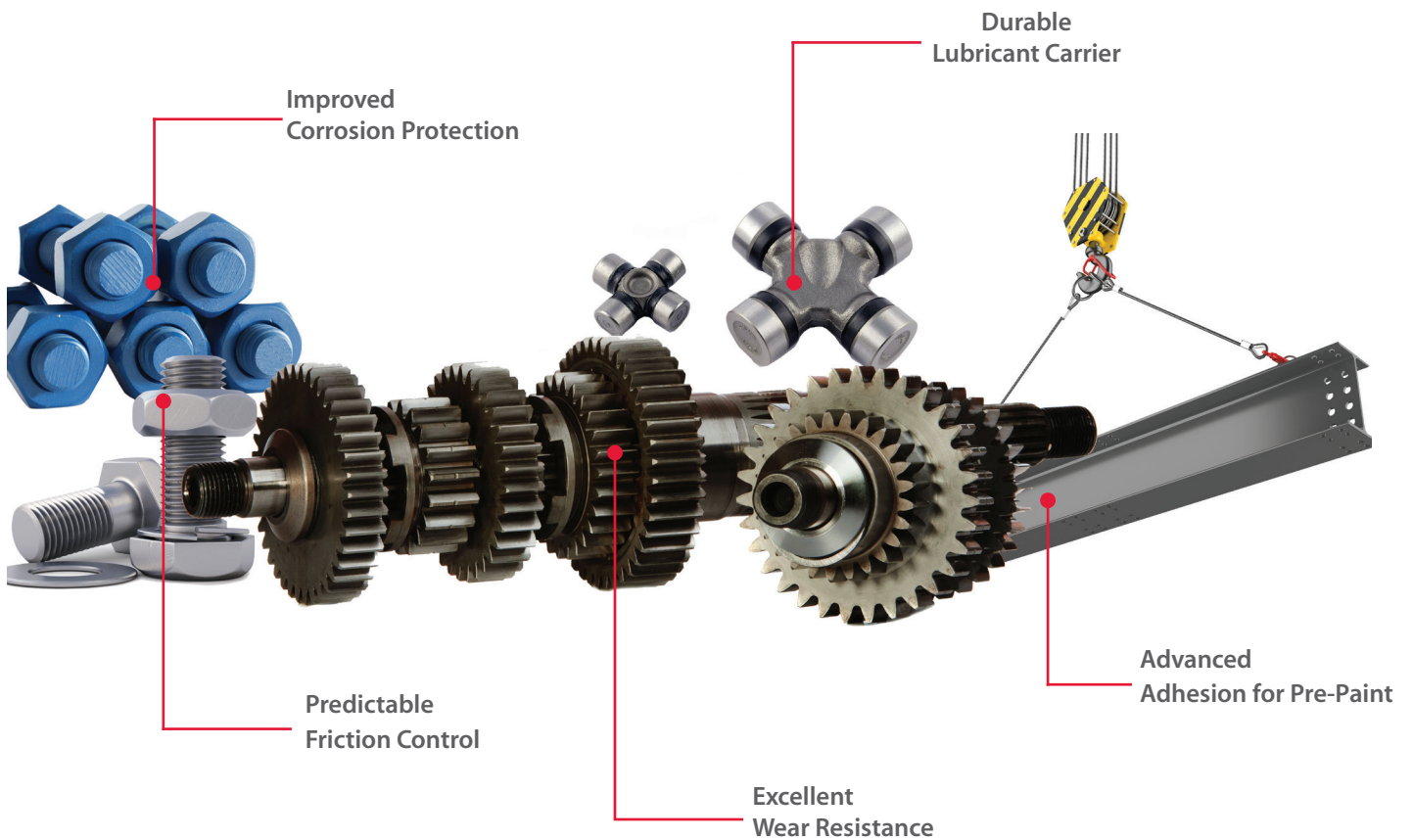


# KeyKote™

Phosphating Technologies for Immersion Application



**KeyKote for the Automotive, Aerospace,  
Construction, Metal Working & Oil/Gas  
Industries**



# KeyKote

## Phosphating Technologies for Immersion Application

### Phosphating for Corrosion Protection, Bonding, Cold-forming and Wear Reduction

**MacDermid Enthone Phosphating technologies** cover a multitude of applications and have proven to be fit for purpose over many years of industrial use. In addition MacDermid Enthone offers the products for pre and post-treatment, which are Cleaners, Pickling products, Conditioners, Passivation, Friction modifiers, Corrosion protective oils and Lubricants.

MacDermid Enthone Phosphating products will produce high quality coatings, meeting the most demanding requirements.

- Automotive
- Oil & Gas
- General Engineering
- Construction
- Furniture

The properties of the coating in terms of weight, thickness and topography can be adjusted to meet appropriate specifications. All products show economical low consumption, cost-effective working temperature and reduced sludge formation.

Our experience of Phosphating helps to provide improved products and benefits for the user in the actual production line.

### KeyKote FEATURES

- **Nickel-free Processes**
- **Reduced Sludge Technology**
- **Advanced Iron Management of Zinc Phosphate Systems**
- **Complete Range of Phosphating Products to Suit All Applications**

	Corrosion Protection	Coefficient of Friction	Wear Protection	Lubricant Carrier	Pre-Paint
Zinc Phosphate	●	●		●	●
Zinc Calcium Phosphate	●	●		●	●
Manganese Phosphate	●	●	●		



MacDermid Enthone Phosphating products produce conversion coatings on iron, steel and zinc with wide-ranging properties and which cater for most industrial applications.

**Corrosion Protection** – When the primary requirement is for resistance to red rust after neutral salt spray exposure, heavy weight zinc or manganese phosphate provides the base coating. Combined with corrosion protective oil they can reach in excess of 72 hours.

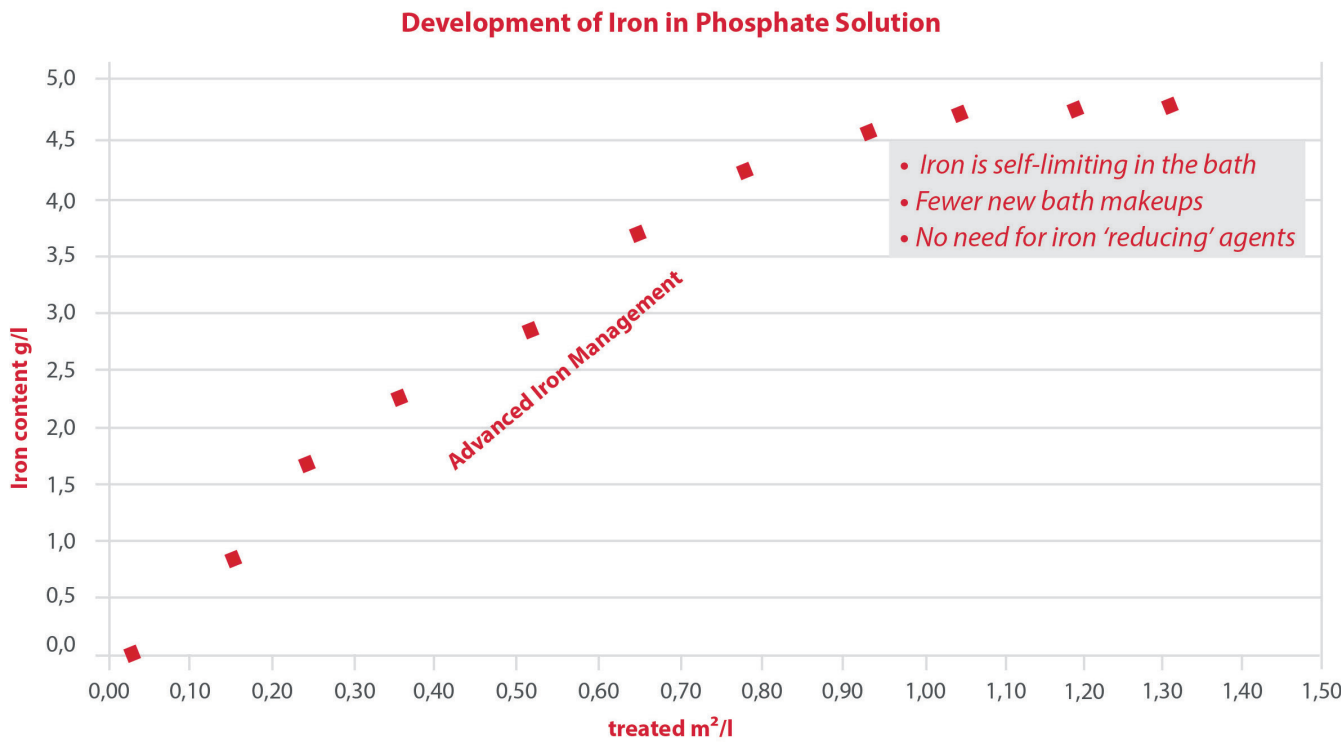
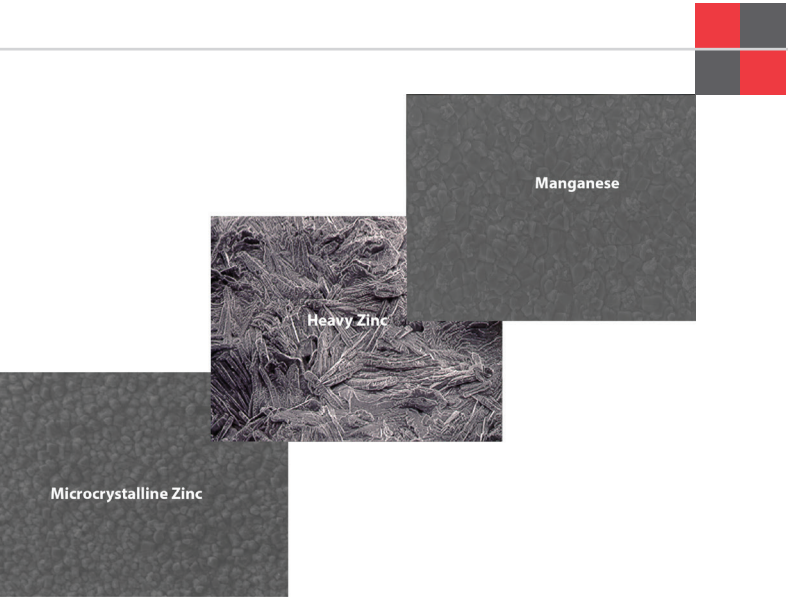
**Friction Modification** – If a microcrystalline phosphate is required, then zinc calcium phosphate is recommended. These are supplemented by a corrosion inhibitor/ coefficient of friction modifier. With the appropriate friction modifier, MacDermid Enthone phosphate coatings will return these values:

- Heavyweight zinc phosphate is typically within the range of 0.12 – 0.30
- Microcrystalline phosphate is within the range 0.08 - 0.16.

**Pre-paint** – Light to medium weight zinc phosphate coatings provide a corrosion resistant base for organic coatings. Usually calcium modified zinc phosphates, these finishes provide excellent adhesion for subsequent paint coatings.

**Wear Resistance** – Crystalline manganese phosphate with coating weights up to 25g/m<sup>2</sup> absorb oil and other lubricants exceptionally well. They provide exceptional wear resistance and running-in of sliding parts in power train and transmission applications.

**Cold Forging, Forming and Drawing** – The phosphate layer helps prevent metal-to metal contact and in combination with a suitable lubricant enables the cold forming and the drawing of wire and tube material. Micro-crystalline, calcium modified zinc phosphate acts as the perfect lubricant carrier for these applications.








# KeyKote

Phosphating Technologies for Immersion Application



The tables below outlines the recommended products which combined will deliver coatings for zinc and manganese phosphate specifications from leading automotive companies including **BMW, Daimler, FCA, Ford, GM, PSA** and **Volvo**

Product Range						
	Product Type	Product Character	Corrosion Protection	Coefficient of Friction	Cold Forming	Bonding Wear Reduction
KeyKote 36	Zinc Phosphate	One component for make up and replenishment, Nitrate accelerated, 60 - 90°C, 20 - 60g/m <sup>2</sup>	X			
KeyKote 703	Zinc Phosphate	Two components for make up and replenishment, Nitrate accelerated, 65 - 80°C, 11-16g/m <sup>2</sup>	X	X	X	
KeyKote 750 	Zinc Phosphate	Two components for make up and replenishment, Nitrate accelerated, 65 - 75°C, 6 - 30g/m <sup>2</sup>	X	X	X	
KeyKote 501 	Zinc / Calcium Phosphate	One components for make up and replenishment, Nitrate or Nitrite accelerated, 65 - 80°C, 3 - 5g/m <sup>2</sup>	X	X	X	X
KeyKote 514 	Zinc / Calcium Phosphate	Two components for make up and replenishment, Nitrate accelerated, 60 - 80°C, 3 - 12g/m <sup>2</sup>	X	X	X	X
KeyKote 515 	Zinc / Calcium Phosphate	Two components for make up and replenishment, Chlorate accelerated, 65 - 75°C, 2 - 4g/m <sup>2</sup>	X	X	X	X
KeyKote 701	Manganese Phosphate	One component for make up and replenishment, 85 - 95°C, 11 - 16g/m <sup>2</sup>	X			X X
KeyKote 731 ZG 	Manganese Phosphate	One component for make up and replenishment, 85 - 95°C, 11 - 16g/m <sup>2</sup>	X			X X

It is important to choose the right permutation of pre-treatments, phosphate stages and final finishes to ensure consistency in the desired coating weight and grain size.



**MacDermid Enthone**  
INDUSTRIAL SOLUTIONS

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