Case Study

Transformation from Chromate-based to Chromate-free primers

United Metal Coatings (UMC) is one of the largest manufacturers of pre-painted coils in the Middle East. As a long-time partner of Beckers RAK, UMC has used a wide range of coil coating paints for over ten years. They traditionally applied chromate-based primers (PE, PU, High Build, etc.) for different product qualities. With rising sustainability requirements, environmental regulations, and the need for safer options, Beckers encouraged UMC to switch to Universal Chromate-Free Primer. This primer is versatile and designed for high performance and compliance with regulations in regions across the world.

Context

Driving the Transition to Chromate-Free Solutions

In the late 1980s, the European coil coating industry began moving away from strontium chromate due to its carcinogenic nature and environmental impact linked to hexavalent chromium. This shift was driven by a shared commitment to improving safety across production, application, and downstream processes.

Pioneering Innovation

Anticipating future market and regulatory needs, Beckers launched its first chromate-free primer in the mid-1990s. This early innovation was backed by an extensive validation program:

- 770 systems tested
- 10 years of outdoor exposure
- 20+ pigments evaluated, alone and in combination

Proven Performance

Through advanced testing methods, both accelerated (salt spray, Prohesion, humidity) and natural exposure (Bohus Malmön), chromate-free technologies have demonstrated long-term durability in demanding environments.

Setting the Standard

With the 2019 European ban on strontium chromate in coil coatings, the transition became a reality. Today, the latest generation of chromate-free primers delivers top-tier corrosion protection, achieving **RC5 classification according to EN 10169-2**.

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Challenges

1. Performance

UMC needed assurance that chromate-free primers would match or exceed the performance of traditional chromate-based primers in terms of corrosion resistance, adhesion, and durability.

2. Process adjustments

Shifting to a new primer technology meant potential line parameter changes, including adjustments in temperature settings, curing conditions, and application techniques. This raised concerns about disruptions to productivity and coating consistency.

3. Testing & Validation

To ensure a seamless transition, rigorous testing was required across different topcoat qualities such as: Beckry®Pol, Beckry®Tech, Beckry®Fluor, Beckry®Duro, Beckry®Roll, Beckry®Silk

4. Staff Training & Confidence Building

UMC's production and technical teams had to be trained to handle Chromate-free primers to ensure proper application and process consistency.

5. Regulatory Compliance

The new primer had to meet international environmental regulations, including REACH compliance (Restriction of Hazardous Substances), RoHS standards, and reduction in VOC and hazardous emissions.

6. Cost

Cost was a key challenge, as chromate-free primers were initially more expensive. Beckers had to provide a strong value proposition to justify the investment.

Groundwork and implementation

Beckers executed a structured transition strategy, focusing on:

1. Lab development and testing

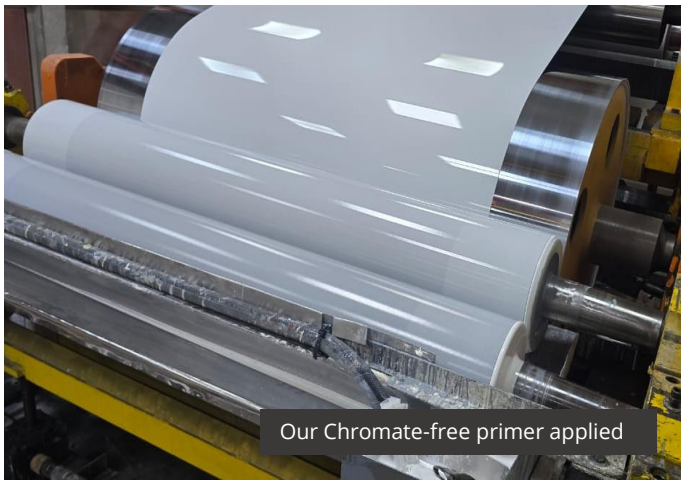
Developed Universal Chromate-Free Primer as a universal primer, capable of being used with multiple topcoat qualities. Conducted long-term performance testing to match or exceed chromate-based primer standards.

2. Pilot trials on UMC's production line

Sent trial batches to UMC for small-scale production testing. Conducted on-site trials on both aluminum and HDG (hot-dip galvanized) substrates. Performed long-term durability tests to ensure no commercial claims or rejections.

3. Cost optimization strategy

Presented Universal Chromate-Free Primer as a universal primer, which allowed UMC to use one primer across multiple coating applications without frequent line stoppages or changeovers. This cost-saving approach helped offset the price difference compared to traditional chromate-based primers.



Our Chromate-free primer applied

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Results and success metrics

Within just one year, UMC shifted 85% of their primer requirements to Universal Chromate-Free Primer. The key outcomes included:

1. **Zero commercial claims or rejections**: Customers reported no quality issues, proving the primer's reliability.
2. **Improved environmental footprint:** Significant reduction in hazardous emissions, waste, and CO_2 footprint.
3. **Operational efficiency:** Smooth transition with no disruptions to production schedules.
4. **Regulatory compliance:** Full compliance with REACH, RoHS, and other environmental guidelines.
5. **Cost optimization:** Adoption of a single universal primer reduced the need for multiple primer stocks.

Within the next six months, UMC aims to become the first company in the region to fully switch to 100% Chromate-Free Primers.

1st drum of Beckers'-UMC Chromate-free primer

Conclusion

UMC's successful transformation serves as a benchmark in the coil coatings industry for companies seeking to move toward more **sustainable and high-performance alternatives**. Through innovative product development, rigorous validation, and strategic cost optimization, Beckers RAK facilitated a smooth transition that has positioned UMC as a **pioneer in sustainable coil coatings**.

Director Operations, UMC

"We initially had concerns about performance, but extensive testing and successful trials have proven the primer's reliability. We now operate with a more sustainable solution, without any compromise in quality.

Managing Partner, UMC

"The transition to Universal Chromate-free Primer has strengthened our commitment to sustainability while maintaining the high-performance standards our customers expect from UMC. We take pride in being industry leaders in adopting environmentally responsible solutions."

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