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# Standing up for Science

One of the stranger things that happened in recent years has been the declining confidence in science. The reasons are complex, ranging through contention over climate change; shifting theories in medicine, an area that affects us all directly; a vocal minority that enjoys questioning anything that doesn't meet its criteria for rightness; and sloppy or incomplete statistical analysis in certain areas of research.

A key factor underlying all these, of course, is poor science education generally. Teaching science has been dumb-ed-down by many school-boards, and popular science programs on TV don't always remedy that. (And let's not even discuss YouTube in this context).

The odd ways materials behave under extreme stresses (or even under minor ones) have fascinated me ever since someone in the business explained how polymers respond to orientation and tension, and I realized

'common sense' was not something molecules necessarily believe in, nor practice. I've been a science nerd since, even though I wasn't one in school.

People's grasp of science as an issue often comes to the fore when industrial emissions and toxicity are in focus. The concept of dose-and-dosage, for example, is hard to explain when a vocal critic is holding forth on carcinogens and toxicity in general. Governments usually make reasonable decisions on such things in the end, but it often takes major effort by industry and trade associations to achieve a survivable outcome.

The feature on trivalent chromium in this issue doesn't go into the toxicity issues much, since they are well-known. Nobody doubts there is a potential problem, even if the means to address it vary from jurisdiction to jurisdiction.

In this case, simply eliminating hexavalent chromium is impossible without creating a serious impact on production

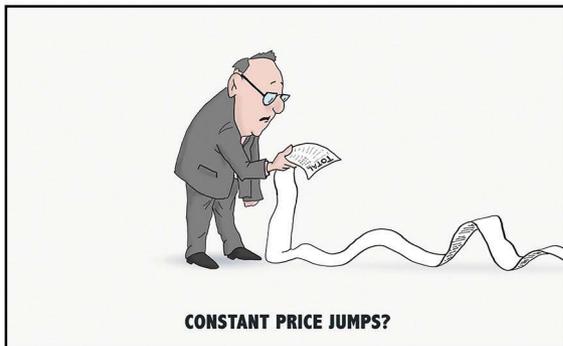
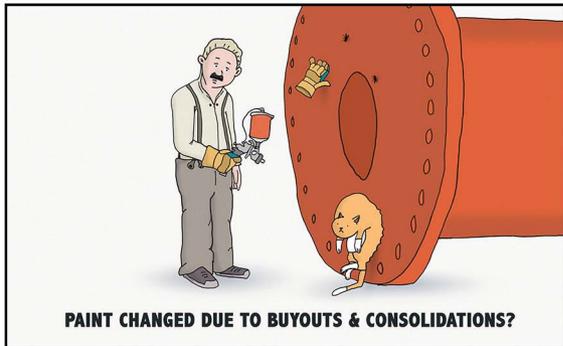
of reliable, long-lasting metal parts. Trivalent suppliers are making efforts to come up with viable substitutes, but complete elimination of chromium (VI) is not going to happen.

The same situation prevails across any number of industries. Some materials or processing aids are harmful, if they accumulate too heavily, or are disposed of poorly. They are designed to be reactive –it's how and why they work – and that reactivity can have health effects.

In industry, we know and accept this. Sometimes, though, we forget to remind other people that those risky substances, while they do need to be monitored and controlled, make our lives better and safer overall.

It requires a bit of courage to go up against the "technology is killing our world" school, but remember: the science is on your side. And, though they might not accept or appreciate it, on theirs too.

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### Powder Coating Conference Announces 2018 Dates

The Powder Coating Institute (PCI) has announced that next year's PCI Powder Coating Technical Conference and Tabletop Exhibition will be held March 12-15 2018 at the JW Marriott Hotel in downtown Indianapolis. PCI's executive director Trena Benson said, "We are excited to be headed back to Indy for the Powder Coating 2018 Technical Conference. This event is the best place for powder coating end users and suppliers to learn, network, and support the entire powder coating industry."

The four-day event will kick off with the Technical Conference and Tabletop Exhibition on Monday and Tuesday, March 12 & 13, closing on the morning of March 14. The tabletop display area will feature powder coating manufacturers, powder coating application equipment, system houses, chemical suppliers and various services that support the powder coating industry.

Along with general sessions and concurrent technical program, attendees will have access to a variety of powder coating information as well as personal interaction with suppliers. Following



The Downtown Indianapolis Marriott Hotel, location of next year's Powder Coating Conference.

the technical conference, PCI's popular Powder Coating 101: Basic Essentials Hands-On Workshop will be offered on Wednesday afternoon, March 14 and Thursday, March 15. The workshop includes a comprehensive agenda that covers all the basics of powder coating operations and concludes with hands-on training demonstrations at an area powder coating facility.

### Huber Completes Silica Business Sale to Evonik

J. M. Huber Corp. has completed the sale of the Silica business unit of Huber Engineered Materials to Evonik Industries AG, a global specialty

chemicals company. The US\$630-million transaction, completed after approvals from the European Commission and other global regulatory bodies, transfers ownership of the HEM silica facilities in North America, Europe and Asia to Evonik, effective September 1.

Strategically, Huber stated in a press release, the transfer of the silica business is advantageous for both companies. Proceeds from the sale will enable Huber to invest and expand its product portfolio in other areas, including potential future acquisitions of specialty chemicals or materials businesses. For Evonik, bringing together the two diverse Silica businesses will further improve the company's value proposition as an integrated global provider, better positioned to serve a broader base of customer needs, particularly in North America and Asia.

The silica business has been part of Huber for more than 60 years, providing a runway for the company's global diversification into engineered materials.

"The strength of our Huber Silica business was built, in part," said Mike Marberry, Huber president and CEO, "from the collaborative spirit

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of our Silica employees, who adhere to best practices in environment, health, safety and sustainability, ethical behavior, respect for people and operational excellence. These guiding principles at Huber are the foundation of our company culture and ability to deliver superb value for our customers. We thank our Silica employees and know their talents and expertise will be highly valued by Evonik.”

Huber will continue as usual to serve its HEM customers who use other non-silica materials such as ground calcium carbonate and fire retardant additives across a broad range of applications.

**AkzoNobel Finalizes Acquisition of Disa Technology**

AkzoNobel has completed its acquisition of Disa Technology (Limoges, France), a supplier of aerospace technical marking systems. The intention to buy was announced in July. DisaTech manufactures self-adhesive vinyl, polyester and polycarbonate films used on aircraft and vehicles, as well as other equipment.

“With the acquisition now finalized we can further invest in growth and innovation,” Ruud Joosten, COO of Paints and Coatings for AkzoNobel, said in a statement. “The technology and knowledge acquired from DisaTech strengthens the product and service range we can offer to our customers, bringing them numerous benefits.”

The move is part of AkzoNobel’s long-term plan to provide more of a comprehensive product portfolio for consumers. Financial terms of the deal were not disclosed. AkzoNobel employs more than 46,000 people across 80 countries.

“They will expand our existing product and service offering, enabling us to deliver significant benefits to our customers,” said former AkzoNobel CEO Ton Büchner, in reference to acquiring Flexcrete Technologies Ltd. and DisaTech. “These deals also offer us great opportunities to pursue further coatings innovations in a number of our core markets.”

**Hurricane Aftermath Causes Supply Shortages**

Coatings materials suppliers are warning of supply shortages in the wake of Hurricane Harvey. The hurricane damaged or impaired a considerable number of petrochemicals facilities in the area around Houston, TX, and as a result feed-stock suppliers are declaring force majeure and are unable to fulfil supply commitments in the near-term.

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An aerial view of petrochemical plants around Houston, TX. Photo: Houston Public Media

“Our thoughts go out to all those impacted by Hurricane Harvey and the devastation caused by this storm,” said Felipe Mellado, chief marketing officer and board member, with Sun Chemical. “The devastation from this hurricane has impacted businesses near and far and we are working closely with our supply chains to ensure minimal disruptions to our customers.”

Due to the unprecedented impact and devastation in the wake of Hurricane Harvey, he stated, several of Sun Chemical’s feedstock suppliers have announced a force majeure and many other raw materials suppliers are reviewing allocations.

While the volatility of the supplier markets is

unknown at this point, the inks and pigments markets will be affected. Sun Chemical is committed to working closely with its suppliers to assess global ramifications, develop needed contingency plans, and to notify customers of potential delays or issues.

He added that Sun Chemical will continue to communicate information as more becomes available. The company, a member of the DIC group, is a major producer of printing inks, coatings and supplies, pigments, polymers, liquid compounds, solid compounds, and application materials. Together with DIC, Sun Chemical has annual sales of more than US\$7.5-billion and over 20,000 employees around the world.

### AkzoNobel Opens Advanced Paint Factory in UK

AkzoNobel has launched its most advanced paint factory, which opened in early September at Ashington, UK. The facility, which cost about C\$170-million, is claimed to be the most advanced and sustainable such plant in the world. It is also described as the company’s largest global investment by the Decorative Paints

segment, and will become the new production center for its paint brand Dulux.

The plant uses a variety of renewable energy sources, according to the company, including photovoltaic cells, a biomass boiler and an automated manufacturing process that saves water, waste and energy. All manufacturing technologies are managed by a single computer system, meaning that every activity can be initiated without operator intervention. This production system allows the plant to be capable of producing paint across the full AkzoNobel line.

The facility is capable of doubling the company’s UK production levels to 200-million liters per year.

### DowDuPont Revises Break-Up Plans

DowDuPont has decided to alter its original plan to break into three independent companies, following the merger of the two parent firms. The newly conjoined company said its board of directors and management, with the assistance of independent advisors, completed a comprehensive review of the portfolio composition of the intended companies: Agriculture, Materials Science








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and Specialty Products.

Various media outlets have said the decision follows moves by activist investor groups that felt the original plan did not deliver enough value. Reuters cited Nelson Peltz's Trian Partners and Daniel Loeb's Third Point LLC as groups that had raised objections to the original concept.

The board concluded, according to a press release, "that, in light of knowledge gained since the announcement of the transaction, certain targeted adjustments will be made between the Materials Science and Specialty Products divisions, which will enhance the competitive advantages of the intended resulting companies. The changes better align these businesses with the end-markets they serve, ensuring clear focus, market visibility, targeted innovation and stronger growth profiles, and better equip each to compete successfully as industry leaders."

The board approved the changes based on "a thorough review led by lead independent directors, which included recommendations provided by McKinsey & Company; a comprehensive business and operational analysis leveraging

knowledge gained over the past 20 months of pre-merger planning; and input from a wide range of stakeholders, including both investors and financial advisors."

DowDuPont now says that, among other sectors, it will realign Dow's Building Solutions business, its Microbial Control business and DuPont's Performance Polymers business to the Specialty Products Division from the Materials Science Division:

DowDuPont said that on a forecasted 2017 basis, the businesses that will be realigned to the Specialty Products Division account for a total net sales of more than \$8-billion and operating EBITDA of approximately \$2.4-billion (including roughly 40 percent of the heritage Dow

"These adjustments are also fully supported by the Materials Science Advisory Committee, as they better align select businesses with the market verticals they serve, while maintaining integration and innovation strengths within strategic value chains," said Andre Liveris, executive chairman of DowDuPont. "As a result, both our Materials Science and Specialty Products

divisions will be well-positioned to better anticipate and meet customer needs through focused innovation and technology development that will deliver accelerated growth from a broader suite of best-in-class products."

DowDuPont said it still plans to achieve run-rate cost synergies of approximately \$3-billion and approximately \$1-billion in growth synergies.

### **Pacific Northwest Society Calls for Papers**

The Pacific Northwest Society of Coatings Technology (PNWSCT) is inviting presentations for the CoatingsFest to be held from Wednesday, October 10 to Friday, October 12, 2018 at The Inn at Laurel Point in Victoria, BC.

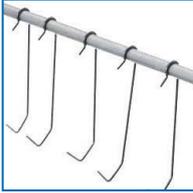
The technical program will begin on October 11 and will extend for a half-day on October 12. Presentations should focus on the future of paint manufacturing in the Northwest, and new product technology designed for the future. Presentations will be 20 to 25 minutes long.

Those interested should submit an abstract of 250 words or less, including the paper title and



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contact information, such as author names, company name, address, phone, fax, email address, and speaker bio. The deadline for the Call for Papers is June 15, 2018. The Society will send out a notification of acceptance by June 30, 2018.

Abstracts should be submitted to Thelma Longakit at [tlongakit@cloverdalepaint.com](mailto:tlongakit@cloverdalepaint.com). Contact her at 604-594-6211 for additional information.

### Anodizing Offers Technology for Diagnosing Cancer

Anodized aluminum could be used for diagnosis of various medical conditions, including cancers. The concept, and the technology behind it, were described to the audience at the recent Summit of the Aluminum Anodizers Council in Westminster, CO., by Matthew Nickel, a PhD candidate and

researcher at the University of Alberta.

"Cancer is intrinsically many different types of diseases, due to the nature by which it comes about: genetic mutation to form cells that multiply uncontrollably," Nickel explained. "Healthy cells have check stops that signal when to grow and when not to."

"Cancer cells, on the other hand, have had a series of genetic mutations that destroy or bypass these check stops and therefore the cell just continues to grow and divide, developing into a tumor. These genetic mutations are also all very different. In fact, there are over 100 different types of cancer with new types being discovered every year."

Often, it is expensive or difficult to identify which type of cancer a patient has, and treatment tends not to be personalized. The result can be unnecessary surgeries for removal of organs, and other excessive procedures.

One method for identifying specific forms of cancer is to detect signifier proteins that show up via interference colors, using thin film diagnostics. The principle, Nickel explained, relates to what is seen when oil sits on top of water in the roadway, the two substances creating the startling visible pattern.

Such interference colors are also generated when certain metals, for example tantalum, are anodized at high voltages. The colors are generated due to an oxide film on the surface of the metal, in a similar way that color is generated by oil on water.

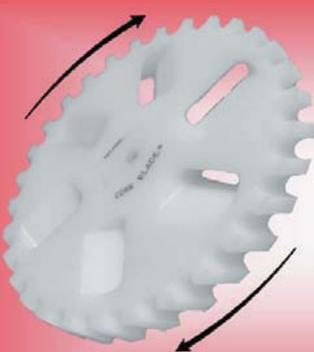
"In the field of thin film diagnostics, this color generating principle can be used to detect small molecules or proteins such as antibodies and antigens," Nickel continued. "If a patient's blood sample is placed on the surface of the device and contains the antigen associated with the immobilized antibody, then the antigen will bind and create a visible color change after washing and drying, due to the thickness increase of the film."

Anodized aluminum came into the picture when it was realized how its porosity could be a direct aid in producing viable and affordable detection instruments using this phenomenon. The ability to create a regular hexagonal array of pores with diameters tailored in the nanometers has led to various research in nanostructured materials and the use of porous anodic alumina in the field of medicine for biosensors, molecular and ion separation, drug delivery devices, and biocompatible implants for improved tissue integration.

The prototype device described by Nickel has a

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thin tantalum layer (200 nm thick) deposited onto a glass or polymer substrate, followed by a thin aluminum layer (90-150 nm) deposited onto the tantalum. When anodization is carried out, a porous aluminum oxide is produced plus the thin tantalum oxide barrier layer. The tantalum is the color-generating metal, with the color dependent on the thickness of the oxide layer.

"The porous aluminum oxide acts as the layer with an adjustable refractive index," Nickel explained. "By changing the electrolyte or voltage during anodization, the pore size and density can be changed which influences the percentage of air in the final film."

When a sample with an antibody to the specific protein that is a disease marker is applied to the surface, it binds and creates a strong color shift in 15 minutes or less. This compares with some current tests that require days or even weeks to confirm an uncommon diagnosis.

"Our lab works on the development and understanding of this device," Nickel added. "In the end, the simplicity of a dipstick-style test combined with the inexpensive materials used and the high sensitivity make thin film diagnostics based on



Matthew Nickel

anodized aluminum very attractive. It is also easy to imagine a test with many different proteins or antibodies attached to a small area of the surface. A small spot of blood could test for many types of diseases or biomarkers by simply checking for a color change in each area."

Research involves much experimentation and fine-tuning of the anodization process. This includes the etching rate of the surface due to the electrolyte used, the temperature of the anodization bath, and pore size and density with respect to the voltage used.

"The future technical challenges lie in mass anodization using a roll-to-roll process," Nickel concluded. "However, we believe this to be achievable."

## Dyeing Anodized Aluminum Black

Black is the dye most used in anodizing, but it is not always the best understood. Pinakin Patel, president of the metals finishing consultancy, Techevon LLC examined some of the ins and outs for attendees at the recent Aluminum Anodizers Council Summit in Westminster, CO.

"Black dyes represent at least 80 percent of the overall anodizing dye market," he noted. "Black is a preferred color because it shows the least variations and hides a lot of surface defects."

He identified two main categories, high-performance and economical. The former demonstrate excellent light, heat and weather-fastness, and consistent color over prolonged use. They also show low bleeding characteristics and can dye a thin coating a deep black.

"There are varying shades of black that are not perceived when inspected as individual components," Patel pointed out. "However, when components are anodized and dyed with different black dyes and inspected collectively, the different hues of black can be very easily observed."

The different hues of the black are important because dyes can be multi-component or

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asymmetric as single components, and can change in hue as the dye ages in the anodizing line. This will make the black hue different over time and customers will easily see the difference if components are retrofitted.

"For alloys such as 7000 series, and particularly if they are hard anodized, the coating has a distinct yellow hue that will impair the hue of the black component and in some cases this can be a significant difference," he cautioned. "With the availability of so many different lighting sources, blacks can flare the base hue significantly and this can cause the customer to perceive the black to be of inferior quality."

Some high-performance dyes show an acceptable black shade even when contaminated, but some of the performance characteristics might be compromised, resulting in component failure. It is difficult, he said, to analyze for contaminants in dyes and there is no absolute number for a contaminant to establish as a failure point. This is because of the synergetic effects of contaminants like aluminum and sulfates.

"Maintaining dye performance is critical to

achieving desired colored and managing overall costs of the dye tank," he advised. "Factors that contribute to poor dye performance, particularly if the dye tank is not maintained correctly, include incoming water quality, since it could contain algae and chlorides; dragout, resulting from sulfates from the anodizing tank, or other dyes dripping into dyes as parts are transported; concentration (both apparent and effective); temperature fluctuation; and pH levels.

"It is important to beware of chlorides among chemicals being used in the total process," he stated. "These can increase galvanic activity and damage parts."

## PEOPLE

Specialty Polymers Inc. has appointed Steve Dobson as the company's new regional sales manager. He has been with SPI for more than 10 years as production manager for the East Coast plant. His territory includes the northeast US and eastern Canada.

In his new role, he will be focused on sup-

porting customers in a variety of markets, including architectural and industrial coatings, building and construction, craft/hobby, and printing inks. He has nearly 30 years of experience in resin chemistry and the company says he therefore has a high level of technical, manufacturing, and sales knowledge.

"With Steve's high level of technical experience and customer-focused approach, he is an ideal fit for the new role at Specialty Polymers," stated Sheryl Southwell, president. He knows the product line, and he is firmly committed to supporting the customer. We are excited to have Steve join our sales team."

Dobson has a bachelor's degree in chemical engineering from the University of Cincinnati, and has worked for Ashland as an engineer and plant manager for multiple manufacturing facilities. While at Ashland he took on a sales role, supplying acrylic pressure sensitive adhesives and also coordinating the acquisition of a competitor in 1999. He came to SPI in 2004 as the production manager in Chester, SC.

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# Inortech's Founder Steps Down

**JEAN-MARC PIGEON** is finally taking it easy. After leading his company, Inortech, for more than a quarter-century, he is stepping down as the company becomes EMCO-Inortech (or perhaps Inortech-EMCO – it's still not settled). As a major force in raw materials supply and formulation in Quebec, the Terrebonne-based firm continues to serve its customer base, while enjoying the financial heft of a large, US-headquartered owner.

Pigeon graduated from the University of Montreal in 1976 with a Bachelor's degree in chemistry, and went to work for SICO's laboratory. Wanting to broaden his horizons and his experience, he later took a sales job with Atlas Chemical, and later still worked for Hoechst.

His next stop was for three years as sales manager for eastern Canada with distributor Stochem, which built up his marketing and administrative skills.

Inortech was begun with a partner in 1990, shortly before the 1991-92 recession. This was, clearly, not an ideal moment to start, but it had some advantages.

"The thing is," Pigeon says, "if you have hardly anything, you don't have much to lose. It was difficult, but we held on."

The aim was always to create a company that offered more than just commodity products, such as yet another line of alkyd resins.

"We sold additives and specialized items," Pigeon continues. "It took time to convince the suppliers to let us distribute their products, but in time it happened."

Buying out his partner at the end of the recession, he continued alone. He remained sole principal of the company until its sales at the start of this year.

"I've always enjoyed making my own decisions, and having the sole responsibility," he says. "I've never regretted starting my own company."

Inortech grew steadily for more than a decade, and only felt a real jolt, as did so many other companies, when the financial meltdown in 2008 happened.

"That was very different to what we experienced in 1991," Pigeon recalls. "It was harder to manage." Recovery came, but it was slow.

When it came time to consider the company's future he had to recognize that his own children wanted to pursue other paths than running the family business. He also had to consider that industry consolidation has affected Inortech's customer base.



Jean-Marc Pigeon and France Boisvert at the Inortech Chimie 25th Anniversary in 2015.

"The market is changing quite rapidly," he says, "and some of the big customers were purchased by big companies from outside Canada. That has meant their R&D work has transferred to the US, also." This underpins the rationale of joining with EMCO.

However, the Terrebonne operation is slated to continue operating as before. It currently employs 20 people.

When the sale was announced at the start of this year, Edward Polen, president of EMCO Chemical Distributors, noted that the purchase of Inortech expands EMCO's range of product offerings and "enables the provision of superior support services. The synergies of EMCO Chemical Distributors Canada and Inortech generate a full line specialty distributor and a leader in the CASE (coatings, adhesives, sealants and elastomers), ink and plastics industries."

He continued, "EMCO views this acquisition as an amalgamation of strengths," he said. "Inortech's excellent technical sales force, unsurpassed R&D support and recognizable name in our Industries, will provide us greater opportunities to grow."

Pigeon himself is maintaining a link with paint, but in a different form. He is a member of the Pastel Society of Eastern Canada (PSEC), and he enjoys doing his own artwork in both oils and pastels.

"I do a lot of portraits," he says, "but I paint everything, including landscapes."

He finally has the time to indulge his hobby to the full. ■

# A Sample of Issues Facing Coatings in Canada

BY GARY LEROUX

Chemicals management in Canada remains a constant preoccupation for CPCA as the federal government continues to seek copious amounts of data in its ongoing assessment of a wide range of chemicals used in the paint and coatings industry. CPCA's Paint and Coatings Working Group, the sectoral working group comprised of industry and government representatives, remains the central platform for this huge undertaking over the next five years. Below are several recent items, in brief, reported in CPCA's regulatory news alerts for members.

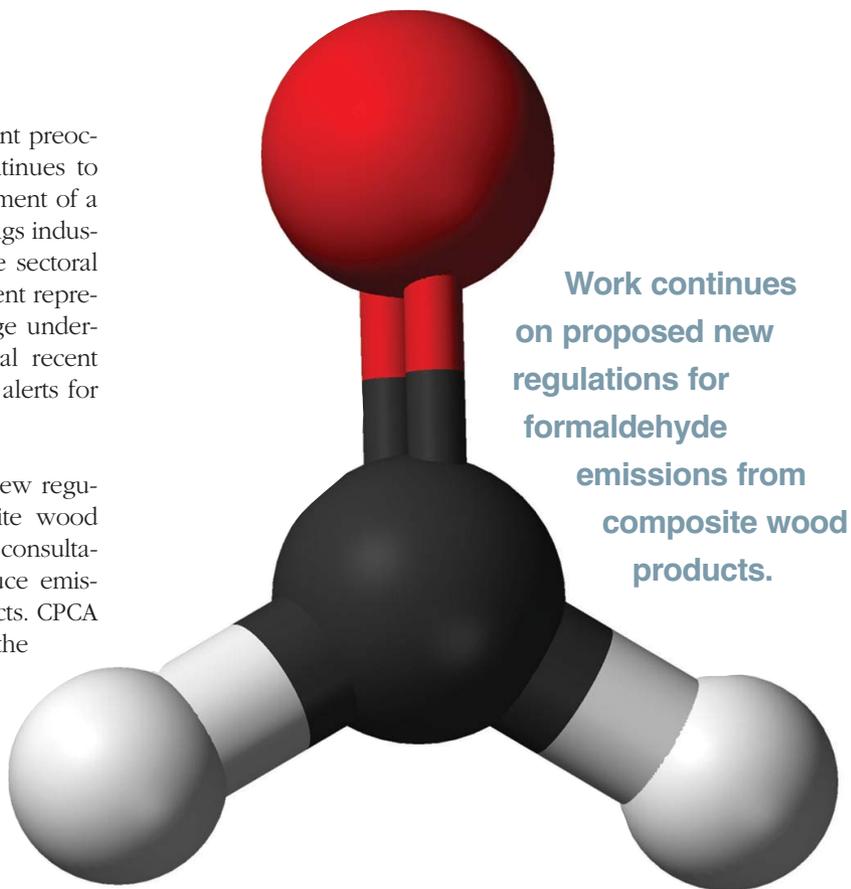
**FORMALDEHYDE:** Work continues on proposed new regulations for formaldehyde emissions from composite wood products. CPCA continues to monitor the ongoing consultation on the proposed regulatory approach to reduce emissions of formaldehyde from composite wood products. CPCA provided government with more information on the use of formaldehyde resins (ULEF) in products in the coatings industry. The date for providing comments has since closed, but given that there are many functional uses for formaldehyde it is important this file be monitored closely for potential impacts on the sector. This would be the case for some companies more than others.

**Significant New Activity:** Since the fall of 2016, the federal government has been working on SNAC amendments for several challenge substances, some of them used in paint, coatings, adhesives and sealants. A new threshold for concentration or quantity for new uses in consumer products was introduced such as in the case of Epichlorohydrin and Hydroquinone. Those with an interest in all targeted substances should review them sooner than later.

**Azo Disperse Dyes (Disperse Yellow 3):** A consultation meeting is expected on a proposed Risk Management instrument sometime in the spring of 2018.

**Phthalates Draft Screening Assessment Report:** This report is still expected soon and it will have implications for many industries including paint and coatings.

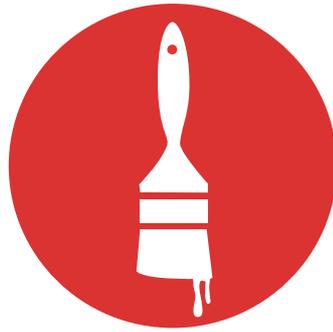
**MDI:** MDI was concluded as being CEPA toxic and proposed for addition to Schedule I of the Domestic Substances List (DSL) of CEPA. While MDAs were not designated as toxic but they will be subject to SNAC provisions in terms of uses. For all MDIs the main Risk Management focus is protecting DIYers and consumers generally through a Code of Practice,



which will target low pressure two-component spray polyurethane foam insulation products, with final regulations put in place by mid-2019. For the MDAs, a SNAC will relate to any new activities in consumer products (at  $\Rightarrow$  0.1% and above 10 kg annually) and these should come into effect within the next 18 months. Government officials have confirmed they do not intend to extend risk management instruments to current industrial uses, that is, manufacturing activities related to the MDI/MDA grouping. The final date for commenting on these substances closed in August.

Further important updates on chemicals management related to Phase 3 of the Chemicals Management Plan include the following:

**TWO-YEAR ROLLING PLAN PUBLISHED:** The paint and coatings industry should note that for some substances "Type 2" was revised from "Type 3." A Type 2 approach refers to a streamline approach similar to rapid screening, that is, these



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substances would henceforth be addressed in a streamlined manner as opposed to utilizing a traditional Risk Assessment approach (i.e. Type 3). The latter may lead to decisions of no further action or assessment being required. Also, in some chemical groupings, there was already Draft Screening Assessment Reports (DSAR) published for some substances but not for the whole grouping (i.e. Boron). Some substances could not be screened rapidly as the publications indicated they needed further assessment (i.e. some Alkyl aryl sulfonates/LABS and derivatives). Those using these substances should be aware that they would in fact will be assessed at a later date.

**SECTION 71 SURVEY PLANS FOR NEXT TWO YEARS:** No Section 71 surveys are planned for the fall of 2017 or winter of 2018. Section 71 survey requirements will be issued later for quaternary ammonium compounds, flame retardants, and for certain bisphenols. That said, those companies with an interest or concern with the outcome of those assessments must be proactive and move forward with relevant data to ensure an appropriate final assessment is made in 2018. Without the necessary data industry can be assured of more severe consequences and use restrictions.

**RESPONSE RATE FOR VOLUNTARY INFORMATION GATHERING:** Sectoral responses to voluntary information gathering initiatives for Health Canada was initiated earlier this year and ended in September 2017. The response rate for Health Canada is around 70% and for Environment and Health Canada combined it was 69-75%. Health Canada is still doing some analysis on information received and what will be needed for next year. With the long list of publications for 2017, Health Canada had tried to include all the necessary follow-up work, but unfortunately the risk assessors do not always know ahead of time what the actual data gaps might be before they open files for further assessment. As such, Health Canada moved forward on a number of ad hoc requests throughout the year to various industry sectors. It remains to be seen as to what further decisions will be taken for additional voluntary information gathering requirements. Industry must ensure all relevant data is provided, as it will assure that assessments are made properly and that good data will lead to better decisions, as is usually the case.

**RAPID SCREENING OF 99 SUBSTANCES OF LOW POTENTIAL FOR HUMAN HEALTH CONCERNS:** In June the federal government published a report on the rapid screening of 171 substances with limited general population exposure. For these substances, the potential for direct and indirect exposure to humans was not anticipated and thus were considered as suitable candidates for rapid screening. However, further evaluations led government to believe that such low risk potential was negligible for only 99 of the 171 substances. The remaining 72 substances will need to undergo further

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**The Draft Screening Assessment Report (DSAR) will be released some time this year. Health Canada is gathering information on Phenolphthalein for its use in colour changing glue products, specifically marketed for use by children.**

assessment for human health concerns. Of the 99, 88 also had low ecological concerns but 11 still have higher concerns. Additionally, 60 of the 99 were considered to have inherent toxicity (IT). CPCA has reviewed all subgroups of substances identified in this rapid screening publication and determined the actual extent of the implication for the paint and coatings sector.

**FURAN AND ITS DERIVATIVES:** The Draft Screening Assessment Report (DSAR) will be released some time this year. Health Canada is gathering information on Phenolphthalein for its use in colour changing glue products, specifically marketed for use by children. CPCA is continuing to collect information on an urgent basis to determine if this substance is used in colour-changing glue sticks in Canada, at which concentration and in which products marketed for children.

**ASSESSMENT REPORTS OF FOUR THIOLS AND TWO ARENES GROUPINGS:** These substances do not meet Section 64 criteria with no further action to be taken at this time. However, options are being considered for follow up activities to track changes in environmental exposure to two thiols: tert-dodecyl mercaptan and grapefruit mercaptan. Follow-up activities to track changes in exposure are also being considered for two arenes, namely Benzene, (1-methylethyl) (cumene) and benz[a]anthracene, 7,12-dimethyl-(DMBA).

**BIOMONITORING SUMMARY RESULTS OF CANADIAN HEALTH MEASURES SURVEY:** Several highlights of the biomonitoring summary result, conducted by the federal government to determine rates of exposure to substances, were shared with CPCA members. Worthy of note for the coatings industry are:

Bisphenol A: All geometric means in urine concentrations (creatinine adjusted) have gradually decreased as well as

selected percentiles of concentrations for the Canadian population aged 3-79

Ethylbenzene: Concentrations of ethylbenzene measured in blood have been either stable or slightly decreasing between cycle 3 and 4 in all age groups.

Toluene: Concentrations of toluene measured in blood have been generally increasing between cycle 3 and 4 in all age groups.

Xylenes: Geometric mean of concentrations of xylenes measured in blood has slightly increased in all age groups (except for one 40-59) between cycle 3 and 4. Meanwhile the maximum concentrations have generally decreased in all age groups.

Proposed Order to Add a Long List of Soluble Cobalt Compounds to Schedule I: CPCA made a formal submission to government on the proposed order for cobalt, which was of some interest to the paint and coatings industry and monitoring will continue with further feedback provided as necessary.

### **BIOCIDE USE IN CANADA**

The International Paint and Printing Ink Council (IPPIC) recently met to discuss the issue of available preservatives for paint and coatings remaining in specific jurisdictions around the World, such as in Canada and the EU. In August, CPCA's EHS Committee members discussed this issue at length and requested a full list of paint-related preservatives targeted for final decisions by the federal government over the next 5 years. CPCA now has a grip on the full list of biocides being considered for re-evaluation and what industry must do to address the narrowing selection of authorized in-can and film preservatives for paint and coatings in Canada. Members are now confidentially confirming current use of authorized biocides with CPCA as the association moves forward on this initiative. ■

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# Custom Diecuts Simplify Masking



**MASKING HAS LONG BEEN** a craft as much as a technology. The shop that understands how to mask efficiently and accurately has a natural edge over competitors.

Today, this picture is changing and developing, as simpler and more versatile design software enters the field. Additionally, the range of masking materials has been extended.

John D. Gill, an engineer with Caplugs, points out that historically, materials were defined by the surface finishing process they were used in; green tape and silicone for powder coating, cork plugs for wet paint. As finishing processes have become more sophisticated, however, masking materials have needed to evolve.

“EPDM caps are now starting to become popular for lower temperature finishing processes,” he says. “Thinner powder coating tapes have been developed which are easier to use on curved surfaces. Higher temperature tapes are available to use on parts that are retaining heat during the coating process.”

And as in other areas of coating and painting, computerization has had a strong impact on how masking is designed

and produced. The hand-sketch might still be a factor in an initial discussion, but digital design takes over from that point.

“All our custom masking is designed using computer assisted design,” Gill says. “It is used when designing the custom mask, for printing a 3-D prototype and for designing the molding tool. It’s safe to say that it would be difficult to efficiently deliver a custom masking solution without using computer assisted design.”

There is a cost factor, obviously, in having masking custom-designed. However, this is often assumed to be higher than it is in reality.

“Yes, there is an investment for the masks and their initial design and development,” Gill says. “It’s essential, however, to consider the costs and impact of bad masking.

“Problems with quality, customer complaints, inconsistent finished parts, rework and capacity problems can all be eliminated with a good custom masking solution. It’s important not to overlook the costs of those problems when you are considering the investment in custom masking.”

Custom masking, he emphasizes, can bring the masking



Making masks by unreliable manual methods (left) is increasingly replaced today with computer-design of custom masks and diecuts.

Photos: Caplugs

time of a product down from multiple minutes to seconds.

“Consider the typical masking environment,” he suggests. “The part is placed on the bench, tape is applied to the part and the tape is then trimmed with a knife. Compare that to the rapid peel and stick of a custom die cut mask or the rapid push on of a custom mold-ed cap or plug. Custom masking will reduce errors, ensure consistency, speed up the process and deliver a quality product.”

Beyond the obvious savings at the masking stage, there are the savings that can be seen by bringing consistency to the process. Inspection times can be reduced, as there is confidence in the process. Reworks, which often include costly stripping processes and risk damaging the component, can be eliminated.

Production planning can be easier and more precise. And customer service is improved, as customer service agents are no longer dealing with

issues regarding badly masked products. “Accounting people are no longer spending their time researching and issuing credit notes,” he points out. “Quality control personnel are no longer completing non-conformance reports for customers. Good masking can positively impact all the areas of a business.”

Diecuts in particular have made market inroads in recent years. Diecuts are pre-cut pieces of masking tape made to the exact size and shape of the surface areas to be masked.

Echo Engineering and Production Supplies recommends diecut kits because they can be custom made to mask components that have multiple surfaces of different sizes and shapes, like an engine block. These kits reduce the amount of time spent looking for the right die cut piece. “They also ensure,” the company says, “that no surface in need of masking is forgotten as each kit can be made to the exact

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## MASKING

amount of die cut pieces per component you are coating.”

Another trick, employing plugs, is to order them in multiple color variations, for sizing identification purposes. Using multiple colors helps speed up the masking process, the company states as the user can quickly associate which cap or plug goes to its designated spot rather than wasting time sorting through a variety of different caps or plugs. Some of its customers reportedly use tie-dye plugs to avoid mixing with solid color plugs.

Custom-molded masks can also help decrease the amount of time spent on masking by speeding up the installation and removal processes. In some cases, Echo says, they can even reduce the amount of total parts needed to completely mask components.

Powder coating has its own specific requirements, since the application process is different to that for traditional paint. In particular, there is a temperature factor to consider, since the coatings need to be baked on, meaning the masking has to be suited to the application. However, there is no problem with liquid to deal with, so seepage is less of a concern.

Custom Fabricating and Supplies is another supplier of diecut masking. The company states that its rotary die cutting machines produce numerous standard diecuts for a range of procedures. “The diecutting method is determined by volume and lead time,” the company states. “Our staff has over 30 years of diecutting experience, including custom diecutting services.”

Caps ‘n Plugs expanded inventory levels at its Brampton, ON, warehouse, not long ago, also adding a high-speed tape slitter. This, said general manager Paul Hamilton, can slit any width, whether metric or in standard imperial sizes, of all popular masking tapes. Turnaround for cut tape for shipment is the same day, or next day at the latest.

As far as industry trends go, he says the main thing several suppliers report is more requests for different types of rubber compounds. High temperature silicone is also popular for higher temperature applications

And while it’s best known for hooks and racks, Mighty Hook provides an extensive range of masking caps and plugs, as well as special molded masking products. The company says it specializes in challenging designs.

It also produces silicone masking tubing, for masking threads, pins and tubing where a longer masking length is required. The tubing is flexible but sturdy enough for use in masking threaded, non-threaded or slotted holes, and is easily cut for desired length. Additionally, its silicone foam cord can form a tight seal in threaded and non-threaded slots, grooves, irregular shaped cavities and through holes.

Matching masking to specific needs will probably always require experienced skill. But as that experience builds, and suppliers adopt more creative and flexible solutions for plugs and masks, the precision and efficiency of what is available is only going to increase. ■

# The Fine Art of Pretreatment

**PRETREATMENT OF METAL PARTS** is one of those things that every shop believes it does right. And that some shops do too fast, or without sufficient care.

How do you know if your process lacks proper procedures? Unfortunately, you find out when the metal parts come out sub-par, not at the point where you can make a difference beforehand.

“If the coating doesn’t stick to the part, if the surface treatment is unsuccessful, poor cleaning is an immediate suspect,” warns consultant Barbara Kanegsberg. “Surface finishers often take cleaning for granted and pay little attention to the process until problems arise.”

Companies should not clean incoming metal parts if they do not need to, she advises. But “Lubricants, coolants, residue of cleaning agents, and even water may be soils, which are matter that’s out of place.”

In ongoing production, she says, some signs that more effective cleaning is needed include lower or variable product yield, as well as a possible production slowdown. Heat treatment and passivation should not be seen as the same thing as cleaning.

“The concept of cleaning before heat treatment may seem strange because heat treatment burns off some soils,” she says. “However, in our experience, we find that heat treatment can also chemically modify the soils. The soils become ‘cooked on’ in ways that interfere with other surface pretreatment and subsequent coating operations.”

The consequences of poor surface preparation are primarily twofold. Either the eventual surface of the part is pitted or uneven; or, it starts to separate from the substrate, possibly right after the plating or anodizing is completed.

A complete cleaning process consists of washing, rinsing,



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An automated electroplating line.  
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and drying. The washing step puts the cleaning agent in contact with the parts, releases soil from the surface, moves the released soil away from the parts, and keeps the soil away.

The rinse step continues the cleaning action and – at least as important – removes any residue of the cleaning agent. The drying step removes excess water or solvent.

“How much drying is needed depends on what surface treatment or coating is going to happen next,” Kanegsberg says. “At each step, you have to be careful not to damage the product. You have to consider the effect on the product of both the cleaning force and the chemicals.”

If corrosion is an issue, the wash and/or rinse steps may require use of a rust preventative (RP). An RP is an additive, so it is necessary to consider the

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**Surface finishers often take cleaning for granted and pay little attention to the process until problems arise.**

effect on the following steps in coating and assembly.

There is more to pretreatment, of course, than simple washing, however important it is, and new products are entering the market to address the changing regulatory environment. Especially in the field of conversion coating, there is a move to eliminate pretreatments that include chromium VI.

For the past couple of years, Henkel has been promoting its Bonderite M-NT 2040 R2 product in Europe, in anticipation of the ban on chromium VI that was implemented across the continent in September this year. It is now beginning to introduce it in North America.

“Chrome-free aluminum pretreatment products are among numerous innovations developed by Henkel,” the company states. “In contrast to products that contain chrome VI, the conversion coating generated in the innovative process based on Bonderite M-NT 2040 R2 is formulated with non-toxic, chrome-free components. Given the many statutory requirements governing environmental protection and occupational safety this technology constitutes a viable alternative to traditional chrome VI conversion treatments, with huge potential for the future.

“It also offers good welding and adhesive bonding properties for uncoated aluminum surfaces, as well as creating an optimal layer on the substrate for subsequent coating.”

The Bonderite M-NT 2040 R2 process combines etching and passivation effects. It thus enables the number of process baths to be decreased, and the pretreatment line to be reduced in length. Older chromating lines can be converted to the new process without major modification to the active baths.

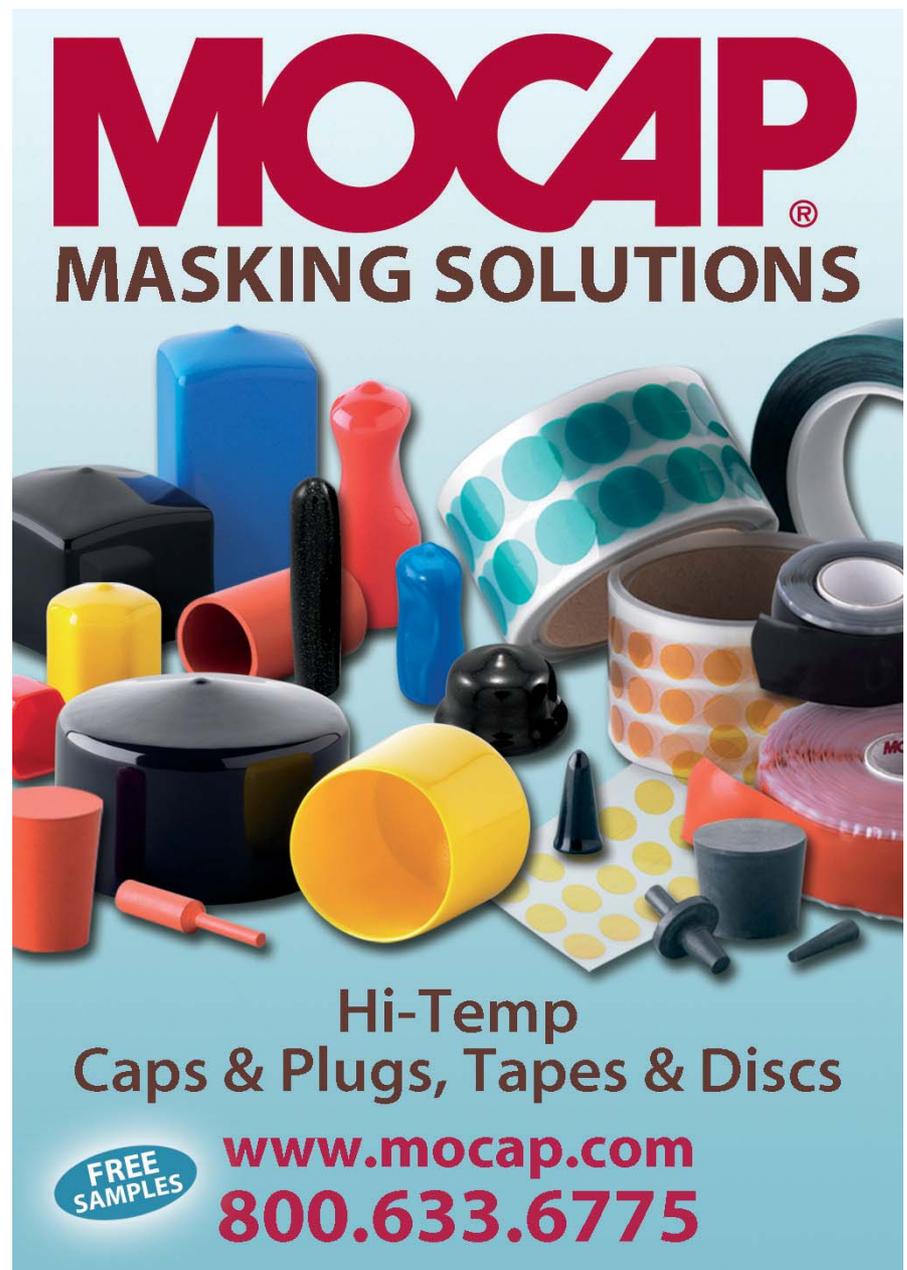
“A further benefit of this innovation is that Bonderite M-NT 2040 R2 can be used at room temperature (around 25 deg C), leading to energy cost reductions,” the company adds.” With the absence of chrome VI, wastewater treat-

ment is also significantly simplified and less expensive. And cost-driving water consumption in the production process is likewise substantially reduced.”

Any switch from chrome VI to chrome III or chrome-free conversion materials such as the Bonderite product, requires complete and thorough cleaning of the plant, the company advises. As it phases in this process in

North America, it is advising customers on how to go about this.

Chemetall, which is now part of the BASF global organization, offers a variety of processes to form the optimum conversion coating. Depending on the substrate and specific requirements, end-users can choose between an iron, zinc or manganese-phosphating, electrolytical phosphating or a chromate,



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**You have to consider the effect on the product of both the cleaning force and the chemicals.**

oxalate or anodizing process.

The company's brand-name in this field is Gardobond. The product range includes Gardobond X titanium/zirconium-based conversion coatings for aluminum, and Gardobond X 4661 (SAM) for metal-free pretreatment of aluminum.

It also has a range of advanced pretreatments, referred to as non-phosphate pretreatments, that utilize dual coating technology that combines zirconium with a variety of organics. For example, A drop-in replacement for iron phosphate processes, Gardobond AP 9809, is stated to be compatible with mild steel equipment and typical city water in three-stage spray washers.

Phosphorus-free treatments include the Oxsilan range, such as Oxsilan 9800, which is a replacement for iron phosphate in steel, aluminum and zinc substrates, and Oxsilan 9810/1, which is

a replacement for zinc phosphate.

Oxsilan MM-0705, the company says, which is used on aluminum, zinc, cold-rolled steel and other substrates, is a silane-based product that enhances the performance of subsequently-applied organic coatings. It is particularly recommended for rubber-to-metal bonding applications.

MacDermid Enthone's Enprep soak, spray and electrocleaners are formulated specifically for cleaning and activating a variety of metal substrates. These products, the company says, can have a major impact on overall finishing costs when it is considered that surface conditioners can represent up to 50 percent of chemical costs.

Each product in the range is application-specific. Soak and electrocleaners and boosters, the company adds, provide high oil retention, and superi-

or rinsability in rack and barrel plating applications. Chelated and non-chelated systems are offered, to allow for process flexibility.

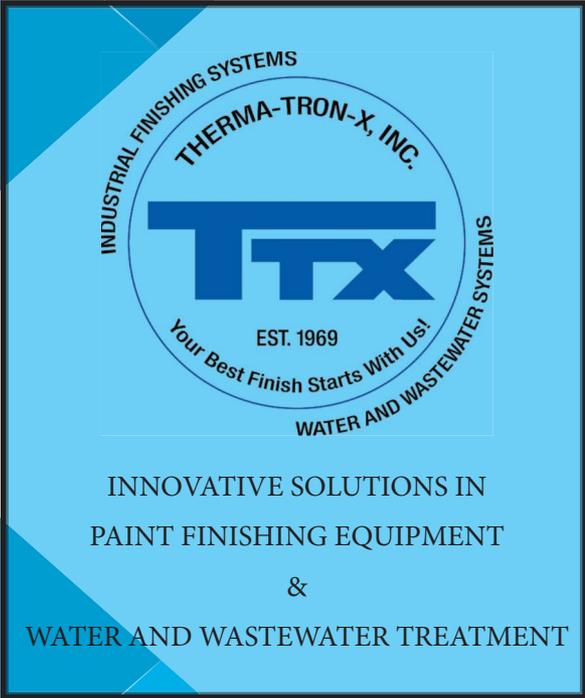
The company's related Alumon AL range is designed to minimize or eliminate smut formation and salt accumulation, readying the metal for controlled uniform etching that produces fewer rejects. As a result, MacDermid Enthone says, finishing costs are reduced and productivity is increased.

There is no ideal pretreatment system, and anything likely to emerge in the foreseeable future will still require care in use and, especially, in disposal. However, formulations for pretreatment are constantly improving, as is their efficiency.

The key, always, lies in proper selection of pretreatments, and in proper training of the staff that use them. ■



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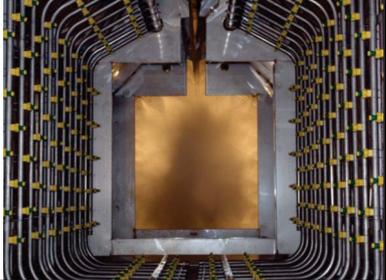
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# Testing Pushes Deep into Digital Territory

**TESTING OF FINISHES** has never been more essential. Data on finish thickness, quality and durability are required by customers in a range of fields.

The result has been the emergence in the past few years of a broadened range of convenient instruments that are designed to be used by people with minimal technical training. At the same time, instrumentation suppliers are finding ways to exploit digital technology to open up areas of measurement that have been unavailable outside research laboratories until now.

Connectivity is one factor Richard Northrop, marketing manager with DeFelsko Corp., sees becoming significant. The ability to make data easily available will likely have an impact on the market, he believes.

“With the invention of cloud computing and easily acces-

sible cellular, WiFi and Bluetooth connections, users can share readings and information in real-time across the globe,” he points out. “You can generate custom, professional reports and CSV data and share them instantly via email, AirPrint, Dropbox or other applications on your smart device.

Additionally, he says, DeFelsko continues to take advantage of advancements in technology, including enhanced processors, and imaging sensors that get the most out of inspections.

Bob Tucker, president with Stone Tucker Instruments Inc., also sees connectivity offering important benefits.

“We think further improvement in the integration of data transfer between devices can be both improved and better presented to the marketplace,” he says, adding, “As we look to the future I believe the industry would benefit



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from have more non-contact measurement devices for some characteristics or being able to measure certain characteristics without leaving a mark or pinhole on the surface.”

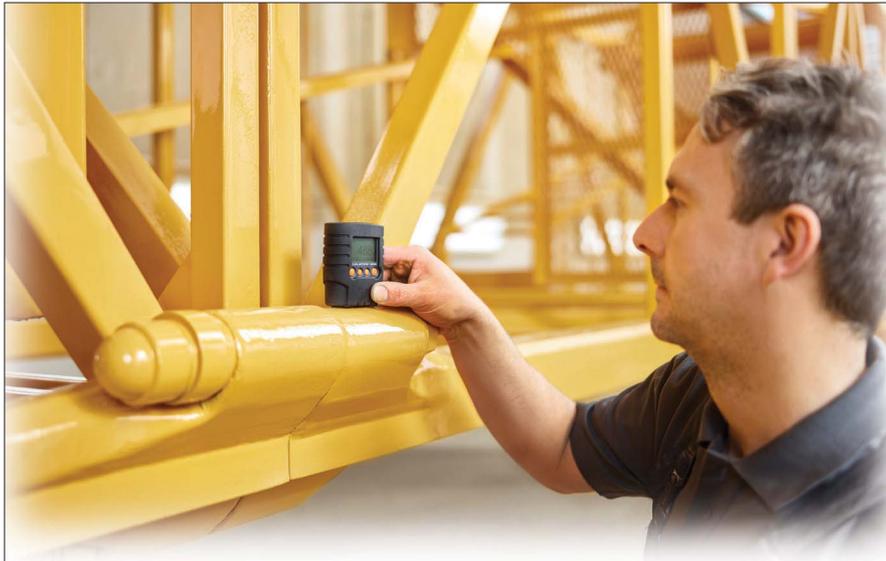
Neil Howard, a technical sales representative with Folio Instruments, suggests augmented reality (AR) could be

used as a tool for R&D as well as for quality inspection. This is something being developed by Microsoft, with its HoloLens, or the competing system Magic Leap.

“All that really needs to be done with the instruments we use is to connect with Bluetooth,” he states. “I could see



Fischer’s XAN-500 X-ray fluorescence instrument performs coating thickness measurement functions and other tasks. It can operate as a desktop unit or be integrated into production lines.



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interactive manuals being loaded into these augment devices, so that when a user looks at the instrument he can quickly have someone explain a feature. Another example could be an identifiable marking on a part so that the headset, when this is looked at, could project all the different inspection results performed on that part.”

Following published reports on this type of technology, he foresees interactive manuals being loaded into these augment devices, so that when a user looks at the instrument he or she could quickly have someone explain a feature. There could also be an identifiable marking on a part that would enable the headset to project all the different inspection results performed on that part.

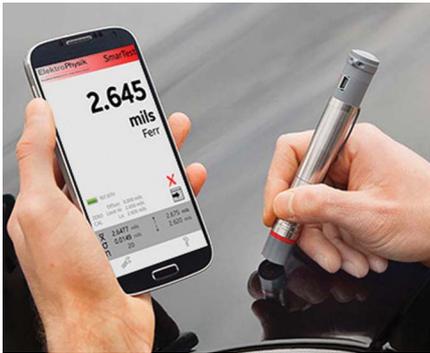
“What really interests me about what I’ve seen with the HoloLens is the ability to pin virtual windows,” he says, “or even have them follow you as you walk around. This could be a real benefit – to be able to see measurement data in real time and not have to be tethered to your computer to see the results.”

Tim Mouw, applications engineering and technical support team manager for X-Rite, notes that in general, instruments have been getting small, lighter, and more portable. But at this point with respect to the physical instruments, themselves, we might have maximized the effect of getting smaller.

“Advances will come in the addition of more functionality within the same physical footprint,” he says. “An exam-



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ple is our recently announced X-Rite MA-T family of multi-angle spectrophotometers. The physical size is the same as the previous generation, but now we have added an on-board color camera to be able to combine simultaneous color measurement and imaging in the same instrument.

"This moves us beyond just measuring color to being able to quantify color characteristics such as sparkle and coarseness – used in many effect coatings and finishes. Sparkle and coarseness is the first step in what the industry has been trying to get to for a long time – the ability to go beyond color to quality material appearance in the way that the human eye perceives these characteristics."

Another example of this, Mouw says, is X-Rite's Total Appearance Capture (TAC) 'ecosystem,' which allows customers to capture, communicate and provide a digital presentation of physical materials in the virtual world. For this system, the company did not aim to produce a micro-unit.

"The TAC7 Scanner is a larger, stationary device," Mouw says, "and it is able to truly capture all aspects of a material's appearance, including color, gloss, texture, opacity, refraction, transparency, translucency, special effects (sparkles) and reflection properties. The MA-T family starts us down the road of capturing not just color but sparkle and

coarseness, and TAC takes that to a whole other level in virtual design."

Color is critical to many products, he notes, but equally important is how that product appears to the consumer: the way a product looks in a showroom or on a shelf directly affects a consumer's propensity to

buy. By adding appearance functionality to color measurement devices, manufacturers speed product development, approval processes and time-to-market while reducing costs and improving consistency across even the most complex materials and global supply chains.



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DeFelsko's hand-held PosiTector gauge.

"Customers are always looking for quality and ease of use at a fair price," says Sherri B. Thompson, marketing manager with Paul N. Gardner Co. "Physical test instruments are consis-

tently evolving based on these fundamentals, instrumentation is market/user driven and we are always listening and developing based on our customer needs."

She adds, "Today's instrumentation has the ability to interface with PCs, phones, laptops etc. With the demand to analyze, report and gather the statistical results, the trend with integrating with all types of peripherals will continue."

Despite the increasing user-friendliness of most testing instruments today, training remains an issue. Tucker says one of the most difficult aspects to training is keeping up with new and evolving standards as well as individual project requirements.

"This is compounded by the fact we are seeing a trend of having the inspection performed via a multi-disciplined inspector who may or may not have adequate training in the secondary inspection methods technology and application," he says. "All of this information cannot be communicated

in a few minutes over the phone or face to face. Another important item is that many QC and QA departments have not kept current with the technology and are not fully utilizing all of the functionality built into today's inspection instruments."

Howard's view is that the challenges of training customers are reduced because of the ability to do webinars.

"With the use of webcams it has become easier to provide additional support to customers when they run into issues or have further operational questions," he points out.

Training does need to be customized, and based on specific customer criteria. Gardco's Thompson says, "Understanding the customers' requirements and expectations, you have to engage the customer and listen to exactly what they are trying to achieve, then make solid recommendations based on this information. We come up with a solution based on the customers' needs with instrumentation

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that is intuitive and easy to use.”

Northrop says DeFelsko prides itself on its easy-to-use products, and that its inspection instruments require no on-site training.

“Their simple, intuitive interface and onscreen prompts help walk the user through the most challenging applications,” he says. “However, many of today’s users prefer instructional media in many forms – not just the conventional paper instruction manual.”

To aid understanding of new products and features, the company website, DeFelsko.com, contains much information to educate end-users, including recorded webinars, how-to videos, application notes and technical articles. “In addition to online instruction manuals and calibration procedures, our highly trained technical sales team are available to consult on a range of unique applications including duplex coatings, thick film polyurea and uncured powder



The Novo-Gloss Trio glossometer from Paul N. Gardner Co. handles gloss measurement on all types of surfaces.

coating thickness,” he says.

Mouw notes that while color measurement is considered a mature technology and has been around for a long time, there are still many people who have never used these tools. In training customers, he suggests, it is important that users understand not just how to use the instruments but what the measurements mean.

“For companies that have been evaluating color visually, incorporating a color measurement instrument into their quality control program uncovers that the product they are producing fails when compared to the color specification,” he says. “We spend a lot of time with customers helping them understand their process, what may have caused the color to be different or out of tolerance, and what can be done to fix that.”

“We do a lot of training that goes beyond simply pushing buttons on an instrument or clicks in software, and is designed at educating customers on color theory. One of our most popular trainings is our Fundamentals of Color and Appearance (FOCA) seminars. We conduct these regularly around the globe every year to educate people on color theory and how to use color measurement devices to improve manufacturing processes and reduce color errors.”

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11	2.675	mils Ferr
10	2.645	mils Ferr
9	2.655	mils Ferr
8	2.655	mils Ferr
7	2.620	mils Ferr
6	2.640	mils Ferr
5	2.645	mils Ferr
4	2.640	mils Ferr
3	2.645	mils Ferr
2	2.660	mils Ferr
1	2.620	mils Ferr
X	2.6477	mils
O	0.0149	mils
n	20	

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**TESTING EQUIPMENT**

FOCA, he explains, helps people think about color in new ways. As children, he says by way of example, we are taught by our parents about color, and how to use words to describe color – red, blue, green. But in industrial applications and manufacturing, we need to describe color, and now appearance, by the numbers or by spectral data.

“A majority of our training efforts,” he says, “are geared towards helping customers understand how to quantify color and material appearance in order to measure and control production.”

Further integration of measuring units and other digital devices and capabilities is one of the definite trends happening in testing systems. Whether it is about integrating cellphones with the hand-held units, or working through the Cloud in some fashion, the trend is towards such combinations of technology.

“DeFelsko is at the forefront of gage



X-Rite MA-T unit measuring the gloss on a car's finish.

and mobile integration,” Northrop says. “We see room for integration between our products, and also between our products and third-party software and devices. Our award-winning PosiTector gage accepts all coating thickness (6000/200), surface profile (SPG/RTR), environmental (DPM), salt contamination (SST), Shore hardness (SHD), and

ultrasonic wall thickness (UTG) probes.”

This innovation allows quick and easy conversion from a coating thickness gage to a surface profile gage, dew point meter, soluble salt meter, Shore hardness durometer or ultrasonic wall thickness gage, simply from changing the probe. Each probe retains its own unique calibration information allowing for full probe interchangeability. “The PosiTector series of instruments provide a Bluetooth Smart API (BLE API),” he adds, “and associated help files for mobile integration with Apple smart devices. The BLE API allows for direct communication with DeFelsko’s PosiTector app and third-party inspection software. Additionally, the PosiTector series of instruments are capable of streaming readings over USB, allowing integration with statistical process control software and PLC controllers, especially valuable in process and on-line environments.” ■






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# Automation and Flexibility Key in Flatline Finishing

**FLATLINE FINISHING IS INCREASINGLY** a business of faster automation, but also one of greater production flexibility. Consumer demands for quality and changing requirements in the wood and panel and cabinet industries are forcing manufacturers to invest in high quality and flexible finishing technology.

Venjakob North America reports it has successfully installed several flatline finishing systems in the US and Canadian wood and panel market to meet these requirements. Sales manager Andrew Scott says the company offers flexible flatline finishing solutions in continuous running mode, from a batch size of one up to mass production.

The standard configurations it is placing start with a Ven Clean Smart de-dusting and de-ionization unit, with pre-heating. Then comes a Ven Spray Perfect spray coating machine that operates in combination with a 2K mixing unit for sol-

vent-based spraying material, equipped with a quick color-change device.

The systems also include the Ven Dry Collect six-level vertical dryer, the Ven Dry Vario Time very flexible vertical dryer, a Ven Dry Air-Jet drying tunnel, and a Ven Dry Cool cooling zone.

“The Ven Spray Perfect automatic spray coating machine fulfills the highest demands on surface quality and equipment availability,” Scott says. “Its double-belt cleaning system reduces cleaning times.

“One cleaning unit can be used during production, while the second one is taken out for cleaning purpose. This reduces time for cleaning and allows for continuous production.”

A switchover from solvent-based to water-based lacquer systems entails no loss of time.

Furthermore, the double washer system of this machine



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A Ven Spray Perfect spray booth in action.

type also enables the operator to switch completely between two different paint systems, to work with either one of them.

The Ven Spray Perfect spray coating machine can be equipped with an integrated 2-K technology, which means that the programs of the 2-K mixing unit can be chosen via the HMI surface of the Venjakob spray coating machine. The optionally available Venjakob Color Management System additionally speeds up the color change process.

“It is a specially designed Venjakob development which combines a software solution with the hardware of color mixing units,” Scott says. “No longer is it required to be pushing several buttons in several locations just to change the color during the spray process. There is now only one user-friendly adjustment.

“This reduces the loss of time and is very process-secure. Beside this, the customer does not have to worry about various interfaces. For an ‘integration-

fee,’ Venjakob implements the externally supplied mixing unit and guarantees its function in the fast color-change management system.”

The latest addition to the line of vertical dryers that Venjakob offers is the Ven Dry Vario Time. It is equipped with an intelligent handling system which allows the feeding and removal of workpieces in batches.

The drying time can be individually set per batch, corresponding to the lacquer system. Therefore, this dryer is very flexible.

As an example the customer might need to apply a primer or stain for one job and for another, a clear topcoat. The primer and stain require a short drying time, and the other lacquer a longer. The Ven Dry Vario Time allows removal of the faster drying parts, while the others remain in the dryer until they are dry. In comparison to this, a conventional vertical dryer demands all parts to run through the entire drying process.

This, Scott says, demonstrates the advantage of the Ven Dry Vario Time technology:

fast pass-through time if desired, and therefore a higher performance of the complete coating line.

“The dryer can be retrofitted in existing machine lines and operates fully automatically,” he says. “Conestoga Wood Specialties has successfully operated such a line concept since January 2015, and has now ordered a second one, expanded by a vertical retrieval store.

“This store is a unique solution to expand the production capacity. In some cases, a coating job include so many parts that the whole job does not fit at once in the finishing line. Therefore, the vertical retrieval store is positioned in front of the infeed of the finishing line.

“The left parts can be provided for coating in the vertical retrieval storage device. This saves time and keeps the batch of the job together.”

SAMES KREMLIN has improved ease of use in its flatline systems by mount-

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ing automatic guns in two sections. This avoids the need to disturb automatic gun settings, as well as requiring hardly any downtime, as well as being easy to clean.

Vice-president S. T. Rajan says the company has developed its Flowmax pump technology as a way of increasing adaptability in its lines. Thus, if (say) a catalyst in a coating is moisture-sensitive, it does not come into direct contact with air.

Such air contact can lead to gelling, and thus an inferior finish, he notes. SAMES KREMLIN's two-component mixing systems ensure the required gloss levels will never change from what the customer specifies.

Superfici's wood finishing products in its DMC line include a range of systems, such as its Compact 3 R model. Production quality on this is guaranteed through application in two steps achieved by a double-arm reciprocator, and by the pressurized cabin, which features a downdraft airflow, a double filtration system at the air inlet and a wide filtering roof for the cabin.

Easy use and constancy in the production quality achieved by the Optispray software, which the company says controls the spraying parameters. The lacquer reclaiming unit achieves complete belt clearing and the eventual re-use of the lacquer, which is collected by the system.

This system, Superfici adds, achieves all the advantages of the automatic spraying and makes them affordable to the small and medium-size enterprises. Finishing lines can be composed of a compact spray machine, combined with fast and efficient hot air drying systems, eventually completed by a Poliedra UV dryer for the three-dimensional curing of the work-pieces when applicable.

For large-scale panels, Superfici offers its Magnum system, which offers a production capacity with feed speed up to 18 meters per minute. Thanks to patented independent reciprocators, the company says, it will offer guaranteed quality in the lacquered work-piece because of the

optimal lacquer distribution even in the most critical applications.

Quick lacquer change from one lacquering product to the next one is made possible with multiple lacquer reclaiming units and there is an optional integrated quick color change.

There are also guaranteed optimal

conditions of the spraying cabin. The automatic filter change of the exhaust filters, using a patented, optional filter on demand system, makes it possible to change filters without any production stop and reduces the maintenance operations. ■

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# The Growing Bond Between **Water** and **Wood**

**WATER-BASED COATINGS** for wood pose a technical paradox. Putting water onto wood sounds like bad idea from the get-go, and it has taken many years to develop a broad range of viable waterborne coatings for furniture and other wooden items.

Today, most of the technical problems have been addressed. Easier application, faster drying and stronger durability – always the wish-list for wood coaters – are possible. But there are still some challenges being overcome, or that are partially overcome; and there are still points where customers need education in what waterbornes for wood can and cannot do.

“A greener solution may not respond to your goals,” points out Mickäel Blais-Roberge, an R&D chemist with Inortech-EMCO Canada. “High-solids, solventborne coatings can contain less VOCs than water-based ones. There is a need to balance eco-friendliness versus performance and clients needs.”

Waterborne coatings made the workplace less potentially toxic, he notes, as well as generally lowering VOCs. There is also the advantage of longer pot-life with waterbornes.

But additives are necessary to achieve proper leveling and a good finish. There can also be a need for a co-solvent to make the formulation work properly.

“The water-based UV market continues to increase in demand, and this technology will be significant moving forward in the OEM market,” says Brent Celone, a technical sales representative with Gemini Coatings. “The durability among these coatings is some of the best in the technology, and moving closer to the solvent counterparts.”

The main difficulty, he suggests, still centers around the cost of the material, as well as some of the perceptions of earlier technology. The best and most durable water-based product still runs around 40 to 50 percent higher in price than solvent-based.

“It is difficult in this market,” he says, “to absorb that cost and also make the investment on some equipment, and more importantly the training. It is easier to continue to use standard material for most smaller companies. The larger manufacturers that can spend on equipment can benefit from the speed of the water-based UV technology and recover the capital expenditure sooner.”

It is therefore often smaller, newer companies that might be more willing to look at waterbornes. They have less investment, either in machinery or in terms of practices, than larger, older operations.

Earlier versions of the water-based coatings were much

slower to dry, Celone concedes, as well as more difficult to apply. Also, the clarity, which is critical, was not as good. All these areas have improved, and more finishers are open to trying the products.

“I continue to see small moderate growth in the water based market,” he adds. “It tends to focus on new businesses who are starting out, and want to look at alternatives. They are not as committed to the current way of doing things and look at the benefits in a different way.”

“These benefits tend to be focused on the environment, with lower VOC levels and the health of the employees applying the material.”

Other benefits can include being able to advertise greener products, and easier compliance with storage regulations, use of spray booths and disposal cost.

“The push to go green has been a slow moving one,” Celone says. “The investment for most companies is significant and if they had a bad experience in the past it makes it all the more difficult.”

Katillac Coatings Inc. uses specialized, dedicated, equipment for manufacturing its waterborne coatings. However, it prefers to keep the details and procedures confidential, says sales and marketing manager Rob Penfold.

“The biggest challenge with waterborne wood coatings is to make a product the closely mimics a solvent based product,” he says. “The most common comment from end-users is that they want a waterborne coating that sprays, dries, sands, looks like solvent-based and has comparable durability properties. That is a pretty tall order – but the chemistry has come a long way over the last 20 years.”

“No one is quite there yet, but the current generation of waterborne wood coatings are certainly very close. Particularly, the variety of resins now available have enabled us to do impressive things with the waterborne technology.”

Katillac’s new Aquavar II product is a self cross-linking acrylic/urethane hybrid that, he explains, exhibits excellent durability, is easy to apply and dries quite quickly. It meets or exceeds the latest NKCA performance standards.

“We also have our interior/exterior waterborne urethane called Woodguard,” he says. “It is as easy to apply as most solvent-based products and provides an exceptional cabinet quality finishing for interior or exterior applications. To enhance the performance of Woodguard, KCI has a product called Fiberset LC2000 that is a pretty revolutionary exterior waterborne primer that utilizes lignin chemistry that bonds with the wood fibers to increase strength, reduce grain raise and block mineral bleed.”

Going by customer comments, grain raise, he explains, is the main difficulty found in working waterborne wood coatings is grain raise. The challenge from a manufacturer's standpoint is: how to engineer a product that has minimal grain raise?

"When you put water on wood," he points out, "the fibers are going to raise. There is not a lot that can be done about that. Misting the wood with water before sanding is the simplest recommendation."

There are further challenges with waterborne wood coatings that have slowed their adoption in the marketplace, the first being a learning curve when starting to use waterborne. While this problem is improving, the application is still a bit more challenging that solvent-based, Penfold notes.

Also, waterborne finishes are more susceptible to environmental factors like temperature and humidity. Shops desiring to run strictly water will have to have controls in place to manage environmental variables. Additionally, waterborne coatings require equipment that is stainless or will not rust.

"Waterborne products also have a higher applied cost, and material cost is always the number one concern," he says. "Lastly, switching to water really should be an all or nothing venture, or at the very least you need dedicated equipment and facilities to spray waterborne."

"Switching back and forth between solvent and water is tricky, and if not done properly can lead to contamination, finish problems, and even damaged equipment. In summary, waterborne wood coatings have application and infrastructure challenges that make widespread adoption a slow process."

For the future, he foresees a definite move toward safer chemistry. This means there would be no isocyanates, no formaldehyde, no heavy metals, ultra low VOCs, and coatings are HAPS-free.

"Only waterborne can meet all these requirements," he says. He cautions, however, that de-listing /exempting of organic solvents like acetone and T-butyl acetate has a negative impact on

the growth of waterborne wood coatings, as this benefits the completely solvent-based products more.

This said, he notes that Katilac does not foresee any great, widespread adoption of waterborne in the near future, unless legislation forces change away from organic solvents. The market



Waterbornes can yield both gloss and matte finishes. Photo: OnFlooring.

is moving at its own pace, watching the technical developments as they are introduced, and is adopting them as they prove they are viable. ■



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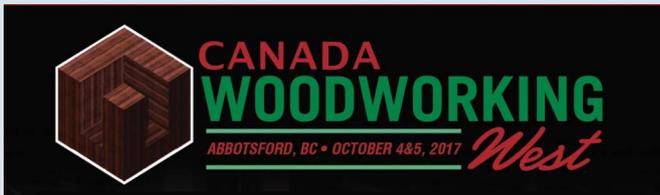
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# Trivalent Chrome Increases its Reach

**CANADA HAS NOT** – at this point – mandated the virtual elimination of hexavalent chromium the way that Europe did this September with its Restriction of Hazardous Substances (REACH) ruling. However, it is obviously on the watch-list, and most commercial plating operations are looking into replacing it with the less toxic trivalent chromium wherever possible.

As always happens with materials substitution, this type of switch presents opportunities and difficulties. There are sound functional reasons for the use of hexavalent chrome, and even in Europe, it is still being retained for certain applications where the trivalent form offers no viable alternative.

The difference between the two types is based on valence, and the way the chromium forms compounds. Trivalent chromium is believed to be a human nutrient at very low levels, while hexavalent chromium is a known carcinogen.

Since in the harmful form it easily becomes airborne, controlling exposure and the effects it has is difficult, even with use of protective gear. Chromate, which a common form of chromium (VI) at neutral pH, mimics certain sulfates in its behavior, which is how it passes into the body and affects metabolism. The result can be squamous cell carcinomas, respiratory cancers and harm to liver functioning, among other syndromes.

Canada passed its most recent regulations on chromium (VI) in July 2009. Their stated purpose is “to reduce the air emissions of hexavalent chromium from facilities where chromium electroplating, chromium anodizing and reverse etching activities are carried out ... The Regulations apply only to persons using a solution of hexavalent chromium compounds (HVC) in a tank located at a facility where more than 50 kg of chromium trioxide (CrO<sub>3</sub>) is used in a calendar year for chromium electroplating, chromium anodizing or reverse etching.”

“It is hard to predict with any certainty, but the general consensus is that someday in the foreseeable future regulations similar to REACH could be applicable to the North American market,” suggests Steve Kocka, North America business director with Atotech. “Both Environment Canada and the US EPA currently have robust housekeeping rules and toxic substance inventories already in place for hexavalent chromium, so it may not be very immediate. But long term the likelihood for local regulations is quite high and its timeline may even be influenced by how successful REACH has been in accomplishing its goals in the European market.”

Substitution of chromium (III) for chromium (VI) is most challenging where the chromium does not have a decorative purpose, but has to survive corrosive or otherwise challenging circumstances on a finished product

“Plating applications can be broken into two categories: decorative and functional,” Kocka points out. “Decorative triva-

lent plating systems are close to being drop in replacements.”

The aim, naturally, is to develop trivalent materials that can come closer to hexavalent ones, without

“Some of the new tank equipment would be PVC or PP liner, graphite anodes (producing the side benefit of eliminating lead from the operation), a filtration system, and in some cases ion exchange for continuous solution purification.”

“Functional trivalent plating systems, such as Atotech’s BluCr process, represent a new direction and method of hard chrome plating. Individual tanks are now incorporated into a full plating line with the chrome tank itself being similar to that described for decorative.”

The number of things to consider in making the switch can seem daunting at first. Designs of parts might need to be adjusted, for example.

“There are many things to consider when making the change to trivalent, and both the end user and the applicator have responsibilities,” Kocka says. “For the end-user, with high volume or high value parts, such as automotive or aerospace, there are engineering and drawing changes that need to be implemented, and therefore tested for approval prior.”

“In some instances, gaining approval can be a long and complicated task, but it ensures the end-user that the performance criteria continues to be satisfied with the new system. A good example is for decorative automotive applications, where the OEM has very specific criteria on the visual appearance of the part.

“For the applicator, one challenge is how this new technology is implemented into an established production cycle. There is a learning curve and it takes some time and effort for the operators to learn the new process and optimize its performance by incorporating a new set of work instructions and best practices.”

It will remain a fact that certain chromium applications will require use of chromium (VI) for some time, even if evolving formulations make inroads into its primacy in the functional parts field. Trivalent chromium itself has only been available relatively recently in forms that permit a broad range of uses in the decorative field.

“Speaking for Atotech, we are always investing R&D back into our product lines for the continuous improvement of our processes,” Kocka says. “Decorative trivalent systems have now been available for quite some time, and as a result the technology is much more advanced compared to when first released. The processes are more robust and many color options are now available, the latest being TriChrome Ice, which is the closest available color match to a hexavalent system.

“Functional trivalent systems are much newer to the industry. BluCr represents the first generation to market, and over

time this will be continuously improved upon as process experience grows and market requirements evolve.”

However in the near-term, it's clear that trivalent chromium is primarily going to be used in strictly decorative functions. Pavco Inc. is another supplier with a range of decorative trivalent materials, including DecoTri.

The company describes this as an “environmentally responsible chloride based trivalent chromium that is highlighted by exceptional throwing power, ease of operation and excellent tolerance to metallic impurities. DecoTri reportedly provides superior brightness, distribution, increased productivity and corrosion resistance while eliminating a ‘white wash’ effect and common waste treatment issues.

A further alternative from Pavco is Hex-A-Gone, a decorative trivalent chrome plating bath that grants a finish it says is comparable to a hexavalent chromium plate while offering numerous advantages. These include being highly forgiving of high metallic impurities, greatly reducing waste treatment requirements and generating large energy savings.

Formulated from the same technology platform as Hex-A-Gone, Hex-A-Gone 1020, the company says, offers higher bath efficiencies that result in plating rates of 3 microinches per minute or 0.08 microns/minute along with throwing power that delivers thicknesses exceeding 20 microinches. Hex-A-Gone 1020 delivers this while granting a color compa-

table to hexavalent chrome, ease of operation and good tolerance to metallic impurities.

Columbia Chemical is also in the field, with its Tricol range. Tricol Decor is a process for white trivalent chromium electroplating.

This, Columbia Chemical states, is a chloride-based system that offers faster plating speeds and deepest-lightest-whitest deposit appearance. It incorporates the use of graphite anodes to reduce operating costs.

The black equivalent is Tricol Blackjack. This is claimed to offer flexible color control that allows for deposits that can be a light smoky color to a deep dark black finish. The chloride-based system uses graphite anodes for faster plating speeds compared to sulfate based systems.

Tricol Pure Select is an ion-exchange resin for use with the Tricol trivalent chromium electroplating solutions. The company says this is highly selective for removing copper, nickel, zinc and iron metallic impurities from solution. Simplified resin regeneration, it adds, minimizes the cost to operate.

Research continues at various supplier companies, and we can expect more decorative grades of trivalent chromium products. Complete replacement of hexavalent chromium, as noted, is highly unlikely, but partial replacement is going to be an area to watch. ■

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# Pumps – the Unnoticed Workhorses

**PUMPS AND FILTERS** are easily taken for granted in the metals finishing field. They are workhorses in a plant that need occasional maintenance and replacement, but they are also critical components in any well-devised production line.

The two components are, of course, complementary parts to one entity. Without protection against stray, abrasive particulates, or against the type that agglomerate and clog pipes and valves, pumps are at constant risk.

The variety of pumps now available is broad, as it has to be, given the fluids that are moved around a plating or anodizing operation. Some are highly viscous or aggressive; yet water is still usually the biggest concern to be looked at.

This is especially true given the increasing emphasis on wastewater treatment. Ensuring that any waste is properly treated is a significant concern, as regulatory authorities become stricter in the rules they impose on emissions.

Equally, making certain that there is proper, unobstructed circulation of water and other fluids into the main plating or anodizing system is important. There are different configura-

tions of pumps available to manage both these requirements.

One option that is popular with a broad range of platers and anodizers is air-operated diaphragm (AODD) pumps. All-Flo Pump Co. focuses on the plating industry with these products, which it says provide maximum productivity, ultra-precise performance and low maintenance requirements to achieve excellence in plating.

The pumps keep essential operations running optimally with minimal maintenance thanks to durable construction that withstands the harsh properties of plating chemicals, All-Flo says. Construction uses minimal components, which decreases the opportunity for malfunction and reduces ongoing maintenance costs. The pumps are designed to work within sensitive chemical processes by providing consistency and precision during pumping procedures.

PSG offers AODD pumps in its Almatec and Wilden ranges. The Almatec system features solid-block construction with abrasion-resistant polyethylene (PE) and chemical-resistant PTFE materials. Featuring no mechanical seals, these pumps

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A selection of pumps from PSG.

utilize stainless steel ring technology instead to increase protection from leaks, by creating a consistent compression around the ring for higher torque.

Wilden air-operated double-diaphragm (AODD) pumps ensure total product containment while reducing internal friction to maximize output and efficiency. They also provide gentle handling and strong suction/discharge pressures for sensitive, high-viscosity paint and coatings fluids. Drop-in configurations are also available, which allow the pump to be installed in an existing footprint without the need to disturb the piping.

A. Brite offers Finish Thompson motors in its drum pumps, which can connect to the drum pump without any tools, because of a quick connect feature. There is a downdraft cooling system and double wall housing. These motors offer continuous duty and variable speed.

A Brite also offers its EnviroBrite UF/Nano filtration systems, designed for wastewater treatment, recovery and reuse. These filters can also be used to minimize waste haul-off of various solutions.

According to the company, its filtration systems are an example of green technology that provide good return on investment while minimizing overall environmental footprint.

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Constructed completely of CPVC, polypropylene, or PVDF where in contact with the solution, each pump is suitable for pumping, agitating, filtering, or circulating acid and alkaline solutions (pH 0-14), abrasive fluids, and other corrosive solutions. Maximum temperature ratings are as follows: CPVC-180 deg F, polypropylene to 150 deg F, and PVDF to 260 deg F.

PVDF is recommended for use in high purity deionized water, HF, and liquids that must remain contamination free. The Penguin vertical pump has a rigid, solid stainless steel, one-piece rotor drive shaft covered with a two-piece sleeve and impeller.

On the filtration side, the Penguin Series C, CN and CB filter chambers are for removal of particulates from various types of solutions. Chambers offer corrosion-resistance, ideal for many O.E.M. and chemical processing applications, including most acids and alkalis to a maximum 230 deg F.

To ensure process compatibility, Penguin filter chambers are manufactured from CPVC, polypropylene or

PVDF. Larger models can be manufactured to accommodate filter bags or cartridges.

Cartridge options include DOE, 222, and 226 end treatments. Multi-round chambers use double labyrinth O-ring seals, and all models have a standard NPT threaded inlet/outlet.

Flo-King Filter Systems offers a four-in-one, in-tank system that pumps, filters, agitates, and treats electroplating, anodizing, printed circuit, low-sludging iron phosphate, and allied metal. This helps eliminate leaks and spills associated with out-of-tank filter systems.

Agitation, the company notes, is a natural byproduct of filtration. This feature is frequently sufficient to replace air or mechanical agitation systems. The Flo-King system also offers ease of filter cartridge changes, without the need for tools or production interruptions.

Additionally, the system offers in-tank carbon treatment for the removal of organic impurities, such as brightener breakdown products. It can be used stationary in one tank, or moved from tank to tank as a utility pump.

There are several models available, for small and large tanks, ranging from production to prototype to laboratory in capacity. Construction materials available including CPVC, polypropylene, PVDF (Kynar), and stainless steel, and the system can be used with blanket-like reusable filter cartridges, or with disposables. ■

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The Aluminum Anodizers Council combined with the American Extruders Council in June for the 2017 Summit. The event was held at the Westin Westminster Hotel in Westminster, CO., and drew a record 350 attendees.

The event included economic updates and technical presentations, as well as a tabletop expo and a student poster contest that brought entries from as far away as Germany and Turkey. On this page are some of the attendees.

## Aluminum Anodizing & Extrusion Summit



Students from the Istanbul Technical University explain their work in the Poster Competition.



JBC's Kevin Hewett explains rectifier technology.

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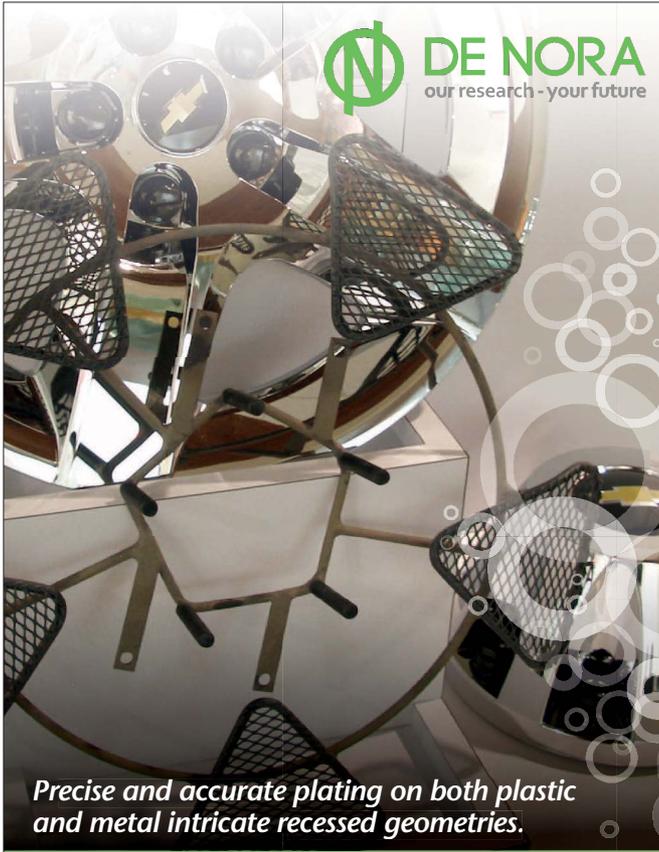
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Frank Munk, international sales manager (right) and George Viola, senior sales engineer, with American Plating Power.

# Wood Coatings Formulation



Photo: Oak Wood Materials

**PREPARATION AND BLENDING** of wood coatings is an increasingly subtle science. The choice between solvent-based and waterborne solutions is one aspect of it, but there is more involved than just the medium of solution.

In particular, formulators need to stay abreast of consumer tastes. People do not change preferences in wood products such as kitchen cabinets to the point they constantly renovate, but there are waves of fashion that dictate what formulation has to be about.

“In recent years, we have seen a significant increase in the requests for both high-gloss and dead-flat finishes,” says Rob Penfold, sales and marketing manager with Katilac Coatings Inc. “European style kitchens are becoming increasingly popular in the Canadian market.”

KCI, he says, has had great success with its high-gloss D9MAX Summit pigmented conversion varnish. With this finish, the company can match any paint color in a high gloss product.

“High gloss pigmented finishes in conventional acid cure products are not without their challenges,” he notes. “To achieve the desired look, shops need to be as dust free as possible and often buffing and polishing is still required.

“A solution to achieving the high gloss look is to use a wet-look polyurethane. To that end, KCI has partnered with Sirca, an Italian manufacturer of polyurethanes, to bring their line of polyurethanes, acrylic polyurethanes, waterborne and exterior coatings to the Ontario market.”

The ‘raw wood’ look is still very popular, he states. This requires a dead-flat finish, and KCI has several products formulated to be zero gloss.

The company’s KD Series Diamond and PHF Series Pinna- cle conversion varnishes are available in a zero degree finish,

and the Sirca Italian line also offers a solution for the flat finish look. Through Sirca, KCI has several polyurethanes that are described as ‘natural effect,’ that achieve the no-sheen look while still imparting protection to the wood substrate.

“As for color trends, the majority of the demand in recent years has been for opaque painted finishes,” Penfold says. “Obviously furniture customers still rely heavily on their traditional stain colors, but the cabinet industry is largely paint finishes. Off-whites are always popular, and there is a noticeable increase in the requests for greys and bright colors like oranges, reds and blues. This goes back to the increasing desire for high-gloss European style kitchens.”

On the technology front, he says customers are inquiring consistently about greener finishes that aren’t waterborne (HAPs free, low VOC, etc.) and finishes that have greater durability. Last year KCI released its Pure line of formaldehyde-free products. The urethane products from Sirca, he states, offer outstanding durability relative to conventional



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Among choice of wood substrates, he sees a noticeable trend towards medium-density fiberboard (MDF) for pigment-ed finishes. Beyond that, there is still solid demand for oak, maple, cherry and mahogany.

“We see a consistent demand for lab services from both our distributors and some of our major customers,” he adds. “Whether it is developing new products for distributors in certain markets or customizing an existing product to run more efficiently on a customer’s line, our lab is constantly working on projects for customers. We also do a considerable amount of finish system testing.”

“Often, we are asked to perform AWMAC or CKMA testing of systems for customers or are asked to do blind comparison testing of finished panels. The bottom line is that we want to ensure our products work for our customers application situations and we want demonstrate that the finished systems we provide meet the highest standards.”

Mickaël Blais-Roberge, R&D chemist with Inortech-EMCO Canada, points out that when it comes to waterborne coatings, there are several distinct types.

“Water-soluble coatings have individual molecules of water-soluble resins that dissolve completely in water,” he says. “They are produced via polycondensation or polymer-

ization reactions, and they typically use co-solvents such as alcohols or glycol ethers.

“Water-dispersible coatings feature the presence of small clusters of insoluble resin particles that are suspended in water. Mechanical agitation and dispersants is sufficient to suspend the monomers, and small amounts of organic solvents are used as coalescing agents.”

The third type, emulsions, commonly known as latex paints, are similar to water-dispersibles.

‘Greener’ solutions, he cautions, might not be in line with a customer’s stated goals. High solids, solventborne coatings can contain less VOC than water based ones in some instances. There is always the practical need to balance eco-friendliness against performance and clients’ needs.

“Water-based coatings feature relatively low viscosity,” he says. “They are easily washable, and uncured waterborne coatings can be cleaned from equipment with water.

“They have an almost infinite pot-life, as long as the water does not evaporate and the emulsion does not break.”

Waterborne polyurethanes are increasingly popular in formulating wood coatings. Eric Vidra,

a technical service consultant with Covestro’s distribution services, says that his company’s Bayhydrol polyurethane dispersions (PUDs) offer superior BHMR (black heel-mark resist-

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**“Whether it is developing new products for distributors in certain markets or customizing an existing product to run more efficiently on a customer’s line, our lab is constantly working on projects for customers. We also do a considerable amount of finish system testing.”**

ance) and abrasion resistance for wood flooring, and can also be formulated for superior water and chemical resistance.

“PUDs have excellent weatherability and abrasion resistance in deck stains,” he notes. “Our Bayhydrol XP 263 grade was rated as among the best deck stains in a large industrial deck stain test.”

PUDs also feature a wide range of elongation and tensile properties, chemical, scratch and hydrolysis resistance, he adds.

“They can yield elastic yet hard films, with an elongation of up to 280 percent,” he says. “PUD coatings are also co-solvent-free.”

Canlak is another long-established wood coatings supplier, which also offers PUDs as well as polyester-based water-borne coatings. Since 2012, it has been allied with Italy-based Verinlegno, which supplies these materials.

Polyester, Canlak states, offers exceptional film clarity, while its ability to fill the wood makes it an excellent sealer as well as a topcoat. The company finds it is widely used

when a smooth or wet-look finish is required, although lustrous finishes are also easily attainable.

Canlak considers its polyurethane products its most high-end. The range includes both standard PUR materials and acrylic-PUR blends, available in clear or opaque systems.

“We have these available from ultra-matte finishes to high sheens,” the company says. “They are ideal for kitchen cabinets, children’s furniture and other articles subject to harsh conditions.”

Formulating wood coatings is always a matter of investigation and calculation with a touch of guesswork. Sometimes customers over-specify what they actually need, sometimes they underestimate what their wood products are going to endure, and sometimes past experience guides them directly to what they need.

At the same time, as new products come onto the market and new ways of formulating them are developed, the process keeps evolving. Staying on top of the innovations is essential for staying on top of your own success. ■

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# Powder Coatings

## Explore New Niches

Powder-coated auto parts. Photo credit: Powdercoat-It.

**THE TYPES OF RESINS** used for powder coating occupy a particular set of niches in the world of polymers, but those niches keep expanding. With every passing year, suppliers understand more about the process of pigmenting, coating and curing, and they continue to stretch the possibilities.

Resin supplier Allnex is primarily focused on thermosetting polyester resins. Its main product line is its Crylcoat

polyester materials. These include, the company says, carboxyl and hydroxyl functional resins for hybrid, TGIC, glycidylester, hydroxy alkyl amide, urethane, and glycoluril powder coating systems.

For UV-curable systems, it offers an increasingly broad product ranges, including its Uvecoat unsaturated resins. UV-cured resins are increasingly important in the market as some

worthwhile materials are sensitive to heat, and UV curing offers a means to avoid problems.

"Allnex has products that can be used in low temperature thermoset coatings as well as UV powder coatings," the company says. "These technologies offer cost savings during application by using less energy, and they are the most environmentally friendly coatings on the market. "They also expand the reach of powder into temperature-sensitive substrates such as wood, plastic, and paper." The UV portfolio has low-temperature cure offerings across three product lines: Crylcoat polyester resins for thermoset powder coatings, the Uvecoat resins for UV powder coatings, and Additol catalyst masterbatches that can lower the cure time and temperature of thermoset powder coatings.

Architectural coatings have seen some developments from the powder coating field. Sherwin-Williams' polyester-TGIC based gloss powder coatings include a wide array of colors, and feature many RAL hues and shades. They hold the Qualicoat Class 1 Certification, which assures aluminum building specifiers and architects that they are specifying a high quality product that offers long-term value and consistent quality.

Qualicoat testing includes a plant audit where the powder coatings are produced and a stringent battery of tests that include weathering, gloss retention, wet and dry adhesion, acidified corrosion resistance, thickness and impact analysis.

Sherwin-Williams also offers its Powdura 5000 for architectural coatings. This is formulated using fluoropolymer resin technology and solar reflective pigments.

Fluoropolymer resins have long been a key component in architectural coatings due to their outstanding UV resistance, and the combination of fluoropolymer resin and solar reflective ceramic pigments defends against ultraviolet radiation. This enhances thermal stability to combat wear and tear of the coatings, and to prevent costly repairs.

The company has also recently been promoting its Powdura OneCure for applications where there is a need for increased edge coverage and corrosion resistance. While applying a primer and topcoat with one single cure cycle. Primer and topcoat can use different chemistries, which can cross-link and co-react to form a tight inter coat adhesion bond. This type of technology, Sherwin-Williams says, is especially interesting to coaters of heavy duty equipment or infrastructure components.

This can be particularly relevant in coating parts that use heavy gauge steel, which takes a relatively long time to achieve the required metal temperature for cure. The lower this curing temperature can be driven, the faster parts can be processed, and the less energy is required to achieve full cure.

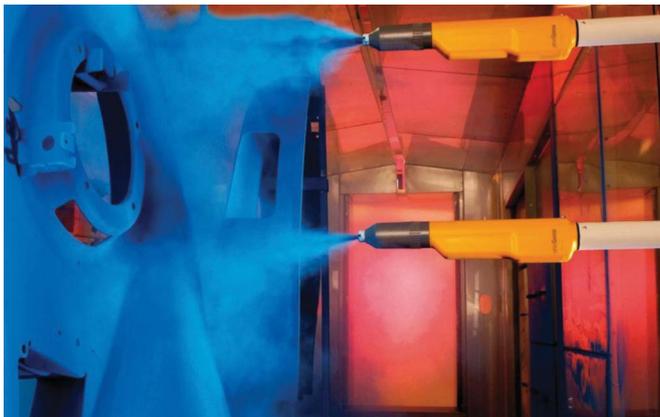
Axalta's Alesta AR architectural coatings feature colors and textures that, the company says, easily adjusted to suit

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The advertisement features a background of blue and white wavy lines. On the left, the letters 'P', 'R', 'O', 'T', 'E', 'C' are stacked vertically in a stylized font. The central text is in a bold, red, sans-serif font. Below the text, there are several images of industrial equipment, including a large grey cabinet with 'TYTAN' branding, a vertical cylindrical tank, a large metal frame, and several smaller control units and components.



**With every passing year, suppliers understand more about the process of pigmenting, coating and curing, and they continue to stretch the possibilities.**

individual esthetic preferences without compromising essential functional properties such as weatherability or impact and abrasion resistance.

The Alesta range includes AR300, which consists of weatherable polyesters designed to meet demanding requirements; and Alesta AR400, which consists of premium weathering polyesters that feature high quality exterior grade pigments. They exhibit, Axalta says, superior outdoor weathering properties.

There is also Alesta AR500, which aims for a higher point on weatherability. This thermosetting fluoropolymer technology provides, Axalta says, the highest level of color and gloss retention available. It features a cure time of 15 minutes at 425 deg F, or 20 minutes at 400 deg F.

Axalta also has its Alesta Illusion product line, which features super-durable polyester powder coatings in 12 high-gloss colors. When viewed at different angles, especially in direct sunlight, the colors produce a special effect and create the illusion of changing color. This technology is designed not only to transform the look of substrates as well as help ensure their protection.

Aimed at the general industrial finishing business, due to its weatherability the Alesta Illusion collection is recommended for exterior projects such as fencing, patio furniture, lawn and garden accents, vending machines, playground equipment, architectural applications, and sports equipment. They are also for interior use on a variety of surfaces including light fixtures, brackets, and metal furniture as well as small and large appliances.

TCI Powder Coatings line-up includes powders for the heavy-duty equipment (HDE) market, which is a growing marketplace for powder. Its HDE primers and topcoats were developed to meet the performance requirements of this field, and have been thoroughly tested to the stringent specifications of the major HDE OEM manufacturers, TCI says.

The company has a broad formulating range of colors and glosses to meet the mechanical and functional requirements of this market. These are offered in single and two coat applications.

Erie Powder Coatings is another player in the HDE field.

Agricultural and construction equipment applications are often large parts, with lots of surface area, the company says. This means they require outstanding durability.

“For the most part, these types of equipment tend to be complicated and expensive and are often used in locations that are very tough on the coatings,” Erie states. “Machines and equipment that work in farmers’ fields, in rock quarries, or for use in construction will demand every bit of durability that can be had from a coating.”

Erie offers super-durable polyesters for this field. These offer the ability adhere to a metal surface as well as exterior lightfastness. Super-durable polyesters are therefore popular for their outstanding weather resistance.

There are some similarities between HDE and the automotive market which of course, is one of the very largest users of powder coatings. They are used on some automotive full body base-coats and top-coats, but much more common is the use of powder coating for primer coats, underhood and underbody applications and for trim parts.

“Many of these uses are high volume but also require high quality,” Erie states.

Often the prime focus for coatings in this segment focuses first on esthetics, especially for highly visible parts such as trim pieces. But given the difficult operating conditions any vehicle must endure, the durability of these coatings is also essential.

“Corrosion control and adhesion are particular problems that powder solves very well compared to liquid coatings,” Erie states. In the other transportation sectors, other coating requirements might be necessary: for example, flammability of coatings is a prime concern for coatings going into interior train compartments or jet cabin space.

The multiplicity of applications for powder-coating is only likely to increase in years to come, even though its primary inroads into the liquid paint field, most pundits suggest, have already been made. However, there are still market niches and unusual uses where it can offer higher durability, weatherability or esthetic benefits than liquid, as well as the benefits or easier clean-up and recycling of the coating material. ■



# Economic Impact of Canada's Coatings Industry

BY GARY LEROUX

**CPCA HAS BEEN WORKING** with Orr & Boss on a comprehensive economic impact study of the Canadian paint and coatings industry, which includes adhesives and sealants. In effect the study addresses all aspects of the industry generally referred to as CASE: coatings, adhesives, sealants and elastomers. While there were no real surprises it does substantiate regular data collected by CPCA throughout the year in various industry segments. The total economic impact exceeds \$12.2-billion in revenue on direct sales of \$3.2-billion annually; supports more than 86,000 jobs; and creates total wages estimated at almost \$3-billion per annum. It reveals that wages and salaries are 18 percent higher in the paint and coatings industry, on average, than in other chemical industry sectors.

The primary reason wages and salaries are higher is based on the fact that the paint and coatings industry is a productive industry with labor content comprising a relatively small portion of the costs to manufacture paint.

The trend of higher wages follows the chemistry industry generally. For all employees, Statistics Canada data indicates the average hourly earnings in Canada are \$25.93 or \$51,860 per year. The chemical industry as a whole pays an average wage that is 39 percent higher than the average Canadian industry. The paint and coatings industry is part of the chemical industry and thus it is not surprising that wages are higher for paint and coatings companies.

The industry has also enjoyed steady growth over the years. Since 2008, the Canadian paint and coatings market has grown at a Compounded Annual Growth Rate (CAGR) of 2.0 percent which is above the Canadian GDP growth rate of 1.5 percent CAGR over that same time period. The expectation is that the Canadian paint and coatings industry will continue to grow at that level and driven by construction activity, automotive manufacturing, and overall industrial production. Furthermore, there is room for paint consumption to grow in Canada. The per capita paint consumption in Canada is 13.7

litres per person versus the United States at 15.8 litres per person. If the paint consumption rate in Canada grew by 15 percent it would equal that of the United States.

There was no surprise that Ontario and Quebec are the leading beneficiaries of economic activity in the paint and coatings industry at 36 percent and 23.9 percent, respectively. They also account for 79 percent of the employment and 78 percent of the revenue.

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two largest provinces with the strongest manufacturing base. These key elements are broken down by the key players in the coatings industry from raw material suppliers to distributors along the value chain right to the point of sale for the various types of customers.

In general, the A&S market follows the trends noted in the paint and coatings market. Ontario and Quebec are the provinces with the largest concentration of A&S manufacturers. These two provinces account for about 66 percent of A&S economic output and a similar amount of employment by A&S companies.

Paint and coatings products are used in many different end-use segments, on many different substrates, whether for metal, wood, plastic, paper, glass, rubber, ceramic, concrete or composite in a vast and diverse range of products. In fact, almost all end-use segments use some paint and coatings in manufactured finished products; thus, the drivers of the paint industry are generally the drivers of the overall Canadian economy (i.e. construction, transportation, energy, etc.). Some of the key segments in the Canadian paint & coatings industry include: architectural coatings, automotive OEM, automotive refinish, coatings for other means of transportation, industrial maintenance and protective, wood coatings, powder coatings, coil coatings, packaging coatings, general industrial, and marine coatings.

The study drilled down on the types of coatings used in all aspects of life on a daily basis for decorating our homes; marking our roads; protecting our buildings and other infrastructure; supporting valuable assets like our plains, trains, ships and automobiles; and many others. The end-use markets for these were analyzed in some detail. Key sectors reviewed included automotive OEM and refinish, architectural, general industrial, coil, industrial maintenance and protective, marine, packaging, powder, transportation, industrial wood, and adhesives and sealants. The relative values for each were analyzed.

The strongest segments for CASE in Canada, which are no different from most countries, include architectural, automotive OEM and automotive refinish coatings. These three segments account for nearly 70 percent of the total market value. Other key segments include industrial maintenance (IM) and protective coatings (PC), general industrial, wood and coil. The study focused on sales at the paint company level, broken down for all segments by both volume (litres) and value (in Canadian dollars).

For all segments there are key players driving the economic outputs in addition to manufactures. The study looked at the impact of the raw material suppliers, the distributors, plant equipment suppliers, freight companies, paint accessories and related products, retail stores, paint users including DIY and various applicators such as contractors and body shops. It also looked at the impact of program operators dealing with paint recycling and stewardship.

Key drivers of total economic output are paint and coat-

ings manufacturers, including adhesives and sealants, accounting for 36 percent of the overall economic output and 24 per cent of overall employment. Raw material suppliers/distributors, professional coatings contractors and retail stores combined account for the remaining 64 per cent of overall economic output and 76 percent of the overall employment. The total chemical raw material and packaging items sold in the Canadian paint and coatings market is estimated at \$1.1-billion/yr.

As with most parts of the Canadian paint and coatings industry, Ontario and Quebec are again the key provinces where economic activity is generated by strong clusters of companies in the paint and coatings industry.

Paint accessories and allied products, which include items such as brushes, rollers, tape, sand paper, etc. is estimated to be \$703-million CND. This figure is based on using a ratio of 0.22:1 for paint accessories and allied products as it relates to paint sales. For every \$1.00 spent on paint manufacturing at the retail level there is \$0.22 spent on paint accessories and allied products. The revenues and sales were spread across the provinces based on 'actual' paint company sales.

The movement of raw materials, packaging items, and finished paint also generates economic activity and employment across Canada. Orr & Boss estimates the paint industry in Canada spends \$131-million per year on freight movement. As with other data presented in the report, the employment and revenue figures are those that are generated from economic activity directly in the paint industry.

The economic output and employment for three types of "paint stores" were considered in the study. The first is the corporate owned store, which are stores owned and operated by the paint manufacturers or brand owners. These can be multinational manufacturers, most of which are publicly traded companies operating worldwide or privately held, Canadian-owned and operated stores.

The second type of paint store is the independently owned and operated paint store or dealer who buys directly from paint manufacturers and then sells to contractors, home owners, and various types of applicators. Finally, the stand alone paint store exists in several other retail categories that include hardware stores like ACE and Home Hardware; home centres or 'big box' stores like Home Depot and Lowes; mass merchants like Walmart and Lumber & Building supply stores. Home centres and hardware stores sell the largest proportion of paint not sold directly or through corporate owned stores. There were also three sets of major "end users" considered in the study: contractors, body shops, and general applicators.

The study revealed that the coatings industry, while continuing to address certain challenges, continues to be a stable and steadily growing industry in Canada. ■

*Gary LeRoux is president and CEO of the Canadian Paint and Coatings Association.*  
[www.canpaint.com](http://www.canpaint.com)

**DC Power Supply**



The new DTX 2400 Series DC power supplies from Dynatronix, Inc. includes models with outputs of zero to 24 volts at zero to 100 amps, and zero to 100 volts at zero to 24 amps. Output is limited to a maximum of 2400 watts DC, and five different DTX models are available. Typical applications include electroplating, electro-polishing, anodizing, waste water treatment and cathodic protection.

Using FPGA controls for increased flexibility, reliability and control, the DTX Series offers features such as a menu-driven 4.3-in. full-color display, ampere time totalizer, ampere time, real time and manual cycle control options, visual tolerance alarms, fault detection and Ethernet/IP or analog communications.

With universal input, the DTX 2400 Series will operate on 100 to 240, 47 to 63Hz, single phase AC input. The FPGA controller automatically detects the incoming power levels and optimizes the power supply to gain the most efficiency.

The power factor is 0.99 minimum for full load operation, and ripple is < one percent RMS of peak rated output. When connected to 120VAC, the maximum output of the DTX 2400 is limited to 1200 watts.

The Dynatronix DTX 2400 Series package measures just 3.43 x 8.45 x 18 in., (HWD), excluding connections on the rear of the unit. The enclosure is made of powder-coated aluminum and environmentally sealed to protect the critical electronics from harsh environments.

Sealed output and communications connections on the rear of the DTX add to its robustness, ensuring long life in tough conditions. Each DTX power supply weighs only 11 lb. The DTX 2400 Series will carry ETL, CE and CSA certifications.

[www.dynatronix.com](http://www.dynatronix.com).

**Walk-In Paint Oven**

No. 839 is an electrically-heated, 850-deg F walk-in oven from Grieve, currently used for heat treating and high-temperature batch paint baking. Workspace dimensions measure 72 x 120 x 72 in.

Power of 120 kW is installed in Incoloy-sheathed tubular heating elements, while a 12,500 CFM, 10-HP recirculating blower provides a combination horizontal/vertical airflow to the workload.

This Grieve walk-in oven features an aluminized steel exterior and interior with 7-in. thick insulated walls, plus a 4-in. thick insulated floor with built-in truck wheel guide tracks. Inner and outer door gaskets are provided, with the inner gasket sealing against the door plug, while the outer gasket seals directly against the front face of the oven.

All safety equipment required by NFPA Standard 86 for handling

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flammable solvents are onboard No. 839, including explosion-venting door hardware, powered forced exhaust air flow safety switch and purge timer. Also featured on this walk-in oven are a recording and programming temperature controller with separate contactors and a recirculating blower air flow safety switch.

[www.grievcorp.com](http://www.grievcorp.com)

### Automatic Film Applicator



The byko-drive XL Automatic Film Applicator has a highly flexible design to perform draw-downs of coatings and inks. The dry film appearance is impacted by drawdown speed and pressure on the applicator tool. A programmable speed control from five to 500 mm/sec. in 1 mm/sec. increments is standard.

Interchangeable weights apply pressure across the entire length of the applicator for a consistent film thickness. The push bar is designed to accommodate a wide variation in wire-rod sizes, applicator bars, applicator frames, and film casting knives.

The touchscreen display makes it easy to program the operating parameters: traverse speed, start position, and stroke length. There are six memory locations to save routine settings. The byko-drive XL has vacuum plate and glass plate platform versions. The vacuum plate and glass plates are user interchangeable for labs that need both platforms.

Metric and Imperial unit scales are engraved on the vacuum plate to easily set start position and stroke length. There is a convenient applicator storage shelf.

The vacuum plate can be used with an external vacuum source, and the unit can accommodate virtually all applicators and wire-wound rods without additional hardware. There is a drip-pan for easy clean-up.

[www.gardco.com](http://www.gardco.com)

### Red Iron Oxide Pigments

Global iron oxide pigment producer Cathay Industries has introduced Cathayred, a renewed and extended range of precipitated red iron oxide pigments for the paint and coating industries. Continuous refinement and enhancement of Cathay's proprietary wet precipitation process has led to this new range of red iron oxides, which reportedly can effectively match the previously unattainable color space of Copperas Reds produced by thermal

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decomposition of ferrous sulphate.

Cathayred encompasses a wide range of high performance precipitated reds with a unique hue, and chroma from salmon to dark red and blue shades. These, Cathay adds, feature outstanding color and physical properties which are easy to wet, with high dispersibility, are chemically stable and can be used in a wide range of applications, including paint and coatings, rubber and plastic products, textile finishes, building materials and ceramics.

[www.cathayindustries.com](http://www.cathayindustries.com)

### Topcoat and Primer



Axalta Coating Systems has added Tufcote 5100 epoxy topcoat and Tufcote LV PR 5187 epoxy primer to its recently released Tufcote LV HG series. In addition to the Tufcote LV HG alkyd and polyurethane coatings, these epoxy products are ideal for use in above water conditions, on surfaces that are susceptible to weathering and corrosion, such as steel, wood, concrete, aluminum, fiberglass, storage tanks, machinery, and piers.

"We're excited to continue to expand our line of Tufcote epoxy products," said John Corry, Axalta product director, industrial coating systems North America. "This topcoat is designed to provide industrial structures with protection and exceptional resistance to chip-

ping and abrasion, making products sustainable for the long-term. The Tufcote LV HG epoxy series offers a high-quality solution to customers who desire a coating with excellent durability, strong adhesion properties, and a very high gloss finish."

Tufcote 5100 Epoxy Topcoat is a two-part, heavy duty thixotropic solventborne coating that is formulated with a volatile organic compound (VOC) level of 0.4 lb/gal (50 g/l) to comply with the most stringent regulatory requirements in the US market. It is available in three colors and may be applied by spray application, brush, or roller. Tufcote LV PR 5187 Epoxy Primer is a light grey, two-part primer that has a 0.8 lb/gal (100 g/l) VOC level that is recommended for use under Tufcote LV HG epoxy topcoat to maximize

chemical and abrasion resistance.  
[www.axalta.us/transportation](http://www.axalta.us/transportation)

### Spray Cup System



3M Canada has introduced the latest version of its paint application technology – the 3M PPS Series 2.0 Spray Cup System. This, 3M

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## Calendar of Industry Events

**November 2-4, 2017:** WMS 2015, the Woodworking Machinery & Supply Expo, International Centre, Toronto. [www.woodworkingnetwork.com](http://www.woodworkingnetwork.com)

**November 6-9, 2017:** Fabtech 2017. At McCormick Place, Chicago. [www.fabtechexpo.com](http://www.fabtechexpo.com)

**November 15, 2017:** Canadian Association for Surface Finishing, annual conference, Hilton Garden Inn, Vaughan, ON. [www.CASF.ca](http://www.CASF.ca)

**December 7, 2017:** Canadian Paint and Coatings Association Christmas Luncheon, Hilton Toronto Airport Hotel and Suites, Mississauga, ON. [www.canpaint.com](http://www.canpaint.com)

**January 15-16, 2018:** Aluminum Anodizing Council, Winter Meetings, Hotel Valencia Riverwalk, San Antonio, TX. [www.Anodizing.org](http://www.Anodizing.org)

**March 12-13, 2018:** Powder Coating 2018 JW Marriott, Indianapolis IN March 12-13 [www.powdercoating.org](http://www.powdercoating.org)

**April 10-12, 2018:** American Coatings Show, Indianapolis IL. [www.american-coatings-show.com](http://www.american-coatings-show.com)

**April 24-26, 2018:** ECOAT 18 Conference. Innisbrook Golf & Spa Resort, Tampa Bay, FL. [www.electrocoat.org](http://www.electrocoat.org)

**May 7-9, 2018:** RADTECH 2018, UV+EB Technology and Expo, Hyatt Regency O'Hare Hotel, Rosemont, IL. [www.radtech.org](http://www.radtech.org)

**May 23-24, 2018:** Canadian Paint and Coatings Association Annual Conference and AGM, Marriott Eaton Centre Hotel, Toronto. [www.canpaint.com](http://www.canpaint.com)

**June 4-6, 2018:** SUR/FIN 2018, Cleveland, OH. [www.nasfsurfin.com](http://www.nasfsurfin.com)

**June 12-14, 2018:** Fabtech Canada 2018, Toronto Congress Centre, Toronto. [www.fabtechcanada.com](http://www.fabtechcanada.com)

**September 12-13 2018:** CanWeld Expo 2018, RBC Convention Centre, Winnipeg. [canweldexpo.com](http://canweldexpo.com)

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says, dramatically improves the flow of the painting process with an improved spray cup design that delivers advanced performance, efficiency and cleanliness.

It eliminates the need for a separate collar, adds a quarter-turn lid locking system and incorporates new features that increase productivity and reduce downtime. The result is a painting process that flows more smoothly, helps prevent contamination of the paint, and improves painters' confidence in the quality of their work.

The company's first disposable paint cup system, the PPS Paint Preparation System, was introduced to Canada in 2002. The system, 3M says, reinvented how painters in the collision repair industry managed the paint process, reducing solvent use by up to 70 percent and decreasing prep time by up to 50 percent.

[www.3m.ca](http://www.3m.ca)

### Vapor Collecting Hood



Hemco Canopy Hoods are designed to collect and exhaust corrosive vapors, heat, steam and odors. They are available in 36, 48, 72 and 96-in. widths, in wall or island models. Canopy hoods are available in either molded chemical resistant flame retardant one piece composite resin or fabricated of welded type 304 stainless steel.

The hoods include a wall mounting kit. Island canopy hoods have an optional suspended mounting kit available. Additionally, custom size canopy hoods can be manufactured to exact size and design requirements.

Corner canopy hoods are recommended

for maximizing wasted space in corner areas, and can either be wall mounted or suspended from the ceiling. Optional corner composite work-surface and corner tables are available.

With any of the canopy hoods, vapor proof lights, switches and side and rear enclosure panels are offered to prevent cross drafts and further improve airflow while providing a way to contain chemical spills. Exhaust blowers, ducting and inline HEPA or carbon filters can be engineered to meet ventilation requirements.

[www.HEMCOcorp.com](http://www.HEMCOcorp.com)

### VOC-Free Aluminum Additives

Sun Chemical Performance Pigments has launched Benda-Lutz COMPAL WS, a range of highly concentrated, VOC-free aluminum preparations for coatings and inks. Designed for long term gassing stability in aqueous environments, this product range can be used in both water or solvent based systems, providing maximum formulation flexibility. Each grade of COMPAL WS preparations is delivered in an easily dispersible granular form for safe and easy handling, improved shelf stability, and numerous other advantages in transport.

"In the midst of increasingly tighter environmental regulations on volatile organic compounds, our customers need pigment solutions that not only meet those regulations, but also help to develop manufacturing processes and finished goods with the highest level of workplace and transportation safety in mind," said Michael Venturini, global marketing manager, coatings, Sun Chemical. "The non-hazardous COMPAL WS aluminum pigment concentrates help to meet those regulations. They are designed specifically for long term stability in waterborne coatings and inks that allow for the manufacture of low to zero VOC, sustainable coatings."

The solvent-free COMPAL WS pigments are nonflammable and therefore present numerous advantages in terms of shipping, storage, handling and dosing. Both leafing and non-leafing pigment intermediates have been developed and can be applied to both cornflake and silver dollar types to provide a wide range of optical effects including high metallic sparkle for straight silver or tinted industrial coatings.

[www.sunchemical.com](http://www.sunchemical.com)

## Electrostatic Spray Gun



The new NANOGUN-MX manual electrostatic spray gun links the expertise of the Kremlin Rexson and SAMES companies, combining electrostatic spray technology for liquid paints with Airmix medium- to high-pressure spray technology. It has been developed to meet the needs of markets requiring high levels of production, such as aerospace, agriculture,

metallic construction, furniture, transportation and energy.

Suited to paints with an average viscosity, NANOGUN-MX spray gun is available in two pressure versions: 120 and 200 bar. It is recommended for products with low to high resistivity to meet all the product parameters used by customers. The gun is lightweight and ergonomically designed, reportedly delivering an excellent electrostatic wraparound effect which improves the overall operator experience.

Airmix spray technology combined with ultimate electrostatic effect delivers a uniform film build thickness on parts being sprayed and allows you to achieve the highest transfer efficiency in the marketplace. The GNM 6080 control module is user-friendly, and easy to maintain, using high quality components and features with advanced corrective and preventive maintenance reminders. There is a single setting knob with adjustable flat spray to provide versatility and a higher transfer rate with excellent finish quality.

[www.sames-kremlin.com](http://www.sames-kremlin.com)

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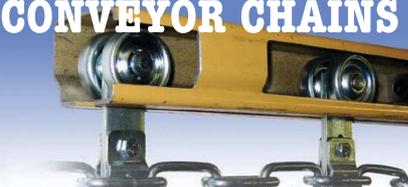
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