

Effective Adhesion Promoters for Improved Bond Strength and Product Properties

Dorf Ketal is the industry pioneer and a global leader in producing and supplying organic titanates and zirconates. For more than 50 years, Dorf Ketal has been delivering innovative, high-quality Tyzor® compounds to meet the evolving needs of a wide range of industrial markets. Dorf Ketal offers more than 40 grades of Tyzor®, including several specialty compounds.

Diverse Applications

Dorf Ketal Tyzor® organic titanates and zirconates are excellent adhesion promoters for various substrates and coatings. Some typical examples of these diverse applications include:

- Paints and coatings
- Printing inks
- Sealants and adhesives
- Metal coating/corrosion protection
- Wire enamels
- Reinforced plastics (glass fibers, natural fibers)
- Mineral filled composites
- Glass treatment (flat glass, hollow glass)

Multitude of Benefits

The effects which can be achieved by using Tyzor® organic titanates and zirconates as adhesion promoters depend on the substrate system, polymer, type of reaction system (aqueous or non-aqueous), and the end use. In general, adhesion or bond strength is increased and end-product properties can be improved.

Typical properties that can be enhanced include:

- Interlayer adhesion
- Chemical/solvent resistance
- Water resistance
- Heat resistance
- Mechanical properties
- Surface hardness
- Corrosion resistance
- Processing properties
- Electrical properties

- Gel strength

Broad Product Selection

A broad range of Dorf Ketal Tyzor® organic titanates and zirconates is available for solvent, solvent-free and water-based applications. The Tyzor® product line includes reactive alkoxides and stable chelates of titanium or zirconium.

Selection of the correct Tyzor® product depends on the system type, process, and end use requirements. In general, the alkoxides are more reactive than the chelates. When high stability in a reactive polymer or coating formulation is required, chelates are usually preferred.

Unique Mode of Action

Tyzor® organic titanates and zirconates are very well suited for cross-linking reactions due to their high reactivity and ability to form multiple bonds through a single metal site.

Organic titanates and zirconates will interact with a variety of common functional groups (i.e., -OH, -COOH, SiOH, etc.) to form stable covalent and coordinate bonds between functionalized polymers and/or substrates. Substrates that do not contain such functional groups (e.g., many plastics) can often be pretreated via corona, flame, or plasma treatment to introduce these groups on the surface.

The high reactivity of titanates and zirconates enables the interaction and fixation to a broad range of substrates and polymers, including those with low reactivity.

The various ways that Tyzor® organic titanates and zirconates can be used as adhesion promoters include:

- Forming a bridge between substrate and polymer
- Cross-linking polymers
- Catalyzing cross-linking
- Modifying or priming surfaces (i.e., creation of a thin metal oxide layer or reactive interlayer)
- Increasing the surface tension of the substrate
- Enhancing the reactivity of other adhesion promoters (e.g., in combination with organofunctional silanes)
- Improving wetting

Put Tyzor® to Work for You

The broad range of Tyzor® organic titanates and zirconates allows you to select the optimum grade to meet your specific needs, enabling you to produce superior quality products for a wide variety of applications and market segments.

And, with warehouses in every region and an integrated global network of highly trained sales and technical service professionals available to assist you, it is easy and convenient to put Tyzor® to work in your application anywhere in the world.