What are coating agents?

4 components and application examples of coating agents are as follows:

- **Resins**
  - Used as the resin itself
  - Used to improve other resins and impart them with the properties of silicons
- **Additives**
  - Used to improve the surface conditions of coatings
- **Pigments & Fillers**
  - Used to modify the surface of fillers to improve coating performance

How silicones are used in coating agents?

Our silicones are used in 4 different ways with the Resins, Additives, and Pigments & Fillers from which coating agents are made.

**Coatings applications**

There are a wide array of coating applications.

**Inks**

**Paints**

**Films**

**Adhesives**

**Hard coatings**

**Use of silicone**

1. **Silicone based Resins**
   - Structure: Resin having a high molecular weight and three-dimensional siloxane network structure.
   - Features: Provide excellent film-forming abilities, coatings can range from very hard to flexible.

2. **Resin Hybridization Agents**
   - Structure: Molecules containing alkoxysilane groups and reactive functional groups.
   - Features: Monomer having two-dimensional siloxane network structure.
   - Surficial reactions of alkoxysilane groups with organic materials.

3. **Surface Modifiers for Coating**
   - Structure: Molecules containing alkoxysilane groups and reactive functional groups.
   - Features: Molecules contain alkoxysilane groups and reactive functional groups.
   - Features: Alkoxy groups provide lower viscosities for the siloxane main chain with reactive functional groups.

4. **Surface Modifiers for Pigments & Fillers**
   - Structure: Molecules containing alkoxysilane groups and reactive functional groups.
   - Features: Lower viscosities for the siloxane main chain with reactive functional groups.
   - Features: Alkoxy groups act to improve adhesion to inorganic materials.

**Use 1: Silicone based Resins**

**Silicone Resins**

- Features: Can be used on their own or to modify organic resins. Can also be used as reactive diluents.

**Silicone Oligomers (Type A)**

- Features: Can also be used for modification of organic resins or even as a reactive diluent.

**Use 2: Resin Hybridization Agents**

**Silane Coupling Agents**

- Features: White alkoxy groups improve adhesion to inorganic materials.
- Features: Good film-forming abilities, coatings can range from very hard to flexible.

**Silicone Resins**

- Features: Two-dimensional siloxane main chain with reactive or non-reactive functional groups in the side chain and end.

**Use 3: Surface Modifiers for Coating**

**Silicone Powders**

- Features: Coating Surface Modifiers designed for use as leveling agents, defoamers, slicking agents, and in coatings.

**KP Series**

- Features: Very small particle size distribution. Particle surface treated to give them extra water repellency.

**Use 4: Surface Modifiers for Pigments & Fillers**

**Alkoxy Silanes**

- Features: Alkoxy groups act to improve adhesion to inorganic materials.

**Silane Coupling Agents**

- Features: White alkoxy groups improve adhesion to inorganic materials, reactive functional groups improve adhesion to organic materials.

**Spherical Silica Fine Particles**

- Features: Monodisperse, less aggregation. Fine adhesion to organic materials.

**Selection Guide - Silicones for Coating Applications-**