes for scratches and digs.

D. Aikens suggested that the column-labeling scheme used in Microsoft Excel be adopted for smaller artifact sizes than what currently exist in the tables. Thus, an A would be placed in front of a second letter to designate the range less than 5 μm for scratches and less than 0.05 mm for digs. Then AA would be a 0.5 μm scratch or a 0.005 mm dig. R. Williamson suggested that the units of measure for Tables 1 and 2 should be the same, i.e. micrometers. The Task Force agreed to change the units in Table 2 to micrometers.

D. Aikens proposed that a letter-number designation be used, e.g. A2 would indicate a 2 μm scratch, or A20 would indicate a 20 μm dig.

G. Boulton asked which notation should be used: the letter "A" and a number or "AA." Two preferred the letter-number combination and the rest selected the "AA" notation. R. Williamson noted that "A-A" already exists as the indication of a scratch and dig specification. In the shop it will be verbally stated as "AA." So it will be unnecessarily confusing to then have a second "AA" designation. F. Dombrowski abstained from selecting a preference. The others decided to approve the single letter and a number notation. C. Gaugh asked how the notation would be written. G. Boulton said that it would be written as "A2-A20." Section 3.5.5 "Specifying Imperfections Smaller Than A-A" was edited to recognize this notation.

After a discussion concerning the use of magnification to view the imperfections that are smaller than A, F. Dombrowski said that the imperfections could not be seen without magnification. D. Aikens moved to add the following statement to the second paragraph in clause 3.7: Imperfections smaller than A-A must be evaluated using magnification, such as described in Annex C. M. Dowell seconded the motion, which carried unanimously.

G. Boulton recessed the meeting at 10:20 a.m. for 20 minutes.

c) Annex C

G. Boulton said that Annex C gives general advice for the use of magnification when estimating the size of imperfections. A. Krisiloff asked if Annex C is a requirement (normative) or guidance (informative). G. Boulton said it is for guidance. A. Brunfeld said that the standard states that inspection is to be conducted according to Annex C. If that is the case, then the annex would be normative. It was pointed out that clause 3.7 states “such as” described in Annex C. Annex C would have to contain all measurement methods if it were normative. A. Krisiloff said that it is not clear whether this document is an annotative standard or inspection standard. It has to be clarified which it is, or all inspection methods will have to be removed. The Task Force agreed to add the statement, “This annex does not contain requirements necessary for conformance with this standard.”

M. Dowell suggested a rewording of the title: “Estimating the size of imperfections on optical elements using magnification.” The group agreed to that wording.

A. asked why a specific reticle technology was referenced. G. Boulton said that he has seen opaque chrome reticles that obscure the artifact that is being evaluated. F. Dombrowski said that it is possible to make partially transparent chrome reticles. C. Gaugh suggested removing the words “iron oxide” and edit the sentence to say, “Using a transparent reticle pattern may facilitate more precise estimation of size of imperfections. Imperfections on the optical element being inspected may be seen through the reticle pattern rather than being obscured by the reticle pattern.” A. Brunfeld suggested that the sentence could be started, “Use of a transparent reticle avoids obscuration...” and A. Krisiloff added, “and may facilitate...” After more word smithing the group agreed to change the sentence to say, “Use of a transparent reticle pattern avoids obscuration of the imperfection and may facilitate more precise estimation of its size.”

F. Dombrowski said that he would prefer that the Annex C be eliminated because it should also include reticles, x-y stages, fiber eye pieces, e.t.c. C. Gaugh suggested that F. Dombrowski write a draft of those sections and submit them for the next revision of the standard. F. Dombrowski agreed to that suggestion.

A. Krisiloff moved that edited version of Annex C be approved, R. Williamson seconded the motion. The motion carried unanimously.

d) Clause 3.1.6

R. Williamson had reported what he thought was a typographical error for the value of the chamfer-face in clause 3.1.6. G. Boulton checked MIL-PRF-13830, where the value was originally specified, and confirmed that the values were 0.020 in to 0.010 in. R. Williamson said that he no longer considered the value in 3.1.6 to be a typographical error. However, he thought that there was an issue since the value was changed from MIL-O-13830 to MIL-PRF-13830. Originally the range was 0.020 in to 0.005 in. The current standard should use metric values so that the value would be $0.50^{+0}_{-0.25}$ since the desired nominal value is 0.50 mm.

C. Gaugh moved that the above metric specification be placed in clause 3.1.6. A. Krisiloff seconded the motion. The motion carried unanimously. F. Dombrowski said that it should be called a chamfer-face. D. Corridon suggested that a figure be added to illustrate the chamfer face. The Task Force agreed that an illustration should be added.

The Secretary said that the draft ballot will be submitted to the Task Force for final approval. This gives members of the Task Force who were not present at this meeting an opportunity to vote. Assuming that a majority of the Task Force members approve the draft, then a second ballot to all of the members of OP would be submitted. This is necessary because the committee balance of interest is maintained over the total OP member base rather than over a single Task Force.

6. Time and Place of next TF 2 Meeting

After a brief discussion as to whether to meet next in San Diego, or Rochester, NY, W. Czajkowski moved that the meeting be held in San Diego; H. Johnson seconded the motion. The motion carried unanimously.

7. Adjourn

L. Endelman moved that the meeting be adjourned; A. Krisiloff seconded the motion, which carried unanimously. The meeting adjourned at 11:58 p.m.