



Inorganic Crosslinkers for the Paper and Paperboard Industry

Bacote® Series and Zirmel™ Series

Luxfer MEL Technologies (LMT) supplies two ranges of formaldehyde-free insolubilizers, Bacote and Zirmel, for pigmented paper and paperboard coatings; offering unparalleled quality and consistency. Insolubilizers are important additives used in pigmented paper and paperboard coatings to impart the properties required to achieve the highest quality print.

LMT's Bacote and Zirmel series of products are well established in most types of formulations for paper and paperboard. These products provide increased effectiveness and runnability, accelerated speed of cure and the superior performance being demanded by this industry today.

Formaldehyde-free, with FDA and BfR approval, these are the crosslinkers of choice at coating mills worldwide, especially those looking to improve their environmental footprint. Bacote and Zirmel are clearly the best solutions for high quality paper and paperboard coating.

General Characteristics

Bacote consists of a clear, aqueous alkaline solution of stabilized ammonium zirconium carbonate, containing anionic hydroxylated zirconium polymers. There is a slight ammonia odor associated with Bacote, and ammonia is released upon evaporation. There is no odor associated after curing.

Where an ammoniacal odor is considered undesirable, Zirmel is recommended. Zirmel consists of a clear, aqueous alkaline solution of stabilized potassium zirconium carbonate and offers all the benefits of Bacote.

Bacote and Zirmel products are all stable at ambient temperatures for a minimum of 12 months and can be stored in the temperature range of 40-160 F.

Benefits for Coating Mills

- **Formaldehyde-free** – Environmentally conscious
- **Rapid cure** – No need for elevated temperatures or extended curing time
- **Effective with all commonly used binders**
 - Starch, CMC, casein, proteins, carboxylated latex, dextrin, styrene acrylic, PVOH, etc.
- **Improved printability** – Achieved through optimal water resistance, an open coating structure, reduction of contact angle and uniform distribution of binder materials throughout the coating, also reducing mottle
- **No adverse effects on optical properties** – No time or heat exposure yellowing
- **FDA and BfR approved** – Used in direct contact with aqueous, fatty and dry foods

Mode of Action

When added to a coating or size press formulation, Bacote and Zirmel interact quickly with oxygenated sites, mainly carboxyl or hydroxyl groups available on the binder molecules. Removal of water and carbon dioxide, during the drying stage, drives the reaction to completion, due to the generation of reactive zirconium cations.

Once the drying stage is complete, covalent bonds are formed and the reaction is irreversible under normal coating conditions. The reaction is not heat dependent. The dried coating will exhibit optimal water resistance but will remain hydrophilic in nature and the microporous structure of the coating surface will be "open" or unblocked.

Luxfer MEL Technologies offers a wide range of products including, but not limited to:

- Ammonium Zirconium Carbonate (multiple concentrations)
- Zirconium Acetate (two concentrations)
- Zirconium Oxynitrate/Nitrate
- Zirconium Oxychloride
- Zirconium Orthosulfate
- Zinc Zirconium Ammonium Carbonate
- Zirconium Propionate (powder)
- Zirconium Hydroxychloride
- Zirconium Basic Carbonate (powder)
- Zirconium Basic Sulfate (powder)
- Full line of doped and undoped Zirconia materials for Catalyst and Ceramic applications

Discover more at

www.luxfermeltechnologies.com

 @LuxferMELTech

Copyright © Luxfer MEL Technologies 2019. The information provided within this document is aimed to assist manufacturers and other interested parties in the use of Luxfer MEL Technologies products. Luxfer MEL Technologies accepts no liability in whole or in part from use and interpretation of the data herein. All information is given in good faith but without warranty. Freedom from patent rights must not be assumed. Health and Safety information is available for all Luxfer MEL Technologies products. **DS-1040-1119**



Certificate No. FM12677

Luxfer MEL Technologies
Elektron Technology Centre
Lumns Lane, Manchester, M27 8LN, UK
T +44 (0) 161 911 1000

Luxfer MEL Technologies
500 Barbertown Point Breeze Road
Flemington, NJ 08822, USA
T +1 908 782 5800