

# Mandom Develops Third New Styling Mechanism After Setting Polymer and Oil-Derived Styling Mechanisms “Style with powder”

Mandom Corporation (headquarters: Osaka; CEO: Motonobu Nishimura; hereinafter, “Mandom”) studied a new styling mechanism called powder styling, in which the hair is hooked together and styled, a concept completely different from that of conventional styling mechanisms. As a result, Mandom successfully developed a styling technology that is optimal for soft volume that feels light and natural. In the future, Mandom plans to market styling agents that apply this technology.

## 1. Hardening and sticking, the styling mechanisms of previous styling agents

Styling mechanisms of previous styling agents are broadly divided into 2 types, ① styling with the fixing strength of a set polymer and ② styling with the adhesive strength of oil, and these mechanisms have been used in various styling products. Typical examples of ① include hair foam, hair spray, and hair gel, which characteristically work by tightly hardening and holding hair with the film formed by setting polymers. Typical examples of ② include hair liquid and hair wax, which characteristically work by sticking the hair together with the adhesive strength of an oil, such as wax, to create a flow of hair bundles and hair, allowing the hair to be restyled many times. Either mechanism can be used to support a variety of hair styles. However, styling agents that use hardening strength and adhesive strength do not provide an optimal feeling or styling power that meets the recent styling trend of a natural finish with soft volume or the styling needs of older hair, in particular, which has reduced firmness and resilience. Therefore, Mandom has been studying a new type of styling agent.

Figure 1. Previous styling mechanisms

① Styling with a setting polymer



② Styling with oil



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## 2. Third styling mechanism: “hook” powder styling

In order to develop a new styling technology, we focused on powder, which has not been previously used as a primary ingredient for hair styling. We found that certain powder ingredients (volume powder, “VO powder”) have styling power and restyling ability, as well as an optimal styling effect for increasing soft volume. VO powder styling uses a novel styling mechanism completely different from conventional styling mechanisms (fixing/sticking): the powder components form minute concavities and convexities on the surface of the hair, causing the hairs to hook onto one another and create a sense of three-dimensional volume. Unlike previous styling agents, this agent (mechanism) styles by causing the individual hairs to hook onto one another without sticking, so it is optimal for achieving natural, fluffy volume and provides a totally new, light feeling of use.

Figure 2. New styling method, powder styling (adherence and schematic diagram)



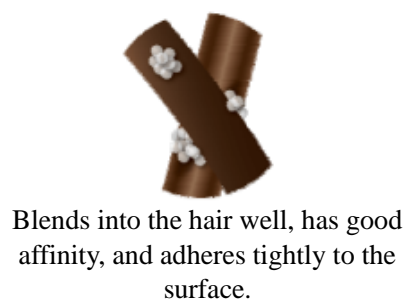
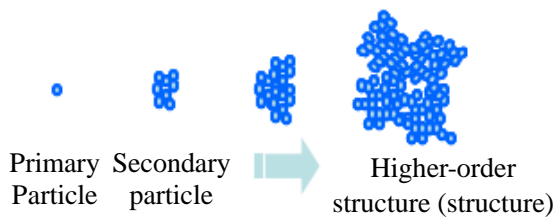
## 3. Characteristics of volume powder

### ① Blends into the hair and creates minute concavities and convexities

Previously, powder components in styling agents were used as a supplement to oil or other styling ingredients to decrease shininess, provide a matte look, reduce stickiness, etc.

After screening various powder components, Mandom discovered that VO powder (silica) could be individually used for styling and restyling without other components and that the unique structure of VO powder was important for styling. The major characteristic of VO powder is its unique structure (Figure 3; higher-order structure in which first-order particles are aggregated), whose distortions were found to allow it to easily blend into the hair and hook the hairs to each another. The adhered VO powder creates minute convexities and concavities in the surface of the hair, causing individual hairs to hook to one another, thereby achieving a fluffy, natural, high-volume style. Figure 4 In addition, the powder does not fall out of the hair easily, even when the hair is folded or bent, so it does not lose its styling ability, and it can be repeatedly used to restyle the hair. In addition, this VO powder has good affinity to the hair, blending into it without appearing white on the hair.

Figure 3. VO powder structure (schematic diagram) Fig. 4 Adherence to the hair (schematic diagram)



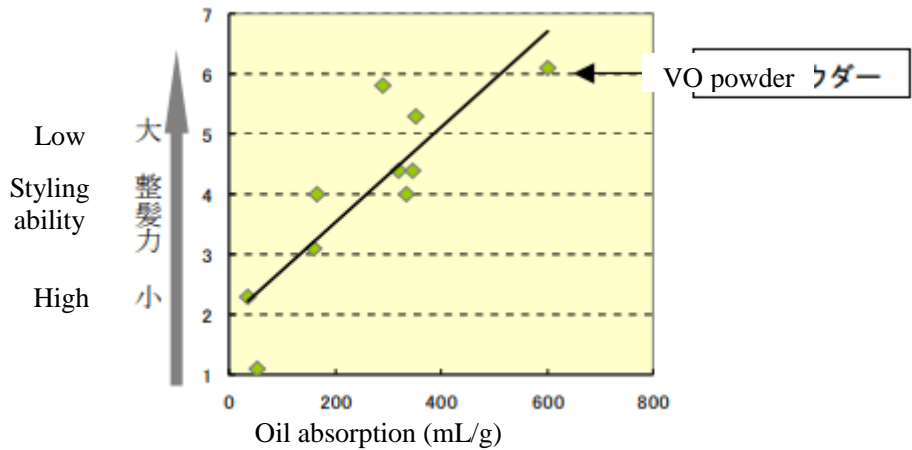
**② High oil absorption and excellent styling ability**

Through extensive research, VO powder was discovered to have a very high oil absorption\* value, which is used as an index of the higher-order structure. The styling ability of a powder is shown to increase as oil absorption increases. In other words, the styling ability of a powder increases as the structure's order increases (Figure 5).

Because of these characteristics, VO powder was found to absorb the oil in oily hair and decrease shininess.

\* Oil absorption: An index of how much oil can be absorbed (specified by JIS K5101); it is related to the pore volume of the powder itself and the magnitude of the space in the higher-order structure.

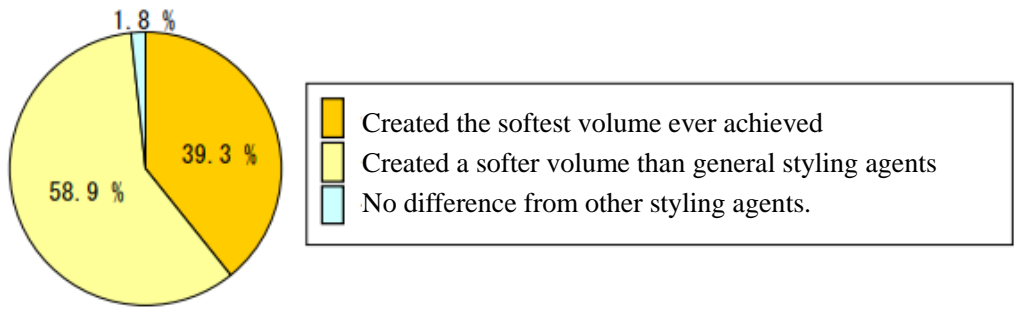
Figure 5. Evaluation of styling ability (functional assessment) of the difference in oil absorption of powder ingredients



**③ Usability study confirms soft volume effect.**

In a usability study of styling agents containing VO powder, 98% of people felt a greater soft-volume styling effect than with conventional styling agents (Figure 6).

Figure 6. Usability study results for styling agents containing VO powder (Mandom study, study of 56 men)



In this way, styling agents that use the novel mechanism of powder styling, a concept completely different from that of conventional styling mechanisms, have the characteristics of i) creating a light natural finish and being optimal for increasing soft volume, ii) allowing restyling and multiple rearrangements of the hair, and iii) being able to absorb oil in the hair and create a light finish with no stickiness.

Specifically, it is intended to be used as styling mechanism that is optimal for hair types previously considered difficult to style, such as thin hair, soft hair, hair without firmness or resilience, and sticky hair.

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