

## 1. Why the glass coating was invented?

The so call car paintwork protection is the glass coating we developed. Why we get the idea for car paintwork protection? To be brief, it is because car manufacturers (agents) attempt to decrease the cost of production. They park numerous cars in the temporary warehouses. The cars will be parked in the outdoor and roofless temporary warehouses for a long time before supplies. During the period, the piles of UV rays, radiation, rain, dust...etc. can break down car paintwork. Besides, bird droppings, bat deposit and solvent tree sap can cause severe damage to the coating. To remove those stains, a very strong cleaner is required. However, the cleaner with such strong chemical could rust the car paintwork. In order to rinse and remove any remains of the cleaner, it will lead to water waste and increased cost. For reducing the cost, we found out a good solution. Then, glass coating has been launched!!!

We have provided OEM/ODM services to a great number of car manufacturers for half century. We began to invent and develop coating products since 2000. We spent lots of time to test the products again and again, and to try the products on thousands of brands of cars worldwide. Based on the test result, we cooperate with the biggest chemical factory in Japan to invent and produce our glass coating range.

Evolution of glass coating as below:

	Wax	-> Polymer Glass Coating (glass-resin coating)	->Glass Coating
Lasting	1~3 months	3~6 months	1~5 years

In our product development process, Japan's chemical factory did not have outstanding progress for organosilicon at the beginning. However, Japan's research on Organosilicon is far surpassing other countries in the world nowadays. In recent years, many factories have started to promote glass coating products. However, our company and the largest Japanese factory took the advantage of our particular network and shared intelligence to invent and develop many of our products.

## 2. The difference between organic matter and Inorganic matter.

Organic matter an element composed of organic compounds. Organic molecule consists of carbon atoms. Relatively, the inorganic matter is composed of inorganic compounds. The main ingredient of glass coating is inorganic compound-silicon dioxide (SiO<sub>2</sub>). Most people considered the inorganic is better than organic. They thought inorganic glass coating does not become oxygenized and shows superior protection against UV rays. But this concept is not correct. Inorganic coating

actually becomes a contamination. It cannot remove water stain and water spot. The reason is that inorganic coating would absorb energy and could be 100% penetrated through by UV rays. That will cause damage to the car paintwork. Due to the high hardness, the inorganic coating is easily leaked and gives a poor performance with long-lasting. That information is well-known between the professionals.

### **3. Evolution of crystallization (from liquid to crystalline)**

The coating is hardened by continuous condensation of addition-elimination reaction.

Condensation reaction of dealcoholization and organic polymer- $\text{C-OH}+\text{RO}+\text{Si} \rightarrow$  organic polymer- $\text{C-O-Si}+\text{R-OH}$

Condensation reaction of dehydration and organic polymer- $\text{C-OH}+\text{HO-Si} \rightarrow$  organic polymer- $\text{C-O-Si}+\text{H}_2\text{O}$

Condensation reaction has above two hardening operations.

The chemical reactions will harden the coating.

### **4. With regard to the hardness.**

The H graphite grading scale is used to measure the hardness of a glass coating and also the same measurement unit for pencil cores. The most common misunderstanding is: the higher hardness coating has better performance; 9H is the best. Usually the thickness of glass coating is 0.3~0.5 micrometer and different from the thickness of a gold foil, which is only 0.1 micro meter. The hardness has no meaning in 0.1 micrometer thickness. Higher hardness will cause coating broken easily and is relatively easy to peel off. Thus the flexibility is more important than hardness. Flexible coating can be applied on the deformed object and not easily broken even after crash. All in all, for making a perfect product, it is more important to achieve a balance of hardness and flexibility.

### **5. Siloxane and hexamethyldisilazane**

A siloxane is a functional group in organosilicon chemistry with the  $\text{Si-O-Si}$  linkage. The chemical reaction of silicon atoms and nitrogen (inorganic) produce hexamethyldisilazane. In contrast, silicon atoms react with oxygen (organic) to form siloxane. As hexamethyldisilazane coating are inorganic, there are two disadvantages: 1. usually the solvent is needed for dilution. Also, it takes lots of time to become solid and is inconvenient to handle. 2. If it rains before solicitation, the coating will drain out. In order to prevent the coating drain out, people usually have to apply fluoropolymer on top of the coating.

The thickness of organic siloxane coatings is usually triple of the hexamethyldisilazane coating. And the organic siloxane coating has both adherence and peel-off property. As mentioned above, Japan's Organosilicon research is superior to all other countries. Organic silicon=organic siloxane=silicon, it plays a very important role in a variety of industry. After all, you can easily recognize which is the best coating.

## **6. care and maintenance after coating process**

Strictly speaking our coating products need 7 days to become fully solid. Ideally, we suggest parking the car in a place with roof to prevent possible damage. After coating cured, please make sure parking the car in a place with roof, and wipe the car dry immediately after raining. By the way, the hexamethyldisilazane coating takes about one month to fully cured.

"Maximum hardness of 9H glass coating "; "100% silica glass coating "; "completely inorganic glass coating"

Those are just companies' slogans. Most of those companies do not have their own factories; they buy OEM product from other manufacturers. They are not professional. Those companies always claimed their products are hardness of 9H and totally inorganic coating.

From the information given by the Japanese manufacturer, you should have better understanding of the coating and know how to choose coating products. Q-GLYM coating products are directly imported from the professional coating manufacturer in Japan, which cooperates with the largest chemical factory in Japan. Our products are 100% concentrate without dilution. We are different from those DIY, OEM, second-hand or third hand products available in the market. Japan controls the unique technology of coating and leads the world in the field. It is the well-known fact in the industry. Q-GLYM provides the newest and the most professional coating products from Japan. Of course, Q-GLYM coating range is your best choice.