

THE EVOLUTION OF MOISTURE CURED URETHANE COATINGS

It may surprise many that the history of modern moisture cured protective coatings is only 40 years old. Moisture cured polymers were first invented by the Germans in the late 1940's. Their early formulations were never commercialised, and the technology stagnated until 1980, when a talented chemist by the name of Bill Brinton in the U.S. started developing them in his basement for use as protective coatings.

His first big break came in 1987 when the Oregon Department of Transportation started carrying out comparative product testing on coastal bridges subject to severe weather and salt spray. As reported in the Seattle Times:

⁶Doug Eakin, the state structural coating coordinator, was astounded by the results. Not only did the new paint allow contractors to meet deadlines unencumbered by bad weather, but the quality of the finished paint was also better than anything Eakin had seen.

Bill Brinton's paint was used on Oregon's next big job, and one of its most difficult, the Astoria Bridge.

When Eakin excitedly reported the results at a national convention, "they practically laughed themselves out of their chairs," he recalled. "Everybody told me I was going to be really sorry about using this system," he said.

Nobody's laughing anymore!

The very "gurus of the paint industry" who had ridiculed moisture-cure urethane paints are now among their biggest promoters, Eakin said. He remains impressed. Eight years after first using Bill Brinton's moisture cured paint on the coast, it's doing so well Eakin expects it to last for 20 or 30 years, two to three times longer than the older epoxy paints.

Brinton said, "Other companies could have produced a better high-performance industrial paint but didn't, largely because low-bid government contracts didn't offer any incentive for improved quality. A growing number of other agencies accept our more-expensive paints on grounds that they are high quality and help reduce total contract costs.

"I think we just got into an industry that was kind of complacent and divvied up," Brinton said. "We came in and it was, `What the hell is this?' We came in with an automobile into the horse-and-buggy business."



The iconic Astoria–Megler Bridge is the longest continuous steel truss bridge in <u>North America</u>, linking <u>Astoria</u>, <u>Oregon</u>, and Point Ellice near <u>Megler</u>, <u>Washington</u>. It is 6.55 km in length.

In 1987, as part of a governmental evaluation program, the subsequent testing involved 10 of the top-performing technologies at the time including; various zinc systems, various epoxies, waterborn systems and Bill Brinton's moisture cured urethane technology.

This was in fact the first major bridge to be painted with the moisture cured urethane protective coating system developed by Bill Brinton.

It is interesting to note that this test and comparative studies since have concluded, even after 18 years, that the moisture cured urethane system was the only coating that achieved a SSPC-Vis 2 Rust Grading of 10 (less than 0.01% corrosion creep).



Over the years there have been a few imitations that have tried to emulate Bill Brinton's moisture cured urethane coatings, but they have never achieved the same quality and performance outcomes

Interestingly, in 1999 Bill Brinton ended up selling:

- a) the North American manufacturing and distribution rights, which has now ended up in the hands of PPG, who we understand are no longer using the original moisture cured urethane formulations that they acquired with the Wasser brand name; and
- b) the exclusive rights to manufacture and distribute his original formulations in all areas outside North America to MCU-Coatings.

Since that time Bill Brinton has been consulting exclusively to MCU-Coatings and has been involved in systematically developing their formulations. This process of continuous improvement has amongst other things involved, upgrading the base resins, altering the manufacturing process and incorporating better performing additives.

MCU-Coatings success, and rise to prominence in the protective coatings market, is now directly attributable to this process of continuous improvement, and willingness to take advantage of the technological advancements they have built into their new technologies.

In 2019 this culminated in MCU-Coatings being acclaimed as:

The only paint producer worldwide to have achieved a "25+ years to first maintenance durability in a C 5 environment in accordance with internationally accepted ISO test standards based on a 2-coat, 260µm DFT coating applied on weathered steel plates with a ST3 surface preparation".

Numerous other, independent, laboratory tests have also been completed that corroborate these finding and the overall development of this technology, including:

- MCU-Zinc + MCU-Miotopcoat 260µm, ST3, ISO 12944-6, C5 VH, Norsok M501 System 1, Shell DEP 30.48.00.31 F.1.3 & F.1.2.a
- MCU-Miozinc + MCU-Miotopcoat 225µm, ST3, Shell DEP 30.48.00.31 F.1.3 & F.1.2.a
- MCU-Miozinc + MCU-Miomastic + MCU-Miotopcoat 290µm, ST3, Norsok M501 System 1, Shell DEP 30.48.00.31 F.1.3 & F.1.2.a
- MCU-Miozinc + MCU-Miotopcoat 220µm, SA2.5, ISO 12944-6, C5 I&M H
- MCU-Miozinc + MCU-Miomastic + MCU-Miotopcoat 290µm, SA2.5, Norsok M501 System 1, Shell DEP 70.48.11.30, code FC1 - N/M (new & maintenance).

When viewed as a whole, these laboratory tests, together with the thousands of case studies that are now available, are helping to redefine the market's expectations.

Most of MCU-Coatings products have also been tested on their own in accordance with the test standards outlined above and have passed 10,000 hours of salt spray testing without any significant ageing, which in itself is remarkable as most protective coatings struggle to achieve 1,000 hours.



PRIMERS

MCU-ZINC

Zinc-rich primer with high surface and DFT tolerance. Versatile, easy to use, corrosion resistant primer. Tolerates damp surfaces and fast immersion. For any type of surface prep including UHP, dry, wet abrasive, power and hand tool.

MCU-MIOZINC

Industries best MIO + zinc filled primer. Good surface and DFT tolerance. Tolerates damp surfaces. For any type of surface prep including UHP, dry, wet abrasive, power and hand tool.

MCU-ALUPRIME

Penetrating sealer or primer. Use as a universal primer on minimal prepared surfaces. Also works well as an intermediate barrier coating.

INTERMEDIATES

MCU-MIOMASTIC

MIO-filled mastic intermediate and functional non-UV finish coating. Best choice for over- coating old and lead based coatings. Also used as a standard primer for concrete.

MCU-MASTIC NS

Approved potable water coating. Smooth universal intermediate coating and functional non-UV finish. Use over MCUs zinc primers. Also used as a standard primer for concrete.

MCU-FERROGUARD

MIO filled functional coating. Replaces coal tar epoxies. Immerse in one hour. Cold weather cure. Primarily used for marine, offshore, wastewater, hydro applications exposed to salt/fresh water or sewage treatment.

TOPCOATS

MCU-MIOTOPCOAT

Limited to low gloss colors. Longer life than 2-component PUs. High resistance to chalking and peeling. Highly durable and used extensively on bridges, offshore, marine and industrial applications. MIO modification greatly extends a coating's life and allows easy overcoating years later.

MCU-SHIELDCOAT

High gloss, aliphatic topcoat. Outstanding colour gloss retention and chemical resistance. Used extensively on offshore marine and industrial structures.

MCU-TOPCOAT

Semi-gloss, aliphatic coating. Outstanding colour, gloss retention and chemical resistance. Used extensively on offshore marine and industrial structures.

MCU-CLEARCOAT

High sheen, aliphatic clear coating. Excellent chemical resistance. UV resistant clear topcoat for use on special projects.

MCU-ALUTOPCOAT

Aluminium filled urethane. Durable, abrasion and water-resistant. Used extensively to recoat galvanized coatings. High impact resistance.

ADDITIVES

MCU-QUICKCURE

100% solids additive designed to accelerate the cure of MCU Coatings up to 10 times faster. Also improves film build and inter-coat adhesion.

MCU-THINNER

Paint thinner used for clean-up, diluting the product and creating a vapour barrier in the drum that prevents products from curing.

SPECIALITY PRODUCTS

INSULAT-230

Thermal insulation product. Reflects or emits 98% of the radiant energy that comes in contact with MCU-Insulat 230. Protects personnel from burn hazards on hot or cold structures and equipment and significantly reduces corrosion and rust formation.

MCU-Ecodegreaser

A pH neutral dispersant for the removals off stubborn oil, grease and petroleum. Suitable for most substrates, including textile fabrics.

MCU-Ecocleaner

Single component, water based gel to remove hydroxides, metal oxides, mill scale, green algae, humus, barnacles and limestone deposits on corroding ferrous metals. Can be used on steel, stainless steel, masonry, stone and polyester. Is environmentally friendly, non-flammable, non-toxic and biodegradable with a pH >2.

Continually improving and far better than other alternatives