A water-soluble emollient containing Ultra High Molecular Weight Polyether

ACROBUTE™ 60MB-63

2020.09 (ver.2)

日油株式会社
油化事業部

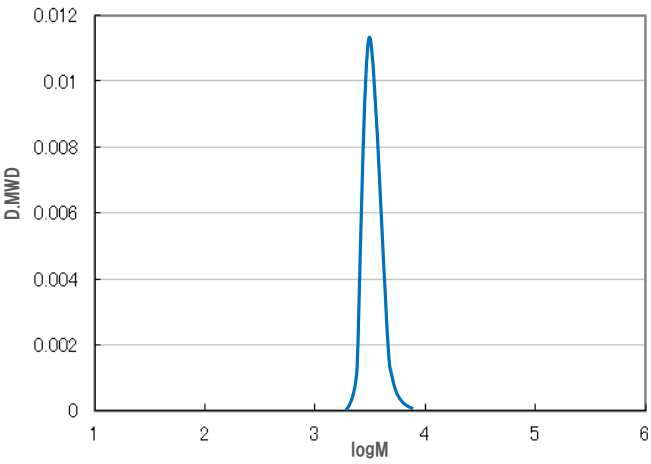
Compliant with JSQI

1 ACROBUTE™ 60MB-63

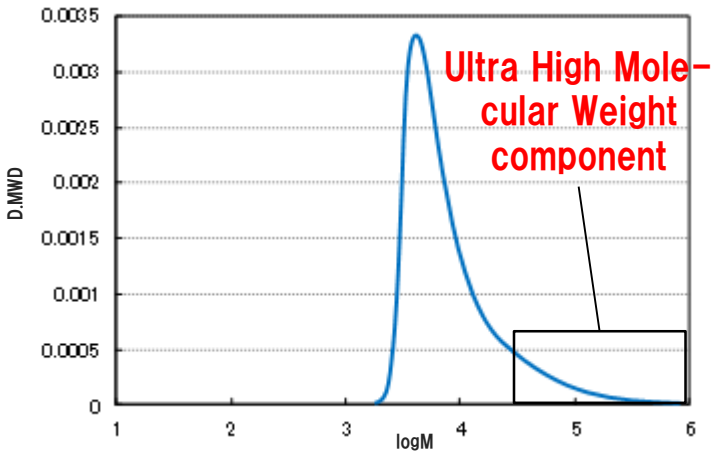
Chemical	$C_4H_9O-[(C_3H_6O)_{28}(C_2H_4O)_{35}]-H$
Concept	A water-soluble emollient containing Ultra High Molecular Weight Polyether
Description	Colorless or slightly yellowish liquid
INCI	PPG-28-BUTETH-35
Chinese INCI	PPG-28-丁醇聚醚-35

2 Molecular weight distribution of ACROBUTE™ 60MB-63

General Polyether Derivatives



ACROBUTE™ 60MB-63

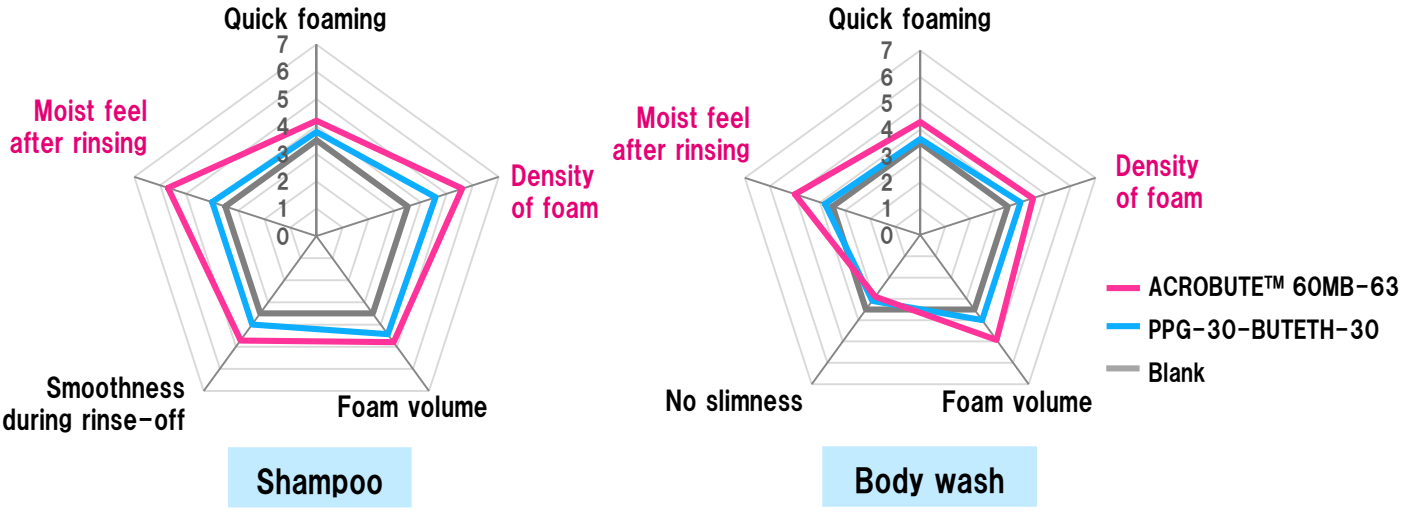


ACROBUTE™ 60MB-63 contains ultra high molecular weight polyether.

Skincare : It enhances skin elasticity and compatibility with skin.
Cleansing :It improves foam quality and moist feel even after rinsing off.
Hair styling :It keeps hair styling firmly and naturally.

3 Sensory evaluation of hair and body wash

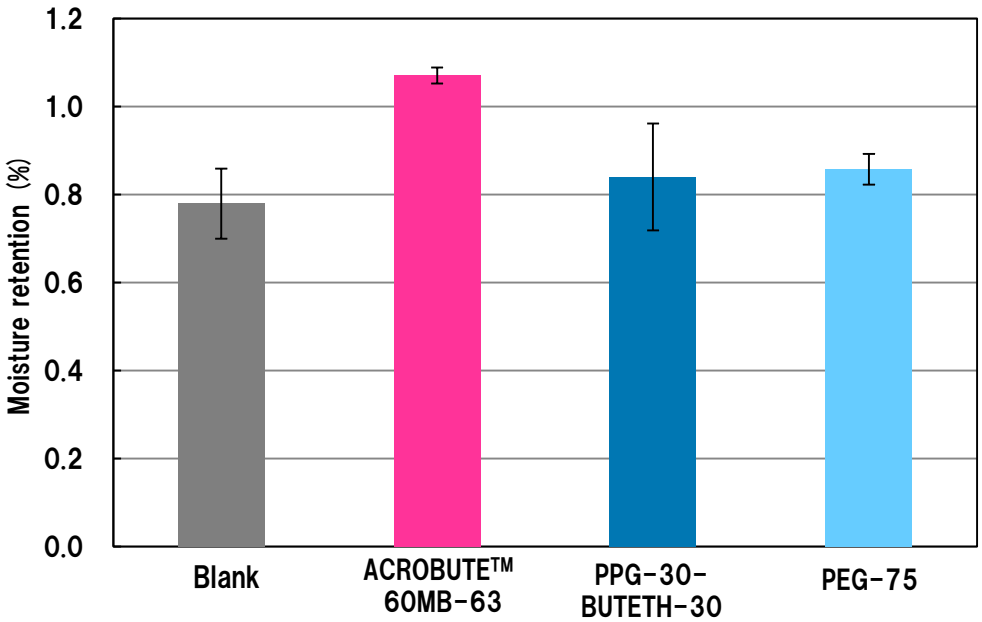
<Sample> Shampoo and body wash which contains 2wt% of each ingredients.
<Method> Each sensory property (7 levels) was evaluated by 7 persons (male:4, fimale:3). The level of blank was difined as 3.5.



Moist feel after rinsing and Density of foam are improved by ultra high molecular weight component.

4 Improvement of moisturizing ability after rinsing off

<Sample>
Aqueous solution which contains 1.0 wt% of each surfactants and 2.0 wt% of each ingredients.
< Method >
The weight of damaged hair was measured before testing (W_{blank}), and measured after washing and drying (W). The moisture retention was calculated from this formula: $(W-W_{blank})/W_{blank}$.



Moisture retention after rinsing was improved by ACROBUTE™ 60MB-63.

5 Improvement of foam viscosity

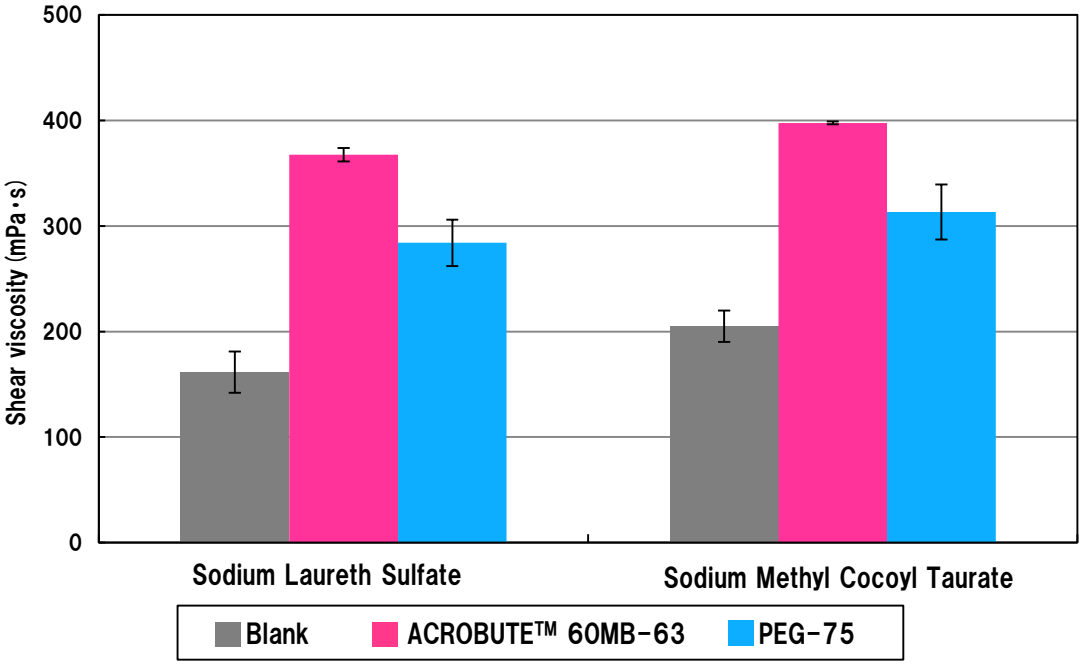
<Sample>

Aqueous solution which contains 1.0 wt% of each surfactants and 2.0 wt% of each ingredients.

< Method >

The foam viscosity was measured by using MCR302 (Anton Paar).

Cone plate: 25mm, 2, Shear rate: 1s-1, Temperature: 25℃



Foam quality was improved by ACROBUTE™ 60MB-63.

6 Moisturizing effect and sensory feel in skincare application

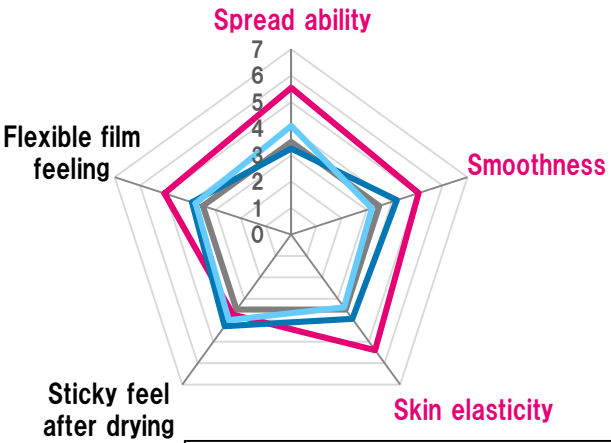
< Sample>

Skin lotion which contains 2wt% of each ingredients.

< Method >

Each sensory property (7 levels) was evaluated by 8 persons (male:4, fimale:4).

The level of blank was difined as 3.5.



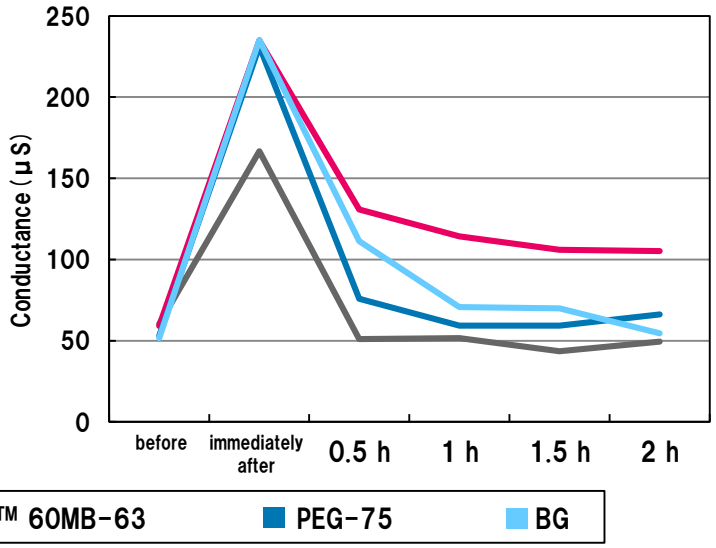
< Sample>

10wt% aqueous solution of each ingredients.

< Method >

The water content of the stratum corneum was measured by SKICON.

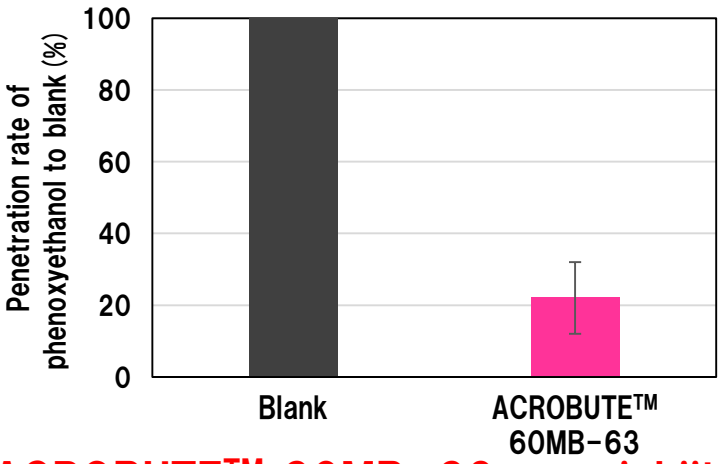
Relative humidity: 40%, Temperature: 25 ℃.

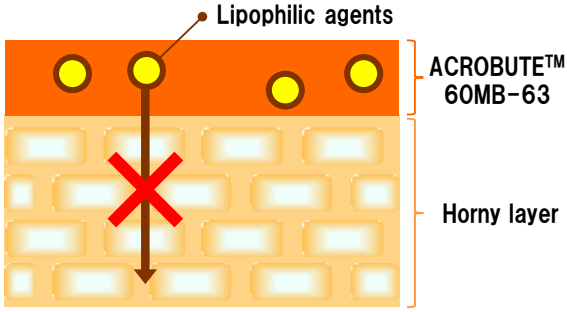


Spread ability, skin elasticity and moisturizing effect were improved by ACROBUTE™ 60MB-63.

7 Skin penetration inhibiting

<Method>
1. Mix 1% phenoxyethanol, 10% ethanol, 1.5% ACROBUTE™ 60MB-63 , and the rest of water.
2. Inject the sample into upper-cell and inject water into lower-cell of the vertical Franz-cell, and set the artificial skin membrane at cell connection part.
3. After 2 h, penetration amount into lower-cell is measured by HPLC.





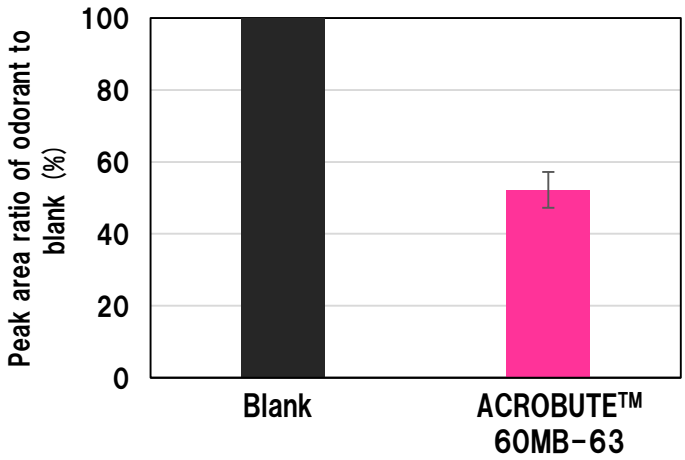
The solubility of lipophilic agents in ACROBUTE™ is improved, and the distributability to horny layer is reduced.

ACROBUTE™ 60MB-63 can inhiit penetration of lipophilic agen such as phenoxyethanol

8 Effect of suppressing body odor

<Method>
1. Weigh 50 μL of odorant into a vial.
2. Add 10g of ACROBUTE™ to the vial.
3. Analyze the amount of adorant by GC.

<Measurement conditions>
Measuring equipment: GC "Heracles NEO"
Measurement temperature: 35° C
Odorant: 2-nonenal



ACROBUTE™ 60MB-63 can suppresse body odor.

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Formulation Guide with ACROBUTE™ 60MB-63 - Skincare

Anti aging serum

Anti aging serum that improves skin elasticity and smoothness.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	-	Water	-	81.29
	PEG#4000	PEG-75	Moisturizer	2
B	-	Carbomer	Thickener	0.060
C	-	Potassium Hydroxide(48%), Water	pH adjuster	0.15
D	—	Propylene Glycol	Moisturizer	5.0
	—	BG	Moisturizer	5.0
	-	Xanthan Gum	Thickener	0.10
E	—	Ethanol	Solvent	3.0
	LIPIDURE®-NR	Polyquaternium-61, Glycerin, BG	Skin protection	1.0
	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Moisturizer	2.0
	DIAPON™K-SF	Sodium methyl cocoyl taurate, water	Stabilizers	0.20
	GLYMOIST™ EH	Ethylhexylglycerin	Preservative	0.20
Total				100

Procedure: 1. Weight ingredients for phase A and mix uniformly at R.T.
2. Gradually add the phase B into phase A and emulsify using a disper at 3,000 rpm.
3. Add Phase C and mix uniformly .
4. Add Pre-mixed PhaseD and mix uniformly .
5. Add Phase E and mix uniformly .

Emollient skin lotion

Oil-free emollient slin lotion that has spread ability to the skin.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Moisturizer	2.0
	-	BG	Moisturizer	1.0
	PEG#4000	PEG-75	Moisturizer	1.0
	LIPIDURE® -NR	Polyquaternium-61, Glycerin, BG	Skin protection	0.80
	-	Sodium Citrate	pH adjuster	0.10
	-	Citric Acid	pH adjuster	1.0
	DIAPON™K-SF	Sodium methyl cocoyl taurate, water	Stabilizers	0.10
	-	Water	-	94
	GLYMOIST™ EH	Ethylhexylglycerin	Preservative	0.20
Total				100

Procedure: 1. Weight ingredients for phase A and mix uniformly at R.T.

※ Check leaflet "6" for data on moisturizing effect.

Formulation Guide with ACROBUTE™ 60MB-63 - Body wash

Oil in Moisturizing Body Wash

Liquid body soap with foaming and moisturinzing after rinsing.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	—	Water	—	62.0
	—	Hydroxyethylcellulose	Thickener	0.60
B	NAA™-122	Lauric Acid	Improve detergency, foam quality	10.0
	NAA™-142	Myristic Acid		3.0
	NAA™-160	Palmitic Acid		1.0
C	—	Potassium Hydroxide(48%), Water	Neutralizer	7.9
D	DIAPON™ K-SG	Sodium Taurine Cocoyl Methyltaurate, Water	Improve detergency, foam quality	4.0
	SOFTILT™ AS-L	Sodium Lauroyl Methylamino Propionate, Water		4.0
	NISSAN ANON™ BDF-SF	Cocamidopropyl Betaine, Water		2.0
E	UNIOX™ ST-40E	Sorbeth-40 Tetraoleate	Solubilizer	3.0
	-	Macadamia Integrifolia Seed Oil	Moisturizing Oil	0.50
F	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Moisturizer	2.0
Total				100

Procedure:
1. Weight ingredients for phase A and mix uniformly at 80±5℃.
2. Add phase B and mix uniformly at 80±5℃.
3. Add phase C、then Add phase D and mix uniformly at 80±5℃
4. Cool to 40℃ or lower, then add Phase E and F which is preliminary dispersed.

Refreshing and moist touch pre-foam body wash

Foam body wash that has refreshing and moisturizing touch after rinsing.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	—	Water	-	72.2
	NAA™-122	Lauric Acid	Improve detergency, foam quality	4.0
	NAA™-142	Myristic Acid		1.5
	NAA™-160	Palmitic Acid		1.0
	-	Potassium Hydroxide(48%), Water	Neutralizer	3.8
B	DIAPON™ K-SG	Sodium Taurine Cocoyl Methyltaurate, Water	Improve detergency, foam quality	2.5
	NISSAN ANON™ BDF-SF	Cocamidopropyl Betaine, Water		2.0
C	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Moisturizer	3.0
	RG·CO·P™	Glycerin	Moisturizer	10
	—	Citric Acid	pH adjuster	As
Total				100

Procedure:
1. Weight ingredients for phase A, then add phase B and mix uniformly at 80±5℃.
2. Cool to 40℃ or lower and then add the phase C ingredients and stir until evenly mixed.

※ Check leaflet "3" and "4" for data on moisturizing effect.

Formulation Guide with ACROBUTE™ 60MB-63 - Hair shampoo

Deodorant shampoo

Shampoo that has the effect of suppressing odor such as cigarettes.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	-	Water	-	42.6
	-	Polyquaternium-10	Conditioning	0.50
B	NISSAN ANON™ BDF-R	Cocamidopropyl Betaine, Water	Improve detergency, foam quality	20
C	-	CITRIC ACID	pH adjuster	0.90
D	PERSOFT™ EF	Sodium Laureth Sulfate, Water	Improve detergency, foam quality	10
	DIAPON™ K-SF	Sodium Methyl Cocoyl Taurate, Water	Improve detergency, foam quality	10
	SOFTILT™ AS-L	Sodium Lauroyl Methylaminopropionate, Water	Improve detergency, Thickener	10
	NONION™ DL-40HN (W)	PEG-75 Dilaurate, Water	Thickener, Improve foam volume	2.0
	MACBIOBRIDE™MG-T	PEG-120 methylglucose triisostearate, Water	Thickener	1.0
	UNISAFE™PGML	Propylene Glycol Laurate	Thickener	1.0
E	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Moisturizer, Deodorant	2.0
Total				100

Procedure: 1. Weight ingredients for phase A and mix uniformly at R.T.
2. Add phase B and mix uniformly at 80±5℃.
3. Add phase C and mix uniformly at 80±5℃
4. Cool to 40℃ or lower, then add Phase D.

Effect of suppressing living odor

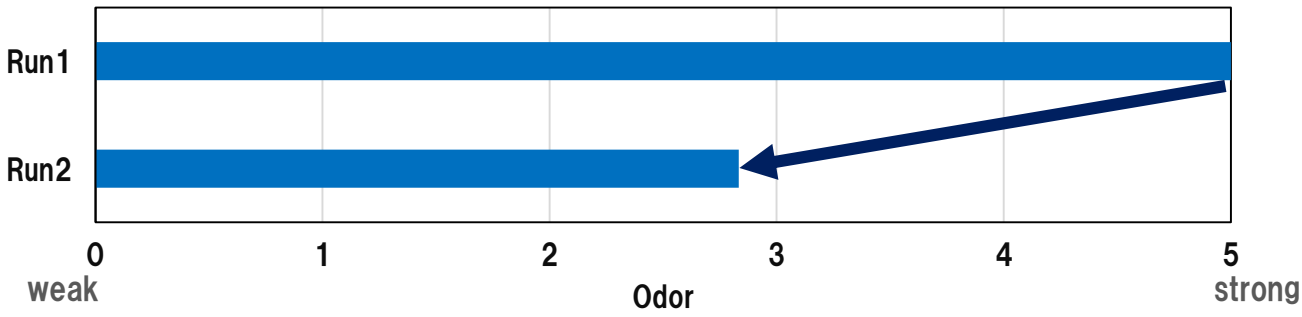
- The effect of suppressing cigarettes odor after hair shampoo.

＜ Method ＞

① Wash hair bundle with the following sample and dry with dryer.
② Leave the hair bundle in the smoking room for 15 minutes.
③ Each sensory property was evaluated by 5 persons. The level of blank was difined as 5.

Ingredients	INCI /Chemical Name	Run1	Run2
ACROBUTE™ 60MB-63	PPG-28 Buteth-35	-	2
PERSOFT™ EF	Sodium Laureth Sulfate, Water	10※	10※
RG•CO•P™	Glycerin	2	2
-	Water	As	As

※active component



※ Check leaflet “8” for data on suppressing body odor.

Formulation Guide with ACROBUTE™ 60MB-63 - Hair styling

Natural hairstyling water

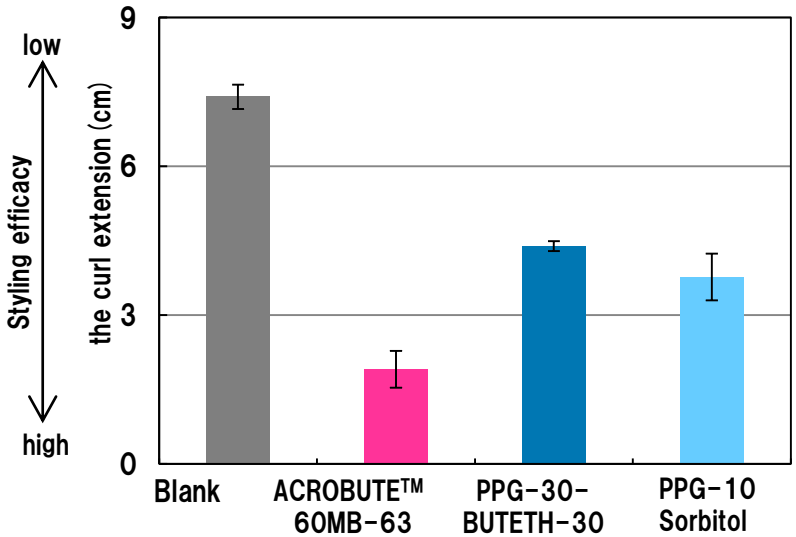
Hair styling water that keeps a natural hairstyle without stickiness.

phase	Ingredients	INCI /Chemical Name	Purpose	(wt%)
A	-	Water	-	72.83
	-	Sodium Citrate	pH adjuster	0.050
	-	Citric Acid	pH adjuster	0.070
	-	PVP	Style Keeping	0.050
B	-	Ethanol	Moisturizer	15
C	RG·CO·P™	Glycerin	Moisturizer	3.0
	-	PG	Moisturizer	3.0
	LIPIDURE®-NR	Polyquaternium-61, Glycerin, BG	Skin protection	1.0
	ACROBUTE™ 60MB-63	PPG-28 Buteth-35	Style Keeping	5.0
Total				100

Viscosity: 3,760 mPa·s

Procedure: 1. Weight ingredients for phase A and mix uniformly at 80±5℃.
2. Cool to 40℃ or lower, then add phase B and mix uniformly at R.T.
3. Add phase C and mix uniformly at R.T.

Improvement of hair styling efficacy



<Composition> (wt%)

	INCI	Blank	Sample
A	Water	100	72.8
	Citric Acid	-	0.05
	Sodium Citrate	-	0.07
	PVP	-	0.05
B	Alcohol	-	22
	Styling polymer	-	5

<Method>
The curl extension was measured by hair curl retention test.
<Measure condition>
Relative humidity: 80%, Temperature: 25 ℃.

It is able to improve of hair styling efficacy by ACROBUTE™ 60MB-63.