Standards Report



Dr. George A. DiBari

On Metallic & Other Inorganic Coatings

The 15th Meeting of ISO/TC 107

We arrived in Cape Town, South Africa, late on a Saturday night after a long, tedious layover in Johannesburg. As we drove along the coast through dreary, dark, rainy streets, I got a funny feeling. Did we make a mistake when we accepted the invitation of the South **African Bureau of Standards** (SABS) to hold the meeting in this faraway city? I mean, delegates would have to travel thousands of miles, it might be expensive, and being on an airplane for 16 or more hours is not exactly fun. How many people would actually show up? Here's my report on the meeting submitted to the AESF Board of Directors, Feb. 2, 2001.

The 15th meeting of ISO Technical Committee 107, Metallic and other Inorganic Coatings, took place as scheduled from Sept. 18 to Sept 22, 2000 in Cape Town, South Africa. There were 25 delegates in attendance from China, Finland, Germany, Poland, Portugal, South Africa, Switzerland, the United Kingdom and the United States; that is, 9 out of 16 participating (P) member countries were represented. In the following report, the status of the various documents under development is indicated by the following acronyms:

- WD Working Draft
- CD Committee Draft
- DIS Draft International Standard
- FDIS Final Draft International Standard, and
- ISO #### International Standard (published)

The working draft (WD) is prepared by a small group of experts referred to as a working group (WG). At each stage, the document is circulated for review to member countries and their comments are considered in preparing subsequent drafts. Technical comments received at the DIS stage may require circulating a second or third DIS. No technical comments are accepted at the FDIS stage. An FDIS is approved for publication if more than 66.7% of the P-members casting ballots vote positive and less than 25% vote negative. After an FDIS is approved, the document becomes a published International Standard. Projects that do not reach the DIS stage within seven years of being started are automatically deleted from the technical work program, but may be reinstated by circulating a new work item proposal for re-approval by P-members.

Terminology (TC 107/SC1)

The subcommittee on terminology (SC 1) met for a full day to discuss the more than 100 comments received on CD 2080, Surface treatment, metallic and other inorganic coatings – Vocabulary. At the end of a very long day, the committee resolved to register the revised document as a DIS. (That was done at the end of Dec 2000, so we expect to reach the publication stage by the end of this year.) The Swiss Association for Standardization (SNV) has held the Secretariat of SC 1 for many years. The Chairman of SC 1, Dr. Peter Heimgartner, and the Secretary, Alfred Brandenberger (SNV), have done an outstanding job in expediting the work on this project. The original WD was based on the work of WG 1 comprised of members of ASTM Committee B 8 including Bill Polleys (Convenor), Allen Grobin, Phil Stapleton, Jim Menturweck, Don Snyder, Art Graham, George Di Bari and others. It is a revision of two

documents that cover the terminology of electroplating and related processes.

Test Methods (SC 2)

Subcommittee 2, Test Methods, met for half a day. The Secretariat of this subcommittee is administered by the British Standards Institution (BSI). The subcommittee chairman is Ken Carvalho, and the interim secretary is Dr. David Michael (BSI). Some of the decisions made at the meeting were the following:

- A new standard on coating thickness measurement by the phase sensitive eddy current method was approved for registration as a DIS.
- The revision of the standard test method on measuring thickness by the anodic dissolution method (ISO 2177) is to be reintroduced as new work.
- A new work item proposal to develop a test method for quantitative determination of the amount of lubrication film on contacts is to be circulated for review and approval.
- The work on the revision of ISO 3882, Review of methods of measuring thickness, is to be expedited with the view to reaching the FDIS stage by 2001-05-27.
- The draft standard developed by CEN on a method for measuring adhesion quantitatively by tensile testing is to be circulated for approval as a possible new work item.

A report submitted by the convenor of SC 2/WG 1, Michael Gee, on microhardness was accepted. The work on ISO/DIS 4516 on Vickers and Knoop microhardness testing was completed and it was agreed that the revised document would be registered as a FDIS. The revised standard document will likely be published before the end of the year. A new three part standard on universal hardness testing (the depth sensing indentation method) prepared by ISO/ TC 164/SC 3 has reached the FDIS stage (ISO/FDIS 14577). A project funded by the European Union is now studying the applicability of the method to coatings. When FDIS 14577 is approved and the experimental work completed, a new standard will be drafted describing how the method can be applied to coatings. A proposal by Dr. Hermann (DIN) to develop a new standard method of measuring coating thickness by utilizing laser energy waves will be considered as a new work item. The method has been applied to paint coatings, but information on its applicability to metallic coatings was not available. Two revisions of existing standards were published on Dec 15, 2000. They are ISO 3497, Measurement of coating thickness -X-ray spectrometric methods, and ISO 3543, Measurement of coating thickness - Beta backscatter method.

Electrodeposited Coatings & Related Finishes (SC 3)

The Secretariat of this subcommittee is held by the American Standards Institute (ANSI) who assigned the administration of the work to AESF in 1995. The Chairman is James Menturweck, the Vice Chairman is Donald Snyder, and the Secretary is George Di Bari. The subcommittee met for half a day and made the following decisions:

CD 2081 on zinc coatings with supplementary treatments, CD 2082 on cadmium coatings with supplementary treatments, CD 4521 on silver coatings for engineering purposes and CD 4523 on gold coatings for engineering purposes are to be circulated as DIS incorporating comments received from Germany and the UK. These projects had been deleted from the active program for lack of progress and were reapproved by a majority of P-members. The requirements for chromate conversion coatings on zinc and cadmium, and test methods for silver and gold

coatings are covered in the respective standards instead of in separate ones.

- CD 16141.2 a new international standard on STEP testing is to be circulated as a DIS with a broader scope that covers other multilayer coatings, in addition to decorative nickel plus chromium.
- CD 15726 is to be re-circulated as a revised CD that specifies zinc alloy coatings with nickel, cobalt or iron in one standard instead of three; the corrosion requirements are to be made mandatory.
- The completely revised standard on electroless nickel (DIS 4527) is to be circulated as a second DIS because of extensive technical comments received. The ASTM working group headed by Phil Stapleton is now studying the comments and will make recommendations on required changes.
- The revised standards on decorative nickel chromium (DIS 1456.2), decorative nickel coatings without chromium (DIS 1458.2), and decorative nickel chromium coatings on plastics materials (DIS 4525.2) are to be circulated as FDIS as soon as possible.
- Two standards covering engineering nickel (DIS 4526) and engineering chromium (6158) are to be revised in accordance with comments received and circulated as second revisions.

Most of the work on the above standards will be completed before the end of this year, and the new and revised standards are likely to be published in the first half of 2002.

Corrosion Tests (SC 7)

- This subcommittee deals with standardization of corrosion and porosity tests suitable for controlling the quality of metallic and other inorganic coatings. The Secretariat is administered by the Polish Committee for Standards (PKN), the Chairman is Lech Kwiatkowski, and the Secretary is Dorota Hitczenko. The subcommittee met on Thursday morning and made the following decisions:
- The subcommittee will circulate a WD of the proposed revision to ISO 10308:1995, Metallic coatings Review of porosity tests.
- Two standards were reapproved without change as part of the

periodic review process, ISO 4536, Saline droplets corrosion test (SD test) and ISO 4539, Electrodeposited chromium coatings – Electrolytic corrosion test (EC test).

• The new project on the development of a temperature and humidity fluctuation corrosion test is assigned to SC 3/WG 4 on EMI shielding, and that working group agreed to prepare a WD of the new standard.

Recently published standards that were revised and/or developed by this subcommittee include the following:

- ISO 4524, Metallic coatings Test methods for electrodeposited gold and gold alloy coatings – Part 2: Mixed flowing gas (MFG) environmental tests.
- ISO 10289, Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates Rating of test specimens and manufactured articles subjected to corrosion tests.
- ISO 14647:2000, Metallic coatings – Determination of porosity in gold coatings on metal substrates – Nitric acid vapor test.

Hydrogen Embrittlement and EMI Shielding Working Group Meetings Two new projects were discussed at the hydrogen embrittlement working group meeting headed by Dr. Paul Ray, (SC 3/WG 3). One covers the measurement of hydrogen embrittlement in steel by the incremental step loading method (WD 17337). The other is a standard method of evaluating and controlling processes to minimize the likelihood of hydrogen embrittlement (WD 17336). Both drafts require additional modification before they can be circulated as DIS. The working group on EMI shielding (SC 3/WG 4) headed by Jim Menturweck met to discuss the status of the new specification covering autocatalytic copper in combination with autocatalytic nickel for EMI shielding applications. The WD will be revised and circulated as a CD before the end of the year.

Committee Meeting (TC 107)

The full committee met on Friday, Sept 22, 2000, to discuss new work items, a generic method of designating metallic and other inorganic coatings and drafting of the business plan. Because most of the active projects on the current technical program will be completed by the end of the year, there is a need to initiate new work. Possible new work items that were discussed include development of a standard guide for the preparation of materials prior to electroplating, standards for plating salts and anode materials, and standards covering the vapor deposition of aluminum and cadmium coatings. The development of a generic method of specifying electrodeposited coatings (See Standards Report, P&SF, July 2000, p. 58) was discussed at length. Because of a lack of consensus, a working group was formed headed by Prof. Victor Lobo, Portugal, to study the question, taking into account the relevant European Standard (EN 1403), as well as existing ISO directives that specify how standard products, processes and services are to be designated. The business plan for the committee is a "new" requirement imposed by ISO. It consists of a review of the need for standards in this field taking into account existing and new markets for metallic and other inorganic coatings. The availability of resources to conduct the work is to be included along with the detailed technical work program with firm target dates for project completion. The draft business plan is to be completed by March 2001. Finally, it was announced that the transition to all-electronic communication is well underway via the ISO livelink system and its associated web sites. The transition is expected to be completed by the end of this year after which no hard copies of ballots, documents, etc., will be circulated.

Many Thanks to Our Sponsors

As you can tell, my misgivings about holding the meeting in South Africa were groundless. The meeting was well-attended and we accomplished a great deal. For that we have to thank the South African Bureau of Standards (SABS), notably Malcolm Vowles for extending the invitation. The SABS support staff...Ronèl Pretorius, Isabel Rennison and Liana Benecke...provided administrative support throughout the week, made excellent meeting and hotel arrangements, saw that the resolutions were typed promptly, and planned the excellent spouses program with the help of James Vivier of African Zest March 2001

Tours. The welcoming reception on Tuesday night was sponsored by Enthone-OMI, Atotech-USA and Inco Limited. Financial support for the committee dinner on Thursday night was provided by the following local companies: Cape Galvanizing, Iscor Steel: Flat Products, Vanderbijlpark Works, J.E. Orling and Associates, MacDermid S.A. (Pty) Limited, Hot Dip Galvanizers Association of Southern African and Team Plating Supplies. The Boris B. Joffe Memorial Awards were presented for the first time at the committee dinner. As already reported, the first recipients were Ken Carvalho, Felix Heiling and Allen Grobin (Standards Report, *P&SF*, Dec 2000, p. 54). The next meeting of ISO/TC 107 will most

likely be in Orlando during AESF Week 2002. The final decision is imminent. Financial support for the work of ISO/TC 107 is provided by AESF who pay the annual fees to ANSI of approximately \$12,500. The technical support of ASTM Committee B 8 members is also gratefully appreciated.

If you have an opportunity to visit Cape Town, South Africa on business or for pleasure, don't hesitate. It's a beautiful city of mountains, hills and spectacular views, where the Atlantic and Indian oceans meet, and whales, seals, penguins, and monkeys can be spotted at strategic locations around and about the city. The views at the Cape of Good Hope are absolutely mind-boggling. *PassF*