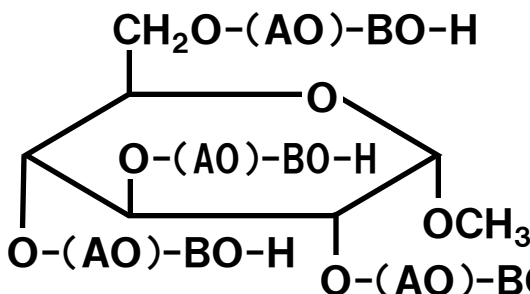


# WILBRIDE™ MG-2070

## 1 What is WILBRIDE MG-2070

### Chemical Structure



AO:

Ethylene Oxide and Propylene Oxide random copolymer

BO:

Butylene Oxide

\*Contained Tocopherol 100ppm

### Concept

*Silky Emollient Sugar*

### INCI

Approved

## 2 Characteristics

- ① Provides silky and emollient feelings with skin in spite of hydrophilic ingredient.
- ② High and long-lasting moisturizing effect.
- ③ Skin penetration **enhancing** for **hydrophilic** agents.  
(ex. VC derivatives, Amino acid, Glycerin, etc.)
- ④ Skin penetration **inhibiting** for **lipophilic** agents. (ex. Paraben, UV-RAY absorber)
- ⑤ No bitter taste and odorless.

Silky and Emollient feeling

Long-lasting moisturizing effect

Smooth feeling

*Emollient Sugar*

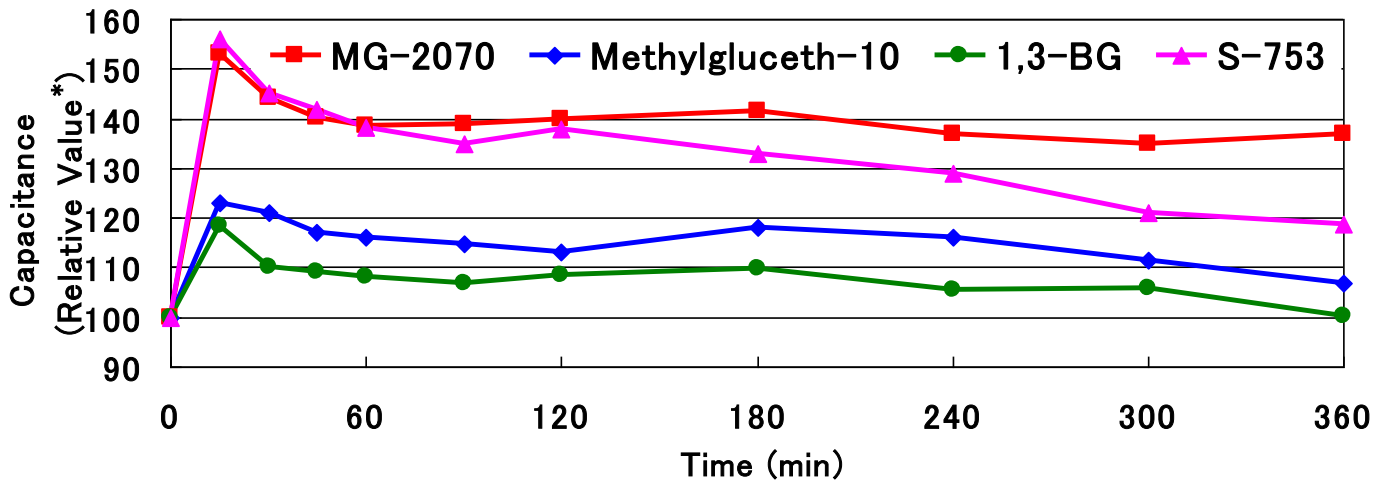
No bitter taste

Mild Penetration Enhancer

Transparent Liquid

### 3

## Moisturizing Effect: Water Content in Stratum Corneum



\* The capacitance value before spread assumes 100

Instrument: Corneometer CM-280

Measurement Environment:  $20 \pm 2^\circ\text{C}$ , 40%RH

Method: ① Wash inner upper arm by soap, and acclimate for 10min.

② Spread 50 ul of moistureizer (5wt% Aqueous) uniformly and measure.

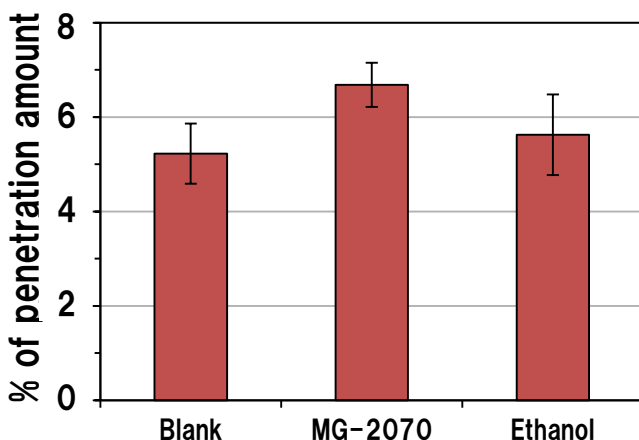
### 4

## Skin penetration enhancing (Tape stripping method)

<Test methods>

1. Applying samples on the arm and Leaving 3hr.
2. Collecting skin surface or horny layer by tape stripping (15 layers).
3. Amount of Vitamin C derivative is measured by HPLC.
4. Penetration amount under horny layer is calculated by subtracting the amount of surface and horny layer from the applied amount

Percentage of the Vitamin C derivatives penetration amount



<Tested Samples>

Active: 2wt% Ascorbyl Glucoside

Enhancer:

5wt% WILBRIDE or Ethanol

**WILBRIDE can enhance penetration of Vitamin C derivatives without skin irritation**

## Skin penetration inhibiting (Tape stripping method)

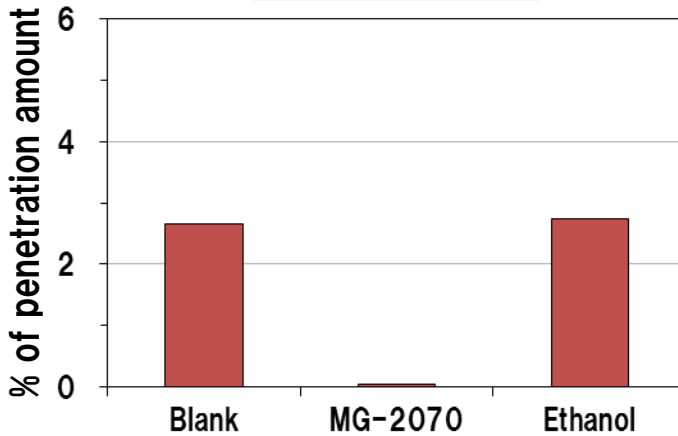
### <Test methods>

1. Applying samples on the arm and Leaving 1hr
2. Washing off the skin surface
3. Collecting horny layer by tape stripping (15 layers)
4. Penetration amount into horny layer is measured by HPLC

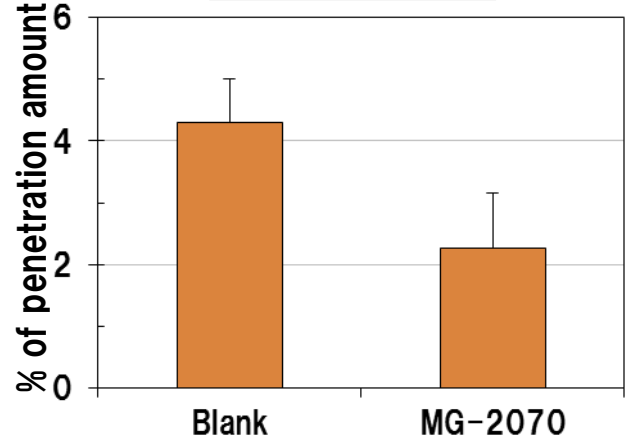
### <Tested samples>

Active: **0.1% Methyl Paraben**  
**0.1% Ethylhexyl Methoxycinnamate (OMC)**  
 Inhibitor: 5wt% WILBRIDE or Ethanol

Paraben penetration amount  
into horny layer

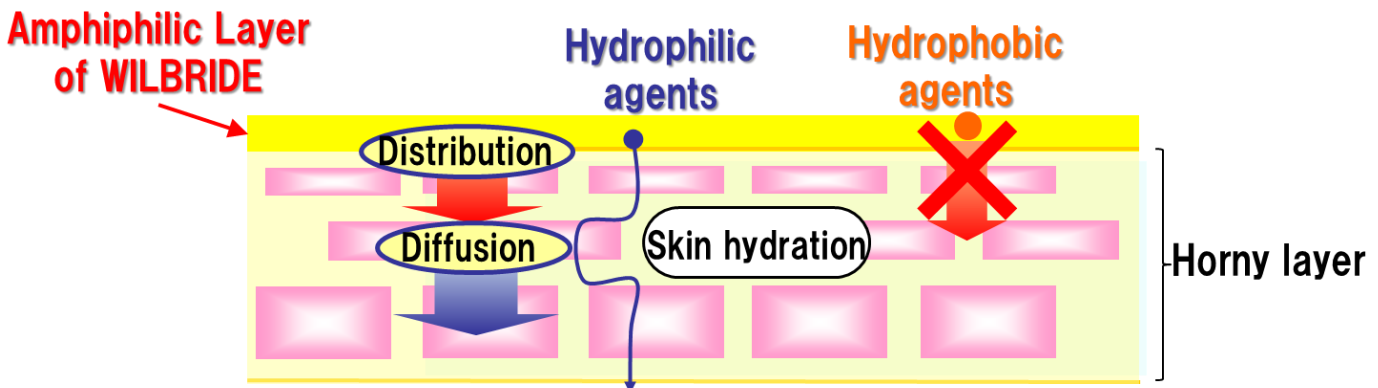


OMC penetration amount  
into horny layer



**WILBRIDE can inhibit penetration of Lipophilic agents**

### Consideration



Hydrophilic agents: Solubility in a formulation is decreased by amphiphilic property of WILBRIDE  
 ⇒ Distribution to horny layer is enhanced

## 6 Application

### Emolient Cream

	INCI name	Product name	wt%
	Approved	WILBRIDE MG-2070	5.00
Water Phase	Water	—	Balance
	Antiseptics agent	—	Proper quantity
Oil Phase	Mineral Oil	—	5.00
	Hydrogenated Polyisobutene	PARLEAM® EX	5.00
	Sorbitan Stearate	NONION SP-60RP	1.00
	Polysorbate 60	NONION ST-60	0.50
	PEG-75 Stearate	NONION S-40	0.50
	Cetyl Alcohol	NAA®-44	4.80
	Stearyl Alcohol	NAA-45	3.20

<Procedure>

\*The safety and intellectual property rights of these applications are not guaranteed.

Put water phase into oil phase gradually at 80°C with stirring, and stir 5000 rpm for 5 min, then cool down to room temperature. After that, add WILBRIDE MG-2070 and stir thoroughly.

## 7 Safety Data

Acute oral toxicity testing	LD <sub>50</sub> ≥ 2000mg/kg
Cumulative application testing	No stimulation (Undiluted solution)
Ocular irritation testing	No stimulation (Undiluted solution)
Human Patch Testing	Negative (Undiluted solution, 45 adults, Occlusive patch 24hours)
Primary skin irritation testing	No stimulation (Undiluted solution)
Skin sensitization testing	Negative (Undiluted solution, Guinea Pig Maximization Test)
Mutagenicity	Negative (Ames Test and Chromosomal aberration testing)



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