



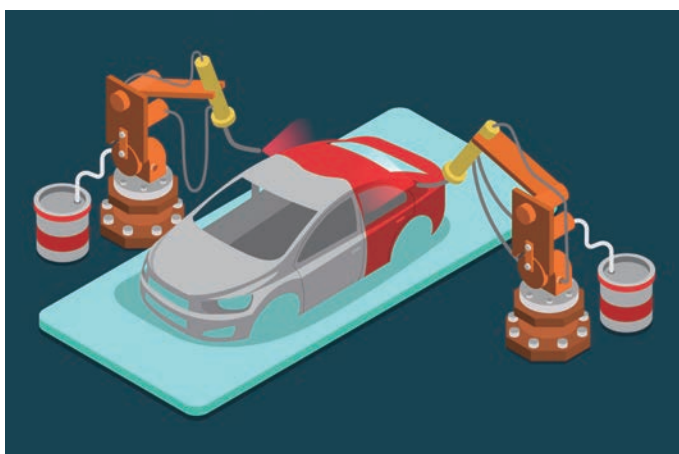
Contributing to the Function to Protect by Softening the Coating Film

SANYO
PRODUCT
TOPICS

Automobiles are beautifully painted in various colors.

Other than the beautiful appearance, painting has an important role in protecting the automobile.

This article introduces the painting that protects the metals in the automobile body from rust and scratches, and the key actor in the shadows that supports the coating film by adding softness to it.



Rust is the greatest enemy of an automobile body

The body of an automobile is made of steel sheets, which are made by drawing steel into thin sheets. While iron is one of the strongest metals, is easy to process, and has properties that are suitable for an automobile body, its disadvantage is that it rusts easily. Especially for automobiles that are used outdoors throughout the year and exposed to direct sunlight, wind and rain, it is not too much to say that they are always at risk of rusting. Rust is the greatest enemy in maintaining the strength of the automobile body.

In general, it is said that the average lifespan of an automobile is about 12 years, and this means that durability is very important. Rust prevention of the automobile body, is accomplished by surface treatments such as plating and painting. This article introduces

the function of protection of the body from rust and scratches, and how the products of Sanyo Chemical are contributing to this, taking the painting of an automobile as an example.

Preventing rust with the first layer of 4-layer painting

Painting has various functions including protection and beautification of the vehicle.

Historically, industrial coatings for rust prevention on iron were based on pigmented linseed oil, diluted with solvents. This was then replaced with nitrocellulose lacquer, which dries quickly. This was necessary for mass production.

At present, the primary type of painting on automobiles is 4-layer painting. The main role of the first layer as applied is rust prevention, the second layer is for chip resistance to prevent scratches caused by flying pebbles, etc., the third layer is for coloring, and the fourth layer is for

weather resistance, waterproofing, addition of luster, etc. As described above, painting plays various roles including protecting the steel sheets from rust.

Electrodeposition coating with high anticorrosive effect

It is necessary that the iron not be allowed contact with oxygen or water in order to prevent rusting. Therefore, electrodeposition coating ('e-coating'), which can provide coating over the entire surface uniformly, even in tight areas, has become the mainstream method for the first layer to add rust prevention. E-coating is a method of painting in which the paint is drawn to the body by soaking the assembled automobile body in a pool filled with water-based e-coat paint and running electric current through the pool. Cationic e-coat paint, whose main component is epoxy resin, is used for the e-coating of automobiles. A cationic e-coat paint

consists of resin, solvent, rust preventive pigments, and additives such as dispersing agent and plasticizer. Since an electric current is used, water is used as the solvent. This method, which resulted in the rapid adoption of water based coatings in the automobile industry, was developed in the 1970s and has been used ever since due to its excellent corrosion prevention performance.

Sanyo Chemical offers plasticizers and water-based emulsions to soften coating films

Epoxy resin, which is used in cationic e-coat paints, excels in rust prevention but is rigid and brittle, and may generate cracks on the coating film or peel off, thus destroying its rust protection. To improve the crack resistance and sealing properties of the coating film, a plasticizer is used to soften it.

As plasticizers and flexibilizing agents, Sanyo Chemical offers a lineup of the 'NEWPOL BP and BPE,' 'SANNIX PP,' and 'GLYCIALE' Series. Use of these products can deliver coating films that excel in corrosion prevention and

flexibility.

The second layer needs to be the barrier that stops water. Chipping and scratching, by flying pebbles, etc., causes water to seep in. Not only is softness required to absorb impact, but strength is also required in order to achieve this chipping resistance, and urethane resin, which excels in elasticity, is suited to this purpose. In recent years, water based coatings have been increasingly adopted for the benefit of both the natural environment and the work environment. The 'UCOAT' Series by Sanyo Chemical is an aqueous urethane emulsion that can be used in water based systems. Since it is urethane resin, which excels in elasticity, high chipping resistance can be achieved even with a thin coating film.

In the future, it is expected that the adoption of water based systems will advance rapidly in paints for automobile painting in China, where environmental problems have become serious, as the regulations on volatile organic compounds will be tightened. To meet such market needs, Sanyo Chemical will continue to develop high-performance products and contribute to our customers and society.

■ Major products of our company to contribute to soften and provide protective function to coating films

Applicable coating film	Product name	Composition	Features
First layer	NEWPOL BP and BPE Series	Polyether	A raw material for electrodeposition paints. Delivers a resin that excels in corrosion prevention and flexibility when used in combination with epoxy resin, which is the main component of electrodeposition paint.
	SANNIX PP Series		
	GLYCIALE Series	Glycidyl ether	
Second layer	UCOAT Series	Urethane resin emulsion	Polyurethane resin, which excels in flexibility, elasticity, strength, sealing property, and water resistance, and which helps in impact absorption. Suited to water-based paints as it is an emulsion type.

Please contact our sales office if you wish to use our products. In addition, please be sure to read the "Safety data sheet" (SDS) before using the product. Suitability and safety in the application for which the product is to be used must be determined as the responsibility of the user.