

Mandom Successfully Develops Technology for a Hair Wax Capable of a Tight Set and Long-Term Hold of Thin Hair

Mandom Corporation (headquarters: Osaka; CEO: Motonobu Nishimura; hereinafter, “Mandom”) strives to develop cosmetic products to address age-related changes in middle-aged Japanese men. In this instance, Mandom successfully developed a novel technology for responding to the age-related change of thinning hair, in the hairstyling field, for which we have been developing technologies for many years.

Many middle-aged men feel age-related changes, such as the hair being more difficult to set/hold in a hairstyle compared to when they were younger. Believing that these changes are related to thinning hair due to aging, Mandom used thin hair to study the causes of hairstyles becoming unraveled and found that highly crystalline* styling components are a reason for the inability to maintain a hairstyle. The results of studying the crystallinity of styling components led to the development of a hair wax capable of tightly setting a hairstyle, even with thin hair, and maintaining that hairstyle for an extended period of time.

Mandom intends to apply this technology in future product development.

* Crystallinity: Tendency to form large crystals

1. A hairstyle is more difficult to maintain with thin hair than normal hair

Currently, 52.2% of middle-aged men use hair wax to style their hair (Figure 1). In an awareness study of middle-aged male users of hair wax, almost half of the men felt the age-related change of the hair becoming more difficult to set/hold in a hairstyle compared to when they were younger (Figure 2).

Believing that these changes were related to hair thinning due to age, Mandom applied hard hair wax to bundles of each type of hair, normal hair (of general thickness) and thin hair, and studied the condition of the hair after 2 hours had elapsed. The results confirmed that the shape of the hair unraveled with thin hair, whereas the shape was maintained with normal hair (Figure 3).

2. Improvement in the maintenance ability of hair bundle shape due to the uniform application of hair-styling components on the hair.

Hair wax styles the hair by causing the hairs to adhere to one another due to the styling components. Generally, to improve the styling ability of hard hair wax, a large quantity of highly crystalline styling components is added to the formulation in order to strengthen the adhesion of the hairs by partially creating locations with a large quantity of adhered styling components (Figure 4).

However, hair that has thinned due to age is less able to stand out individually (less able to resist weight), so it is believed to be unable to withstand the weight of the large quantity of partially adhered styling components, and its shape becomes unraveled.

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In order to create a state in which the amount of adhered styling components is not imbalanced (i.e., a uniformly applied state), a comb was used to apply the components to bundles of thin hair, and it was found that the shape was maintained over time (Figure 5). These results showed that an effective way to style thin hair was to apply hair-styling ingredients in a uniform manner, without creating some locations that have larger quantities of adhered styling components.

3. Developing a hair-wax technology that can tightly set a hairstyle, even with thin hair, and maintain that hairstyle for an extended period of time

Mandom therefore believed that mildly crystalline styling components, as opposed to highly crystalline styling components, could be used to easily and uniformly apply hair-styling components, without a comb and without creating locations where large quantities of components were adhered. Mandom performed a verification of a test sample using this idea. The result was that the styling components were uniformly applied and shape was maintained, even as time passed (Figure 6). Through further study, the blend ratio of mildly crystalline styling components to highly crystalline styling components was optimized, and the effect on shape maintenance was further improved.

This technology led to the development of a hair wax capable of tightly setting a hairstyle and maintaining that hairstyle for an extended period of time, even in middle-aged men who had experienced age-related changes (Figure 7). In the future, Mandom will continue to develop cosmetic products to address age-related changes in order to help members of the community.

[References]

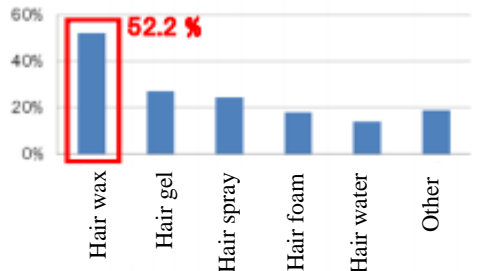
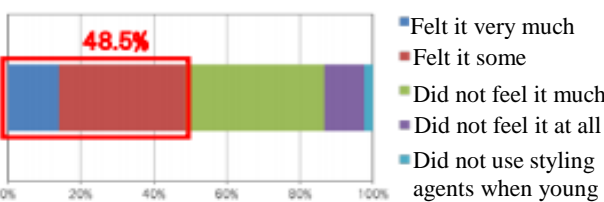
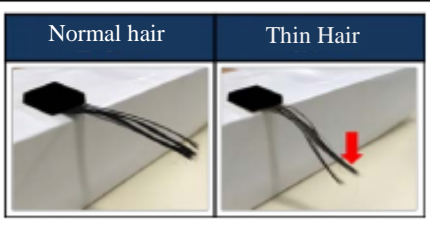
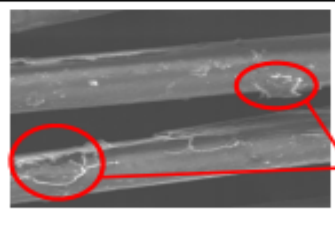
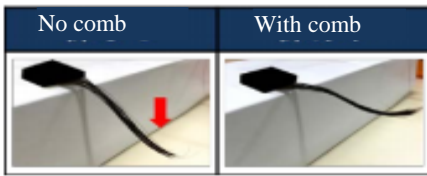
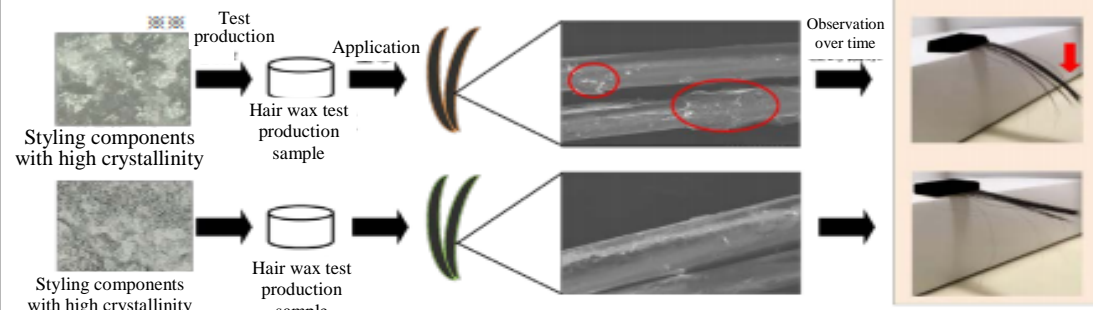
<p>Figure 1. Styling agent use ratio in middle-aged men</p>  <table border="1"> <caption>Data for Figure 1: Styling agent use ratio in middle-aged men</caption> <thead> <tr> <th>Styling Agent</th> <th>Use Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Hair wax</td> <td>52.2%</td> </tr> <tr> <td>Hair gel</td> <td>~25%</td> </tr> <tr> <td>Hair spray</td> <td>~25%</td> </tr> <tr> <td>Hair foam</td> <td>~18%</td> </tr> <tr> <td>Hair water</td> <td>~12%</td> </tr> <tr> <td>Other</td> <td>~18%</td> </tr> </tbody> </table> <p>Answers to the question “Currently, what types of styling agents do you use (multiple selection possible)” (Mandom Study/NET Survey 2005/ 35- to 49-year-old men/users of hair styling agents/n=2,868)</p>	Styling Agent	Use Ratio (%)	Hair wax	52.2%	Hair gel	~25%	Hair spray	~25%	Hair foam	~18%	Hair water	~12%	Other	~18%	<p>Figure 2. Degree to which age-related changes in hairstyle setting/maintenance ability were actually felt</p>  <table border="1"> <caption>Data for Figure 2: Degree to which age-related changes in hairstyle setting/maintenance ability were actually felt</caption> <thead> <tr> <th>Response Category</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td>Felt it very much</td> <td>~15%</td> </tr> <tr> <td>Felt it some</td> <td>~33.5%</td> </tr> <tr> <td>Did not feel it much</td> <td>~30%</td> </tr> <tr> <td>Did not feel it at all</td> <td>~10%</td> </tr> <tr> <td>Did not use styling agents when young</td> <td>~11.5%</td> </tr> </tbody> </table> <p>Answers to the questions “Did you hair style become more difficult to set as desired than when you were younger?” and “Is your hairstyle less able to be maintained than when you were younger?” (Mandom Study/NET Survey Jan 2006/Tokyo Area residents/35–49-year-old men/users of hair-styling agents/n=10,000)</p>	Response Category	Percentage (%)	Felt it very much	~15%	Felt it some	~33.5%	Did not feel it much	~30%	Did not feel it at all	~10%	Did not use styling agents when young	~11.5%
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<p>Figure 3. Comparison of shape-maintenance ability in thin hair vs. normal hair</p>  <p>Comparison of shape-maintenance ability when the same quantity of hard hair wax (model formulation) was applied to bundles of normal hair and thin hair and let to sit for 2 hours to become flat with the surface of the ground</p>	<p>Figure 4. State of styling components in the hair</p>  <p>Locations with a large adherence quantity</p> <p>Electron microscope observations of hard hair wax (model formulation) applied to hair bundles (×300)</p>																										

Figure 5. Comparison of shape-maintenance ability with and without the use of a comb



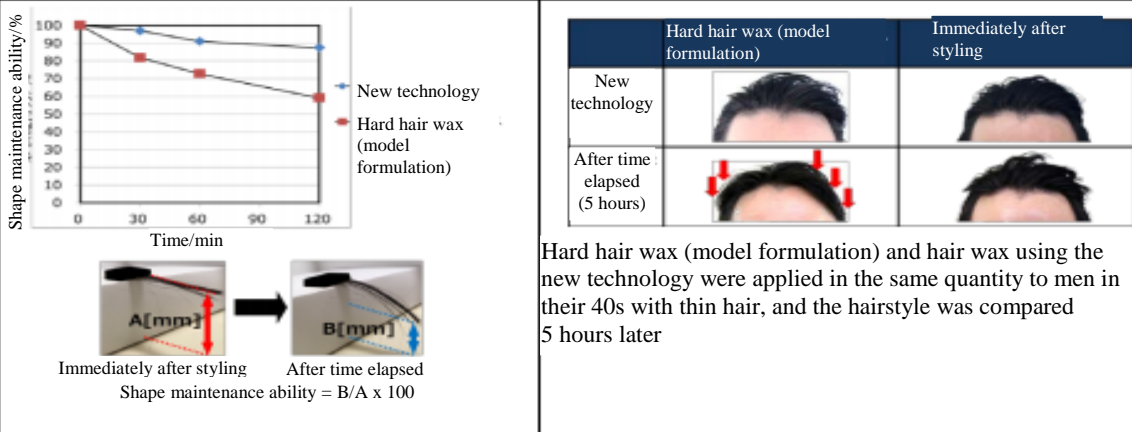
Comparison of shape-maintenance ability when the same quantity of hard hair wax (model formulation) was applied to bundles of normal hair (one-sided comb) and allowed to sit for 2 hours to become flat with the surface of the ground.

Figure 6. Comparison presence and shape maintenance ability of styling components and of different crystallinities in thin hair



***) Observation of styling components themselves under a microscope

Figure 7. Comparison of the maintenance ability of hard hair wax (model formulation) and hair wax using the new technology in thin hair



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