

New salt tolerant thickener

Saltolera

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Saltolera

1 Saltolera Specifications

Description

New thickener with high tolerance against salt.

Its strength in resistance against multivalent ions and excellent thixotropic character enable a flexible formulation in functional cosmetics containing minerals and electrolytes.

Saltolera provides innovative gel with excellent formulation of a watersoluble vitamin C derivative, which makes an extraordinary smooth and fresh texture.

Features

- ✓ Resistant against multivalent ions and thixotropic
- ✓ Smooth and silky texture
- ✓ Fresh and cool feeling

2 Product information

INCI	Acrylic Acid/Perfluorohexylethyl Acrylate Crosspolymer
Appearance	White powder
Storage condition	Keep sealed in a cool dark at 20 °C or less
Packaging	5kg package
Safety data (Not tested on animals)	Skin irritation test (OECD TG 439) : Negative Eye irritation test (OECD TG 491) : Negative Chromosome aberration test (OECD TG 473) : Negative Repeated insult patch test : Negative Human patch test : Negative Ames test : Negative

3 History of development

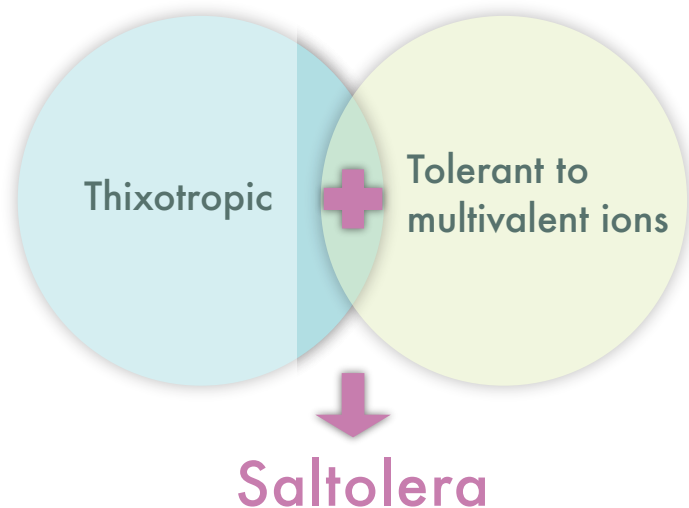
Interviews with Japanese cosmetic manufacturers demonstrated a necessity of a “thixotropic thickener, which is resistant with multivalent ions”, because there is increasing number of functional cosmetics with minerals and electrolytes.

Some of them can be dealt with through formulation, but it turns out that there are no thickeners that meet this requirement.

	Types	Advantages	Disadvantages
Natural origin	Xanthan gum	Salt tolerant	More quantity needed No thixotropy
	Hydroxyethyl cellulose		
	Alginate PG		
Synthetic origin	Carboxyvinyl polymer	Thixotropic	No salt resistance
	Acrylate/C10-30 Alkylacrylate	Thixotropic	Reduced viscosity with multivalent ions
	Crosspolymer		
Polyacrylamide	Salt tolerant	No thixotropy	

→ No conventional material fulfills both criteria.

Our expertise in HIVISWAKO lead to a special technology in synthesizing the polymer below thickener **tolerant to multivalent ions and thixotropic**.

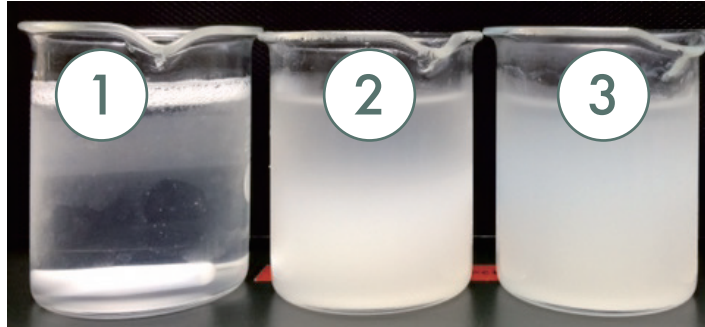


Saltolera

4 Comparison with other manufacturer's products

When 3% of Magnesium ascorbyl phosphate was added, the polymer was precipitated in the conventional synthetic thickener, but the saltolera was able to maintain high transparency and viscosity.

Viscosity comparison of each thickener when adding an ascorbic acid derivative



Condition: polymer 1%, Magnesium ascorbyl phosphate 3%

1) No.4 rotational viscometer at 6rpm and 20 °C

	FUJIFILM Wako	Other Manufacturers	
	① Saltolera	② Carboxyvinyl polymer	③ Acryl/C10-30 Alkylacrylate Crosspolymer
Viscosity ¹⁾	12,800	600	800
pH	8.33	8.01	8.06

【Adjustment method】

1. Dissolve 1 g of thickener in about 60 g of water (mixture 1)
2. Dissolve 3 g of Mg L-ascorbyl phosphate in 30 g of water (mixture 2)
3. Add mix. 2 to 1 while stirring → liquid becomes white and turbid (around pH 5.0)
4. Adjust pH with 5N NaOH aq.
 - ⇒ Turbidity gradually disappears when pH value begins to exceeds 6.
 - At around pH 6.5 the thickening starts to occur.

5 Stability of thickened liquid

Stability against metal ions

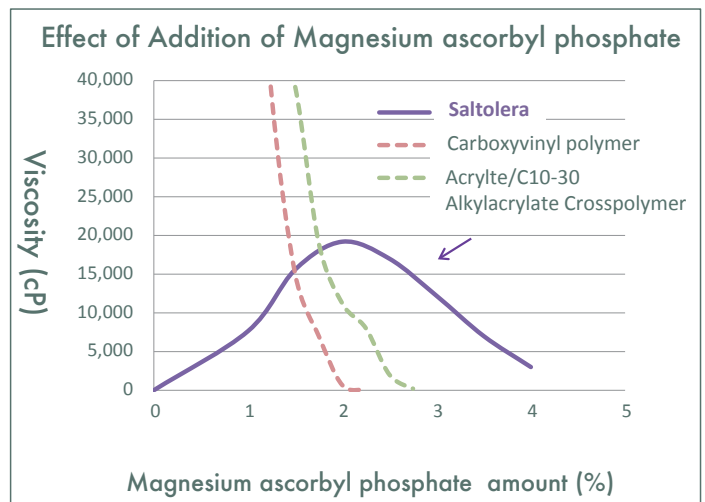
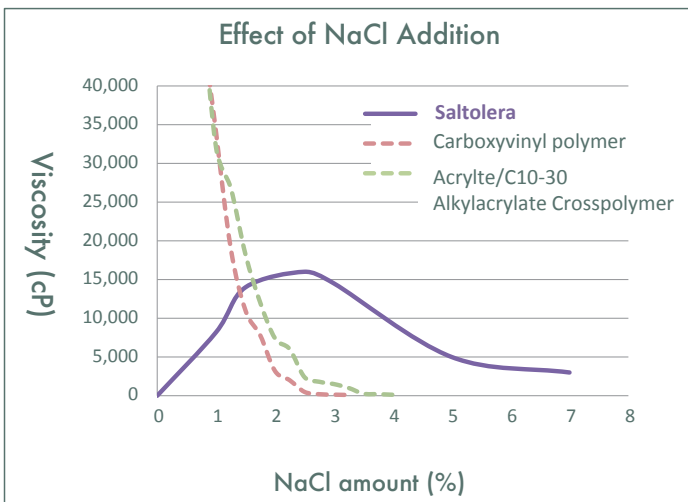
Under co-existing of metal ions, the stability of other water soluble polymer thickeners decreases.

This is presumably because intramolecular repulsion stems from ionic charge of the polymer is weakened due to electrical shielding by excessive metal ions.

Saltolera, on the other hand, can achieve the desired increased viscosity by adding salt.

[Condition] pH 8 Saltolera 1% added at room temperature

[Measurement condition] B8H rotational viscometer at 3rpm

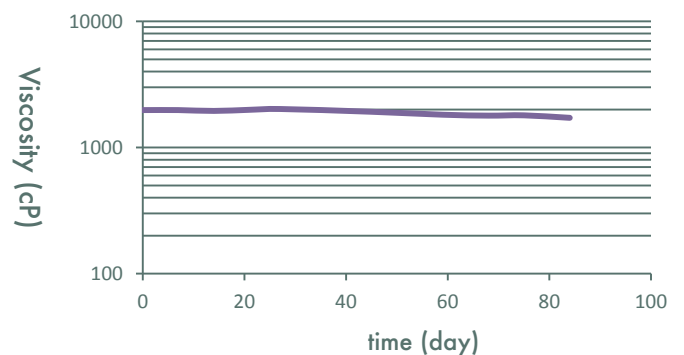


Stability against heat

Thickened liquid made with Saltolera is less likely to decrease viscosity when heated, and its viscosity does not change even if left for many hours at 40 °C.

[Condition] Magnesium ascorbyl phosphate 3% and pH 8 Saltolera 1% added at room temperature

[Measurement condition] B8H rotational viscometer at 30rpm



Saltolera

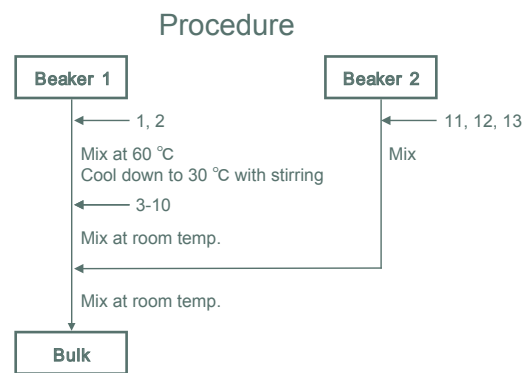
6 Applications to cosmetics

No restriction with salt allows more freedom in developing cosmetics

1. **Beauty gel containing vitamin C derivatives** (Magnesium ascorbyl phosphate etc) is possible.
2. Active ingredients of **sunscreens** and **deodorants** has so far been washed away by sweat, but the use of this **salt tolerant** thickener keeps their effect much longer.

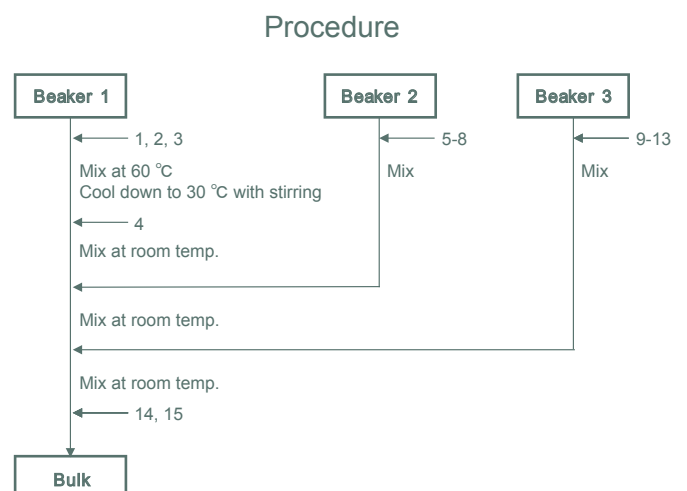
Moisture Gel*

	Ingredients	%
1	WATER	Up to 100
2	Saltolera	1
3	GLYCERIN	20
4	SORBITOL, WATER	7
5	SODIUM HYDROXIDE (10% aq.)	adjust to pH 6.5
6	HYDROXYPROPYL CYCLODEXTRIN	0.5
7	MAGNESIUM SULFATE	0.5
8	PHENOXYETHANOL	0.3
9	ETHYLHEXYLGLYCERIN	0.1
10	IODOPROPYNYL BUTYLCARBAMATE, HYDROXYPROPYL CYCLODEXTRIN, WATER	0.02
11	FRAGRANCE	0.02
12	PEG-60 HYDROGENATED CASTOR OIL	0.35
13	POLYSORBATE 20	0.15



Deodorant Gel Lotion*

	Ingredients	%
1	WATER	Up to 100
2	DISODIUM EDTA	0.005
3	Saltolera	0.75
4	SODIUM HYDROXIDE (10% aq.)	adjust to pH 7
5	GLYCERIN	7
6	ETHYLHEXYLGLYCERIN	0.1
7	IODOPROPYNYL BUTYLCARBAMATE, HYDROXYPROPYL CYCLODEXTRIN, WATER	0.02
8	PHENOXYETHANOL	0.3
9	PEG-100 HYDROGENATED CASTOR OIL	0.5
10	PPG-6-DECYLTETRADECETH-30, TOCOPHEROL	0.1
11	O-CYMEN-5-OL	0.05
12	FRAGRANCE	0.02
13	BUTYLENE GLYCOL	1
14	CITRIC ACID	q.s.
15	SODIUM CITRATE	0.1

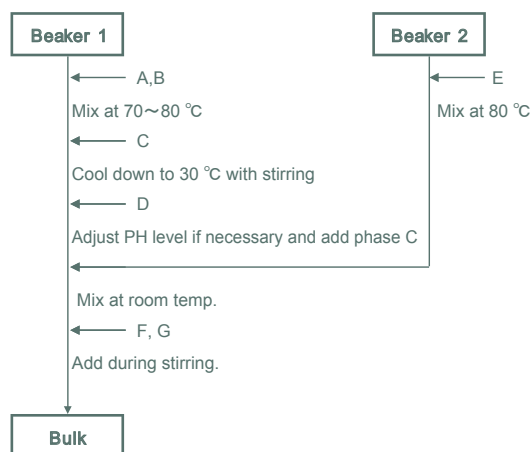


*This prescription example was created with Cosmo Beauty Co., Ltd.

Cosmetic Gel Cream

PHASE	INGREDIENT		% W/W
A	Water		49.88
	Sorbitol		1
B	Glycerin		10
	Sorbitol		1.05
C	Water		4
	Sodium Hydroxide		0.45
D	Agar		1
E	Nicomuls LC-QHF	Hydrogenated Rapeseed Alcohol	1.65
		Polyglyceryl-10 Myristate	0.4
		Phytosterols	0.18
		Glyceryl Stearate	0.1
		Hydrogenated Lecithin	0.1
		Caprylic/Capric Triglyceride	0.07
		Tocopherol	0.003
		Squalane	2.5
		Caprylic/Capric Triglyceride	1.5
		Simmondsia Chinensis (Jojoba) Seed Oil	0.1
F	Water		22
	Sodium Metabisulfate		0.05
	Magnesium Ascorbyl Phosphate		3
G	Phenoxyethanol		0.3
	Ethylhexyl Glycerin		0.1
	Glycacil 2000	Water	0.01
		Lodopropynyl Butyl Carbamate	0.001
		Hydroxypropyl Cyclodextrin	0.01
	Ohbaku Liquid	Water	0.049
		BG	0.049
Phellodendron Amurense Bark Extract		0.001	
	Fragrance	0.05	

Procedure



FUJIFILM

FUJIFILM Wako Pure Chemical Corporation



Japan

FUJIFILM Wako Pure Chemical Corporation

4-1 Nihonbashi Honcho 2-Chome,
Chuo-Ku, Tokyo 103-0023, Japan
TEL+81-3-3244-0305



USA

FUJIFILM Wako Chemicals U.S.A. Corporation

1600 Bellwood Road Richmond,
VA 23237, U.S.A.
TEL+1-804-271-7677



Germany

FUJIFILM Wako Chemicals Europe GmbH

Fuggerstrasse 12 D-41468 Neuss GERMANY
TEL+49-2131-311-0

Specialty Chemicals Web Site

http://www.wako-chem.co.jp/kaseihin_en/