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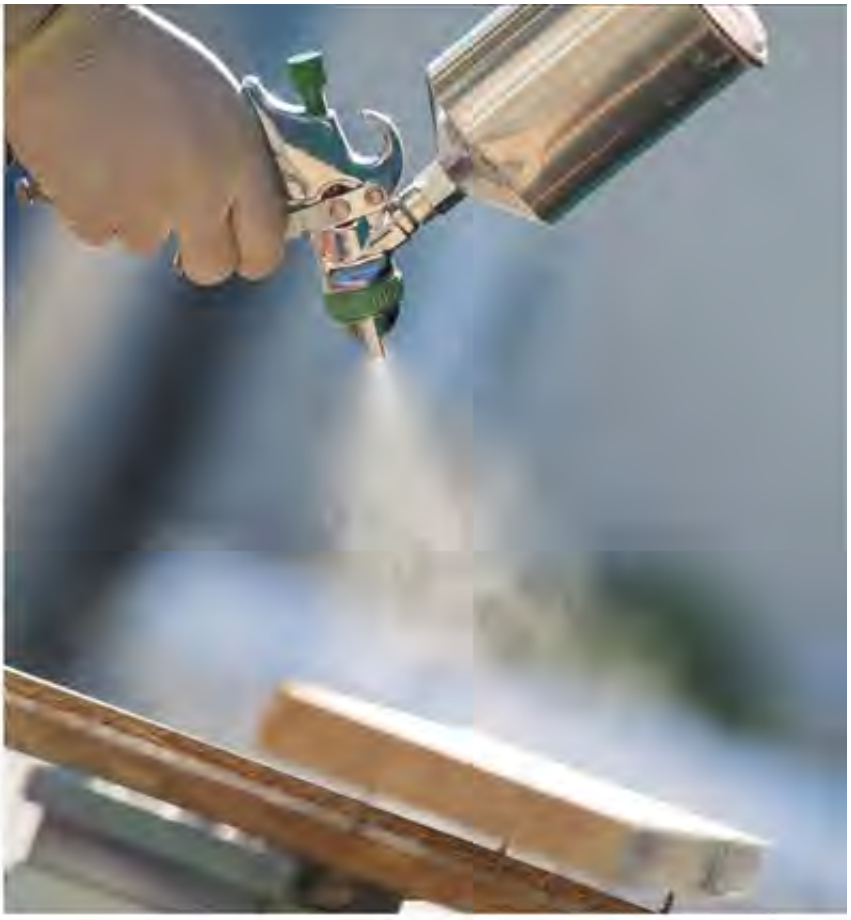
Industrial Coating Contractors Turn to Inorganics



For decades, industrial facilities have measured the effectiveness of a coating by its ability to prevent corrosion, which, of course, is its fundamental purpose. However, with the increasing awareness of the dangers of traditional organic-based coatings and the serious health risks posed to coating contractors, many facility safety managers are specifying safer, inorganic options that now exist on the market.

Coating contractors regularly engage in one of the most hazardous jobs in a plant. Published OSHA accident reports, available on its web site read like tragic news headlines: "One Killed, Two Injured When Paint Vapor Explodes;" "One Employee Dies And One Is Burned in Painting Flash Fire;" "Three Employees Asphyxiated By Paint Fumes."

The risks are further exacerbated within confined spaces such as tanks, vessels, silos, storage bins, hoppers, and vaults – common steel structures desper-

ately in need of corrosion protection found in most industrial facilities. Confined spaces are not only known to accumulate toxic, flammable, and even explosive fumes and dust, but the very act of application of traditional coatings presents its own serious risks.

The problem stems from the application of carbon-based coatings, which include commonly-used polymers, polyureas, and urethanes. These coatings off-gas hazardous VOCs and Hazardous Air Pollutants (HAPs) during, and after, application, which can cause irritation of eyes, nose, throat and/or respiratory tract, headaches, nausea, lightheadedness, memory impairment or even unconsciousness to exposed personnel or contractors.

Furthermore, when applied with a spray gun atomized coatings that have low flash points can create a fire or even explode. Given that plural component spray equipment utilizes electrical elements as well as heat, the equipment itself can pose a risk in such an environment.

"Spraying typical coatings inside a tank is dangerous," says Tony Collins, an industrial contractor for 30 years. "Spraying atomizes the toxic, flammable coating material, which can have a flashpoint as low as 70 °F, the working temperature inside the tank. This means that if a tool is dropped or a metal object is dragged across the tank and a spark occurs, the fumes can ignite and explode. I'm astonished that it's legal."

> Coating contractors consistently exposed to VOCs over time can develop chronic health issues ranging from liver, kidney and nervous system damage to asthma and certain types of cancer.

The risk is not limited to a single job, unfortunately. Coating contractors consistently exposed to VOCs over time can develop chronic health issues ranging from liver, kidney and nervous system damage to asthma and certain types of cancer.

To address the many risks and improve worker safety, confined space work is regulated by OSHA's Code of Federal Regulations 29 CFR 1910.146. Tragically, as investigation of new accidents continues to illustrate, many of the safety precautions are not followed adequately.

New, Inorganic Coating Options

Fortunately, in the past decade coating technology has changed dramatically. A new category of inorganic Chemically Bonded Phosphate Ceramics (CBPCs) has been formulated that emits no VOCs or HAPs during or after application, has no flashpoint, flame spread, or hazardous waste disposal requirements.

Some of these coatings contain no toxins of any kind that could cause distress, whether touched, consumed, or inhaled.

For example, the EonCoat ceramic coating consists of two, non-hazardous components that do not interact until applied by a plural component spray gun. Since the components are not mixed and do not meet prior to application, the need for VOC-generating ingredients in the formulation is completely eliminated, as are HAPs.

Ceramic coatings generate no smoke and have a flame spread rating of zero, which means that flames will not travel across the surface. In fact, an intense flame can be directly exposed to the coated surface and the

substrate will not catch fire unless enough heat is generated to make the substrate behind the coating self-ignite. With no flashpoint, a ceramic coating cannot ignite or explode during spray application as well.

As for its corrosion resistant properties, ceramic coatings bond through a chemical reaction with the substrate, and slight surface oxidation actually improves the reaction. This makes it virtually impossible for corrosion promoters like oxygen and humidity to get behind the coating the way they can with ordinary coatings.

The corrosion barrier is covered by a true ceramic shell, which resists fire, water, abrasion, chemicals, and corrosion.

With the availability of new, safer, inorganic options on the market, coating experts as well as industrial asset and safety managers can now specify an alternative to traditional carbon-based coatings that will dramatically increase safety without sacrificing corrosion protection.

"If you look at how safety and environmentally-conscious the industry has become, there is no excuse for using toxic, flammable materials where there is another option," said contractor Collins.

For more on ceramic coatings, call 252-360-3110; Fax 252-360-3109; email Jim.McBrayer@EonCoat.com; visit www.eoncoat.com. FSM

Know Your Trigger

Nail Gun Safety Begins with Shot Control

Nail guns are widely used on many construction jobs. They boost productivity but also cause tens of thousands of painful injuries each year.

NIOSH says the type of trigger system and the extent of training are important factors. The risk of a nail gun injury is twice as high when using a multi-shot contact trigger as when using a single-shot sequential trigger nailer.

All nailers rely on two basic controls: a finger trigger and a contact safety tip located on the nose of the gun. Trigger mechanisms can vary based on: the order in which the controls are activated, and whether the trigger can be held in the squeezed position to discharge multiple nails OR if it must be released and then squeezed again for each individual nail.

Combining these variations gives four kinds of triggers. Some nail guns have a selective trigger switch which allows the user to choose among two or more trigger systems. Each trigger type is described below.

Full Sequential trigger

This is the safest type of nail gun trigger. This trigger will only fire a nail when the controls are activated in a certain order. Both the safety contact tip and the trigger must be released and activated again to fire a second nail. Nails cannot be bump fired.

Contact trigger

Fires a nail when the safety contact and trigger are activated in any order. You can push the safety contact tip first and then squeeze the trigger, or you can squeeze the trigger first and then push the safety contact tip. If the trigger is kept squeezed, a nail will be driven each time the safety contact is pushed in.

Single Sequential trigger

Like the full sequential trigger, this trigger will only fire a nail when the controls are activated in a certain order. First, the safety contact tip must be pushed into the work piece. Then, the user squeezes the trigger to discharge a nail. To fire a second nail, only the trigger must be released.

Single Actuation trigger

Like the contact trigger, this trigger will fire a single nail when the safety contact and trigger are activated in any order. A second nail can be fired by releasing the trigger, moving the tool and squeezing the trigger again without releasing the safety contact tip. Note that some manufacturers refer to these triggers as "single sequential triggers," but they are different. The first nail can be bump fired with a single actuation trigger but not with a true single sequential trigger.