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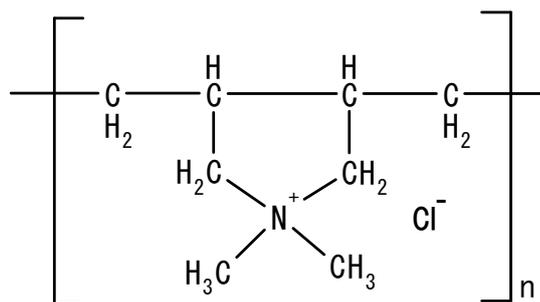
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ADEKA CATIOACE PD-50

ADEKA CATIOACE PD-50 is a cationic polymer with good antistatic and conditioning effect, used for toiletry and haircare products. In cleansing formulations, it can boost foam volume and make foam firm and elastic. Also the foam is rinsed off quickly with no stickiness but just rich conditioning feel is left on skin.

1. **Chemical name** Poly-(dimethylmethylene piperidinium chloride) water solution (40%aq.)
2. **INCI name** POLYQUATERNIUM-6, WATER
(Chinese INCI name 聚季铵盐-6, 水)
3. **Structural formula**



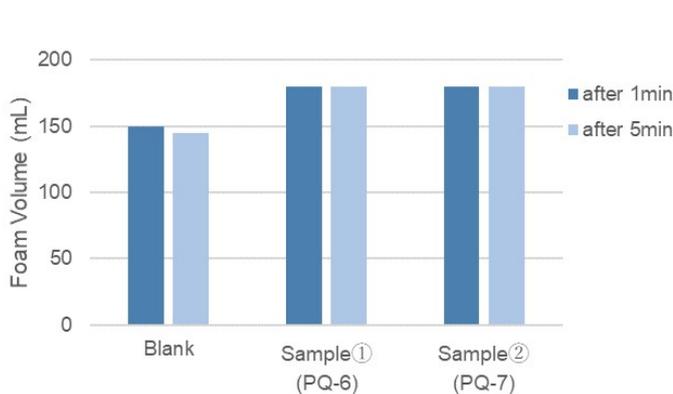
4. **Usage** Foaming cleanser, Body shampoo, Hair shampoo, Hair conditioner, etc.
5. **Packing** 18kg/ Can

6. Adding effect on foaming cleanser formulation

Evaluate foam volume and texture using foaming cleanser formula with CATIOACE PD-50.

6-1. Foaming test

PD-50 can boost foam volume by 20%.



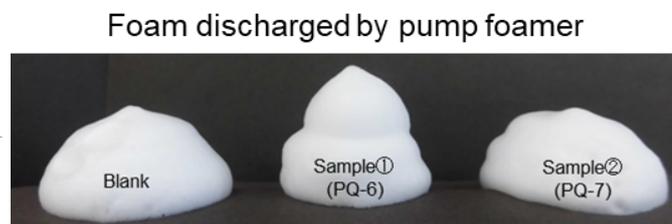
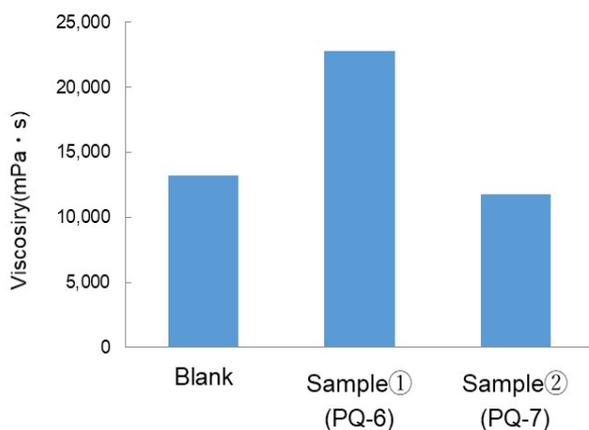
Base formula (pH 9.0)

INCI	wt%
Glycerin	6.00
Butylene Glycol	2.00
Dipropylene Glycol	1.00
PEG-8	12.00
Lauric Acid	6.00
Myristic Acid	12.00
Stearic Acid	12.00
Glyceryl Stearate SE	1.00
PPG-24-Glycereth-24	1.00
Glycol Distearate	1.00
Preservatives	q.s.
Potassium Hydroxide (48%aq.)	11.30
Water	to 100.00

Prepare Base formula (Blank), Base formula with 2.5% PD-50/ 1% Polyquaternium-6 A.I. (Sample①), and Base formula with 1% Polyquaternium-7 A.I. (Sample②). Mix 50mL of each 2% solution with 40°C tap water for 5 sec with mixer, and read off foam volume after 1 min and 5 min.

6-2. Foam viscosity

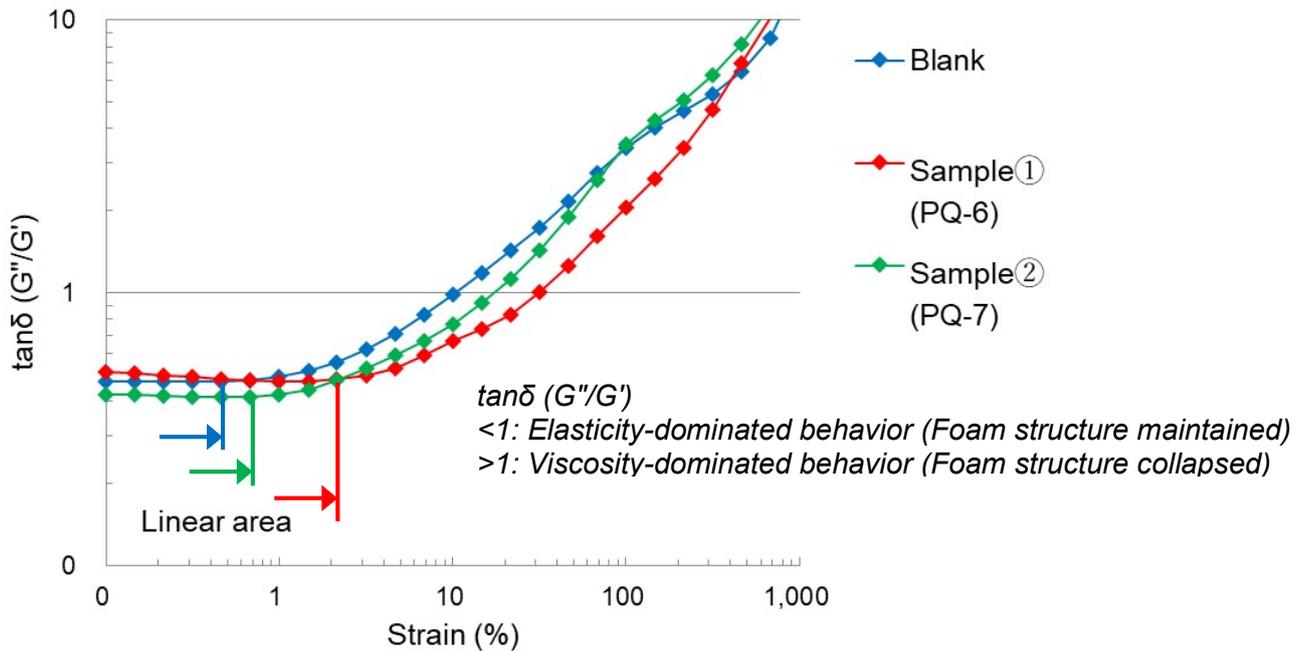
PD-50 is expected to make foam firmer.



Fill 10% solution with 25°C tap water in pump foamer. Discharge foam into beaker and measure the viscosity by B-type viscometer (T-B 1.5rpm).

6-3. Foam elasticity

PD-50 can provide elastic textured foam and also make foaming last longer.



Fill 10% solution with 25°C tap water in pump foamer. Discharge foam and measure the viscoelasticity by Rheometer.

For all samples, the increase of strain caused a collapse of the foam structure and the change from elasticity-dominated behavior to viscosity-dominated one was observed.

Sample① containing PD-50 had the longest linear area and the strain when tan δ reached at 1 was highest, which means the foam of Sample① was most resistant to the strain.