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ABC-MR

Abrasive Blast Cleaning - Monthly Review

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EDITORIAL

This being the tenth issue of ABC-MR means that our first anniversary is getting close. Operational aspects, such as producing and distributing the publication, have settled down to a routine and present no major problems. Obtaining material from our contributing authors has proved to be more difficult than originally anticipated. As ABC-MR does not pay anything for the material it publishes, it is entirely dependent on the good will of the parties supplying the information needed for each issue. An effort is presently underway to increase the number of contributing authors, particularly experts in areas which have not been adequately covered in the first ten issues of ABC-MR.

Editorial policy is another aspect which needs to be looked into in the future. Having no Editorial Board and, consequently, no set editorial policy, ABC-MR has, up to now, been relying on the good judgment of its authors and has made but few editorial changes in the material submitted by them to ABC-MR for publication. In the Editorial of our May issue, we informed our readers of a questionnaire which we had sent to a number of parties involved with our industry. The questionnaire, concerning formation of an association of our industry members, sought to find out in the third question:

"3. Would you make the services of an employee available to take part in the direction of the publication ABC-MR as a member of its Editorial Board? YES___NO___"

We have received a few replies, generally favorable, and, in fact, a move is underway to have the Founding Meeting of the Association take place early next year. Answers to question 3 have all been positive and, consequently, ABC-MR is hoping that the matter of its editorial board will be resolved once the Association is formed and operative.

Concerning reader reaction, ABC-MR has, up to now, made only one limited effort to find out what its readers think about our

publication. This was done by sending a questionnaire to a select, small group of our European readers. Of the 13 recipients, five have replied so far. Of these five replies, four were positive as regards the scope and content of ABC-MR. They find the publication interesting, informative and useful, and want to continue receiving it in the future. One party was not interested in the subject matter covered.

During the next few months, we will make every effort to discover what our readers think of, and would like to change in, our publication. In order to make this effort meaningful and productive, the fullest cooperation of our readers is necessary. Please, take the few minutes it entails to respond to our questionnaires.

IDEAL EXPENDABLE ABRASIVE

[In the October issue, an essay was started under this heading. Segments 9 and 10 which follow conclude our coverage of the subject.]

9. Chemical Composition

The basic chemical makeup of an expendable abrasive is of little interest compared with its physical properties reviewed in the preceding paragraphs.

This does not apply to the content of free silica and heavy metals such as antimony, arsenic, beryllium, cadmium, cobalt, chromium, lead, manganese, nickel, zinc, and others.

The free silica (or quartz) content of the abrasive is of major significance because breathing even minute quantities of respirable dust containing free silica causes silicosis, a deadly disease unfortunately all too well known by the blast cleaning operators who have worked with silica sand abrasives.

There is a worldwide consensus that abrasives containing more than 1 to 3 percent of free silica should be avoided in unconfined abrasive blast cleaning whenever possible.

An ideal abrasive should not contain any free silica in measurable amounts.

Heavy metals such as arsenic, beryllium, chromium (alkali chromate), cobalt and nickel, being known carcinogens, present a very real occupational health hazard if dust containing these elements is inhaled in quantities exceeding the established limits.

Heavy metals such as antimony, cadmium, lead, manganese and zinc, all known toxins, also present an occupational health hazard if dust containing these elements is inhaled in quantities exceeding the established TLV's.

At present there is much less agreement on the permissible exposure limits for the heavy metals than for free silica.

One way to approach the subject is to take OSHA's exposure limits for total dust and the heavy metals involved and to calculate the permissible maximum heavy metal content in this manner. Thus, the following values were obtained:

Arsenic	0.067%
Beryllium	0.013%
Cadmium	1.3 %
Lead	0.33 %

An ideal abrasive, then, should have its heavy metal content well below these values so that its classification as a non-hazardous material from the standpoint both of occupational health and safety as well as of its proper disposal ultimately would be beyond any reasonable doubt.

10. AVAILABILITY AND COST

If an ideal expendable abrasive or one approaching it could be produced, how much more, if any, could it be sold for than the currently available abrasives? That is a good question.

It is well known that silica sand is gradually losing part of its expendable abrasives market share because it has one property far from ideal: it is made principally of quartz (free silica), known to constitute a serious health hazard at the work place.

Coal slag abrasives sell at considerably higher prices than silica sand, yet their use is increasing at the expense of the cheaper sand.

At the same time, as more smelter slag abrasives of good quality become available and evidence of their superior overall performance, at least in some instances and some applications, becomes better known, a number of users shift to the smelter slag abrasives despite the higher price they must pay for them.

And, even more expensive abrasives such as staurolite and garnet, which have properties closer to the ideal abrasive, are finding customers who believe the tradeoff for better quality even at the higher price to be to their advantage.

Naturally, for the imaginary abrasive to be truly ideal, its availability should be excellent and its delivered price to the customer should be highly competitive.

ALMANDITE AND OTHER GARNETS

In our October issue under the heading IDEAL EXPENDABLE ABRASIVE, section 3 page 4, we gave 3.5 - 3.8 as the typical range for specific gravity for various types of garnet.

In an informative letter to ABC-MR, Mr. John C. Rosling, president of Myers Metals and Minerals, one of the world's major garnet producers, points out that, while the range given by us is correct for such garnets as andradite, grossularite, pyrope, etc., it is too low for almandite garnet, the iron-rich end member of the iron-aluminum silicate type of garnets.

The well-known Idaho, alluvial type garnet which is produced by (and marketed by) Mr. Rosling's company, is an almandite garnet having an average specific gravity of about 4.0.

In addition, the Idaho almandite garnet is very hard, exhibiting a mho's hardness rating of 7.2 to 7.5. Furthermore, the garnet possesses excellent friability characteristics as shown by a recent test result from the California Air Resources Board, which was reported to us by Mr. Rosling as having shown zero percent generation of respirable dust. The high specific gravity and hardness combined with the friability characteristics resulting in low dust generation and good recycling possibilities make the Idaho almandite garnet a superior abrasive when compared with many other garnets, staurolite, slag abrasives and silica sand.

Consequently, the viability of using this material is worth evaluating in many instances despite its higher cost compared to the abrasive materials listed above.

Myers Metals and Minerals is ready to assist any prospective customers in such an evaluation. The company has also promised to keep ABC-MR informed of any new pertinent data becoming available, which we hope to pass on to our readers from time to time.

[Editor's note: The reported maximum error in the determination of the respirable dust percentage is plus or minus two percent.]

THE INTERNATIONAL STANDARDS ORGANIZATION

ABC-MR introduced the ISO and the ISO TC/35 SC/12 subcommittee dealing with "Preparation of Steel Substrates Before Application of Paints and Related Coverings" in our February 1986 issue, and we promised to cover the highlights of its annual London meeting as well as its other activities of interest to our readers from time to time.

There has been no coverage since then. Consequently, it is high time for us to keep our promise and to let our readers know what SC/12 has been doing during the past nine or ten months in the area of interest to our industry.

A request for new work covering blast cleaning abrasive specifications and test methods was made by Sweden even prior to the London meeting. The attendants at the meeting responded by approving the initiation of a new working group, WG-4, to undertake the carrying out of the work. Unfortunately, due to a number of technical reasons, the start of serious work by WG-4 was delayed and only started shortly before the latest full SC/12 meeting, which was held in The Hague, Netherlands in October of this year.

ABC-MR is happy to report that the first meeting of WG-4, which took up the better part of a full day (October 21/86), was attended by 31 delegates and resulted in unanimous approval of the organization, its scope, and guidelines for the work to be undertaken.

Organization

It was agreed that only abrasive blast cleaning media used for preparation of steel surfaces were to be included and that they should be divided into two categories: Metallic abrasives and Non-metallic abrasives. Consequently, two advisory groups to the full WG-4 were formed to deal with the drafting of the Standards for each of the two categories and subsequent presentation of these standards for the approval of the full WG-4.

Mr. Roland Buse of the German F.R. was confirmed as the leader of the non-metallics advisory group, while Mr. Arthur Aston of the United Kingdom, convener of the WG-4, was chosen to lead the metallics advisory group.

Scope

There was considerable discussion and exchange of information between the delegates, ending with the following consensus on major points:

Some four to six important physical properties are to be covered by the standard, which would include sampling procedures and test methods for their determination.

Between two and four important chemical properties, including the content of free silica and heavy metals, and stating the test methods to be used, will also be covered by the standard. Concerning occupational health and waste disposal aspects involved in abrasive blast cleaning, these are to be

covered only in general terms, making references to particular precautions necessary, and the need to observe all applicable national or other regulations.

The question regarding what performance characteristics to include in the forthcoming standards for abrasive media used in blast cleaning was deferred to future meetings of the advisory groups of the full WG-4 for their final decision.

Additionally, the standard should include sections on terminology, definitions, reference standards, classification, quality control, and labeling.

Guidelines

During the lively discussion throughout the entire first meeting of WG-4, many matters were considered which may eventually be incorporated into the guidelines for the advisory groups. To put these in writing, however, is not so easy.

With the organization accomplished and the scope fairly well defined, there is no reason why the working groups cannot come up with a good first working draft in short order.

[Editor's note: Since the meeting in The Hague, tentative arrangements are underway to hold the next ISO TC/35 SC/12 WG-4 meeting in New Orleans, Louisiana in January 1987, in conjunction with the SSPC Annual Meeting and Symposium.]

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Major developments are taking place which will impact the entire Abrasive Blast Cleaning industry. ABM producers, distributors, equipment manufacturers, blast cleaning contractors as well as the principal clients (shipyards, structural steel fabricators, refineries, chemical plants and others) will be affected in a major way over the next few years. To know what is taking place and thus anticipate future events becomes increasingly important to every one of us involved.

ABRASIVE BLAST CLEANING-MONTHLY REVIEW (ABC-MR) is designed to keep you abreast of forthcoming developments so that your business will prosper to the maximum possible extent in spite of these changes.

We hope, after having read our current issue of ABC-MR, that you will join with us by adding your name to our growing list of subscribers.

U.V. Erkkila
Editor/Publisher

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