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Seasons Greetings to all of our readers

PaintExpo success

Markus Biess, Elcometer Germany, reports on the success of their latest exhibition.

In October 2006, Karlsruhe Exhibition Centre saw the first PaintExpo Trade Fair take place in Karlsruhe, South Germany. PaintExpo, which has replaced the bi-annual PaintTech International trade fair, was held over 3 days from 10th to 13th October 2006.

With over 240 exhibitors from 16 countries, PaintExpo featured a vast range of innovate products and services designed to make the painting and powder coating industry more flexible, reliable, economic and more environmentally friendly.

Initially PaintExpo expected the majority of visitors to be German, however 17.5% of the 4900 visitors came from outside Germany, making this an international event.

The Elcometer 2300 Rotational Viscometer generated much interest

Markus told us "Elcometer exhibited a comprehensive selection of products from our extensive coatings inspection equipment range. Over the 3 day show, we saw an unprecedented amount of interest in our Viscosity products range, with the Elcometer 2300 Rotational Viscometer causing quite a stir! With the Elcometer 2300 offering various speeds, test temperatures, spindles and a wide range of accessories, it meets almost all viscosity testing requirements in a single gauge. With PC control, our visitors saw this as an easy and accurate way to measure viscosity."

Elcometer also received much interest in the other product ranges they exhibited which included viscosity cups, coating thickness gauges, film applicators, bend testers, washability and abrasion testing instruments and more.

Improving on the success of previous years, we are looking forward to participating in this very successful show again in 2008.

Colour issue resolved

Graham Culf, Elcometer UK, solves a quality check problem for a clothing company.

RoDO Ltd (www.rodo.co.uk) an importer and distributor of high-visibility workwear clothing, have recently moved into a new 10,219m² (110,000 sq.ft) warehousing facility, close to the Elcometer UK site in Manchester. The recent move is to house stock valued at approximately £5 million.

RoDo's Quality Manager, Mr Tony Osborne, approached Elcometer UK Sales for advice on solving a specific colour consistency problem they were experiencing with their Chinese supplier.

An artists impression of RoDO's warehouse facility Mancheser, UK

Initial conversations identified the Elcometer 6075 Portable Sphere Spectrophotometer to be the ideal solution. Allowing a quick pass/fail comparison against a stored standard, the Elcometer 6075 also provided corrective information as to the nature of the "drift" from each individual CIE L*a*b co-ordinate. Tony was invited to bring various workwear samples into the Elcometer offices for evaluation with the Elcometer 6075 Spectrophotometer. He was impressed with the ease of use and results obtained and subsequently ordered one. The whole process from initial enquiry, demonstration to placing an order took less than a week.

product of the month

The Elcometer 3086 Motorised Pencil Hardness Tester

The Elcometer 3086 is a simple and effective technique to evaluate the hardness of many coatings.

This motorized device can travel forwards and backwards at a uniform speed, increasing the reproducibility of the test. The load on the lead is adjustable from 0 to 10N and each instrument is supplied with a lead holder and a set of 12 leads in each of the 14 hardnesses.

For further information on the Elcometer 3086, or any of our other products, please visit our website www.elcometer.com or contact your local Elcometer distributor.

coatings on site

Cool gloss

Light sources for instruments are changing. They no longer need to be a piece of white-hot tungsten at a temperature of 2500℃ (4500℉) in order to emit incandescent light. A much cooler light-emitting diode (LED) works just as well. The Elcometer 406 Novo-Gloss™ Mini Gloss Meter benefits from using this technology.

The Elcometer 406 Gloss Meter covers the range necessary to measure any surface from high gloss to matt, providing a quantitative value to gloss measurement. It is available in 60° Statistical and Dual Angle 20/60° Statistical versions, both of which use the LED lighting system to take accurate measurements.

The LED light is a part of the optic source and cannot be replaced by the customer, however under normal operating conditions, the LED light source will last over 10 years.

For further information on Elcometer gloss meters and other products used for testing appearance, please visit www.elcometer.com or contact your local distributor.

Oven loggers improve

The Elcometer 215 Oven Data Logger Mark II sees a number of improvements both in the hardware and the software to make the Elcometer 215 even easier to use.

Hardware improvements include:
USB Connection – The logger now communicates with an USB port rather than via RS232.
Illuminated Display – Now with a backlit screen for easy viewing in dark environments.
Probe Connections – More robust to eliminate wrong-way connection problems.

Software improvements include:
Real time temperature indication – Set the logger to display the maximum or real-time temperature during the logging process.
Flexible memory setup – The memory can be set up to divide the capacity over different batches or use the entire memory in one large batch.
Data transfer protocol – A new, faster and safer protocol is now used to transfer data between logger and PC.

Ideal Finish Software improvements include:
Real Time Logging – when the logger is connected to the PC the real time data can be observed at the computer screen during logging.
"Tolerance Band" – before a run is made a tolerance band can be programmed into the system. If the reading are out of the specified tolerance, it will be clearly shown on the graph.
Save as Zoom – it is now possible to zoom into different areas of the graph and save these zooms as separate files. This is especially useful when a complicated process is monitored.

For more information on the Elcometer 215 Oven Data Logger visit www.elcometer.com or contact your local distributor.

coatings in the lab

Why use Spectrophotometers?

Visual assessment with the eye is unreliable. Within any given environment, different lighting will affect how a colour is assessed for example sodium street lighting.

Elcometer Portable Spectrophotometer

Humans suffer from retinal fatigue, poor colour memory, colour blindness, background effects (colour viewed over black look different to over white) and colours viewed cannot be recorded for future reference. With human measurement, colour communication is reliant on verbal descriptions, unclear tolerances and subject to variable opinions.

When using a spectrophotometer, all these variances are eliminated and colour can be accurately measured and recorded. The benefits include:

Agreed tolerances make pass/fail decisions easy:- Precise standards and acceptable variations can be agreed with both suppliers and customers. Standards can be accepted that ensure costly rejects are minimised.

Using spectrophotometers ensures that colour communication is accurate and reliable:- Colour co-ordinates and spectral data allow exact standards to be communicated to all. There is no longer a need to be reliant on old and faded Pantone books, physical samples and rough estimates that can result in costly miscommunications.

Using spectrophotometers allows standards and samples to be stored:- Complete records can be kept and data reviewed, hence costly and wasteful mistakes will not be repeated and integrity of production can be insured.

Common uses of spectrophotometers include:-

- Quality Assurance
  Quality of incoming and outgoing raw materials and products can be monitored as well as Quality Assurance on the production line. This ensures products are made to specification, minimising costly material and time wastage.
- Colour Matching
  Faster matching of customers colours. No more time consuming guesses and estimates.
- Customer Standards
  Exact definition of customer standards can be made and agreed upon. This ensures no miscommunication over poor colour compliance.
- Time + Wasted Materials = Money

Colour comparison can also be carried out using the Elcometer 6300 range of Colour Assessment Cabinets. They provide a controlled environment for viewing colour samples and are available in a range of sizes and functionality with a choice of 3, 4 or 5 light sources.

For more information on spectrophotometer and colour assessment, see the new Product Focus Group leaflet on Colour that is available to download from www.elcometer.com These leaflets have been compiled from the articles written by John Povoiskis for the back pages of **elconews** e-zine and provide a superb overview and practical advice on a wide range of topics.

Concrete information

Concrete is one of the most important building materials in the world. Concrete that has been properly placed, cured and protected, will last longer than any other building material. From motorway bridges to skyscrapers, we see concrete everywhere everyday.

Some concrete facts. Did you know…

- Concrete has been derived from the Roman words 'caementum' meaning a rough stone or chipping.
- The first concrete structure was built around 300 BC.
- Concrete is the second most consumed substance on earth, the first is water.
- The setting of concrete is a chemical reaction between the cement and the water, not a drying process. This reaction is called hydration.
- Concrete is a mixture of gravel, sand, cement and water.
- The Chinese used a material similar to concrete to construct the Great Wall Of China.
- In 1756, British engineer, John Smeaton made the first modern concrete (hydraulic cement) by adding pebbles as a coarse aggregate and mixing powered brick into the cement.

Elcometer 331² Covermeter with Half Cell

Elcometer provide a comprehensive range of products to satisfy all concrete inspection needs. Elcometer have four covermeters in their range, Elcometer 331² Model B is a Covermeter only and the Elcometer 331² Models BH, SH and TH incorporate the Half-Cell technology required to assess potential corrosion of rebar. For further information please visit www.elcometer.com

Post-Construction Quality of Reinforced Concrete

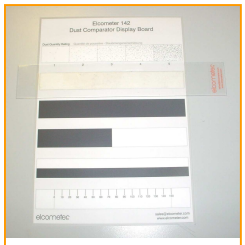
Early deterioration of concrete structures after a short service time has been frequently observed. Even though the durability design scheme has been implemented, the integrity of newly constructed structures can still not be indisputably guaranteed. The main causes are: no obligation to inspect in-place concrete, favourable specimen-based quality verification, inappropriate short guarantee period, lack of reliable verification techniques and no suitable verification system. That is why the need has emerged for a system to verify the quality of concrete after construction.

In response to this need, the subcommittee JSCE 335 was established in September 2005. Its purpose is to discuss and share opinion on related topics, review the current trend, point out the problems and to collaborate with researchers and engineers having the same interest in this matter.

ISO 8502-3

Inadequate preparation of steel substrates prior to applying a coating can lead to premature failures. To ensure a lasting coating performance, it is essential to assess the cleanliness of a prepared surface.

ISO 8502-3:1992 *Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)* provides pictorial ratings which can be used in the assessment of the average quantity of dust on a steel substrate and provides a means to classify the average size of the dust particles. Based on using a pressure-sensitive adhesive tape on the steel surface to be tested, ISO 8502-3 can be used as both a "pass/fail" test - by comparison with specific limits – and as a permanent inspection record.



Comparing test tape against pictorial

Elcometer 142 Dust Tape Test Kit

The Elcometer 142 Dust Tape Test Kit provides users, for the first time, with a specifically designed inspection kit which can be used in accordance with the recommendations of ISO 8502-3.

The Elcometer 142 Dust Tape Test Kit contains all the essential components required for accurate testing:

- The test tape - compliant with the ISO 8502-3 standard
- Clear acrylic dust assessment plate – the tape is mounted on this to ensure the dust on the tape is only from the surface being assessed and not the surrounding environment.
- Comparator display board and illuminated microscope - makes cleanliness judgements and assess dust particle size easily and accurately.
- Test record sheet – Allows a record of each test to be kept for future reference.

All of the above are supplied in a compact, portable kit box, making testing in accordance to the standard ISO 8502-3 convenient, accurate and user-friendly.

New Elcometer brochures are now available for download

Elcometer now have a new range of brochures available for download.

These include Elcometer Surface Cleanliness, Elcometer Rebar & Wall Tie Locators, Elcometer Moisture Meters and Elcometer Test Hammers, as well as the Product Focus Group brochures.

Abrasion and wear testers

The external appearance of a product is very important to both purchasers and users. Most prefer it to last for the lifetime of the product but in the harsh world we live in, this takes some doing. From motorcars to domestic appliances, from floors to paint, they all suffer from abrasion and erosion. The chemist has the task of designing this material and the quality person of ensuring its production is consistent.

DIFFERENT TYPES

Initially, accelerated tests were based on simple rubbing, scrubbing and scratching. Then, attacking with particles and chemicals came along. Now, there are many of these tests, based on what happens or could happen to a particular product during its lifetime.

TABER ABRASER

A turntable (or two) supports the sample as abrasive wheels rotate on it. The number of revolutions, the load and the type of wheel are variables affecting the wearing of the sample's surface. The same type of abrasives can also be applied in a linear motion. The result is a break through the coating or a loss in weight. Sometimes, the Reflectance Haze is measured.

Taber's Rotary Abraser and their Linear version

WASHABILITY TESTER

When grandmother did the cleaning, she used a brush with soap and water. Today, we use something similar to predict what a surface will look like after years of such treatment. She used stiff brushes and softer pads, according to the task. Now, world standards describe exactly which type to use and how, so the same test can be repeated in any laboratory. (Elcometer 1720)

Another simple cleaning method is to rub a very small area with some textile held over a finger, dipped in water or another solvent. This is now called the Crock Test and determines the ability to remove some of the surface material or coating by rubbing (Taber Linear and Elcometer 1720).

IN REVERSE

Laboratory tests based on methods of cleaning can provide some other very useful information. Think of packages rubbing against carton or each other while being transported. Their labels or printing should remain undamaged, even after purchase. A pad could be used for a set number of cycles during the test. A container for cosmetics such as lipstick should not have it's writing coming off when handled. A crock test would test this. Swipe cards should retain their security marks. An abrasive wheel accelerates the wear to determine the useful life of these. Floor coverings for busy areas are tested with tougher wheels and so on.

Rubbing or abrading samples using some of the test methods mentioned above tell us something about how resistant the surface is or which one is most resistant. And because the tests are reproducible, the results can be compared as each of the variables is changed.

Bench top car wash

AUTOMOTIVE

Paint on a car has to look good for many years. It has to withstand not only erosion from grit off the road but abrasion caused by cleaning cloth and brush, especially that of the car wash machine. Plastic brush fibres and road grit moving over the vehicle's paint produce a specific form of abrasion and erosion. The Car Wash Simulator (Elcometer 1730) is a bench-top sized machine that provides the same form of attack and requires only small sample panels.

ABRASION BY PARTICLES

A stream of sand or silicon carbide grains falling by gravity abrades and erodes a surface after a short time. This simple process is used to test the resistance to abrasion of organic coatings, being the time to make a 4mm diameter hole in them. It has been used for printing on anodised aluminium control panels. (Elcometer 1700)

Falling Sand Tester

The action of leather shoes and grit on a floor can be synthesized too. The Taber Grit Feeder attached to their Rotary Abraser fitted with leather covered wheels tests not only floor coverings but also floor polishes. The same test was useful in developing paint for ships that would support cargo moving around on salt crystals.

Leather wheels roll the falling grit on the sample

CONCLUSION

There are many abrasion and wear tests to choose from simply because there are so many forms of attack on coatings and materials. Choose the right test by considering what will happen to the sample material when it is being used as a product. There is no 'best test', only the most appropriate.

In the next issue of elconews e-zine we will be looking at Porosity and the detection of pinholes.

If you would like to make a contribution to the elconews e-zine or is there is a subject you would like to see covered, e-mail us at: editor@elcometer.com

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