【Technical Data】	YAMAGUCHI MICA CO., LTD				
Title	High Water Repellency of Spherical Silica with Amodimethicone Treatment - Contribution to Stability for W/O Emulsion Systems -				
Category	Cosmetics	By	H. Asano	Date	Mar.15.2024

(Summary)

The spherical silica with hydrophobic treatment, commonly suggested as an alternative ingredient for microplastic beads in cosmetics, often suffers from poor water-repellency due to its porous property. We developed a spherical silica with amodimethicone treatment “PSG-05WA5”, which has excellent water-repellency without surface treatment defects. This property is highly expected to improve the stability of the W/O emulsion system.

(Key Wors)

microplastic beads, spherical silica, amodimethicone treatment, surface treatment defect, W/O emulsion, stability

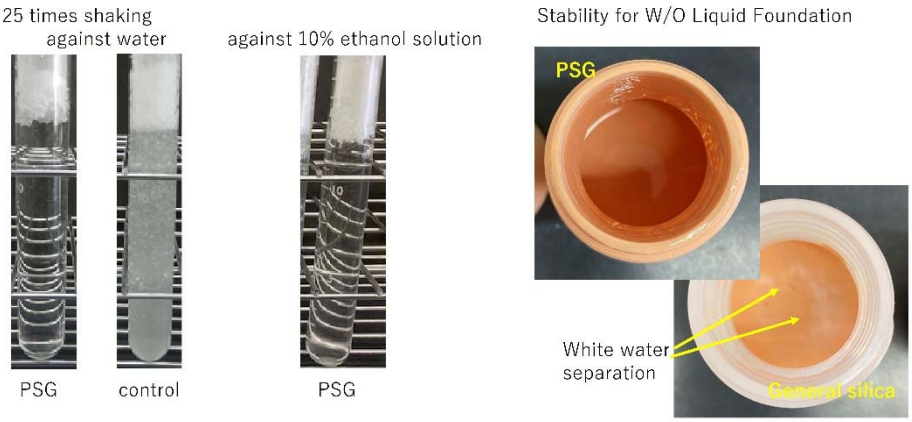
(Introduction)

In recent years, there has been concern about ocean pollution caused by microplastic beads. For this reason, there is a growing movement towards alternatives in the cosmetics industry. As a solution to this problem, spherical silica is often considered as a substitute, but the water-repellency of spherical silica with the other surface treatments are insufficient. In particular, when surface-treated spherical silica was substituted for organic spherical powder such as PMMA in a W/O emulsion system, the emulsification often became unstable. In general, the water repellency of powder is often evaluated by its contact angle measurement, but the influence on the W/O emulsion system cannot be determined by the contact angle values.

Therefore, Yamaguchi Mica developed the process of amodimethicone treatment keeping in mind the porous property of spherical silica. The water-repellency of the obtained PSG-WA5 in actual use was evaluated by a shaking test using water and an aqueous ethanol solution in comparison with conventional products.

(Results)

PSG-05WA5 did not sink in both the water and the ethanol aqueous solutions either. In particular, PSG is considered to have high water repellency, as it did not sink even in an ethanol aqueous solution with a low surface tension. This property is very useful for stability of W/O emulsion.



(Concusion)

If general hydrophobic spherical silica is carelessly used as an alternative ingredient for microplastic beads, it may destroy the W/O emulsion, but PSG-05WA5 can be proposed as the ingredient that is less likely to cause such destruction.