



Sodium carboxymethyl cellulose

Sunrose® F350HC-4

– Anti-salt resistance testing –

Conventional Sunrose® becomes less viscous when it is dissolved in Anti-salt solution. However, Sunrose® F350HC-4 retains excellent viscosity even in salt water. Moreover, its viscosity can be further increased by dissolving it in highly concentrated Anti-salt solution.

Testing Anti-salt resistance

- Prepare 1% solutions (300ml) using different Anti-salt solutions of known concentration.
- Agitate the solution for 4 hours until it dissolves completely. Then heat the solution to 25°C and measure its viscosity with a type-B viscometer.
- Calculate the amount of viscosity increase for each NaCl concentration using the following formula:

$$\text{Viscosity increase (\%)} = \text{viscosity in NaCl solution} / \text{viscosity in aqueous solution} \times 100$$

Graph 1: List of samplers

Product	OD-1% viscosity (mPa/s)	pH	Substitution degree (M/C <sub>6</sub> )
Sunrose® F1400MC	14000	7.0	0.65
Sunrose® F800HC	7480	7.0	0.8
Sunrose® F350HC-4	3200	7.1	0.92
HEC	5840	6.8	-
MC	2160	4.1	-
Potassium polyacrylate	62800	7.1	-

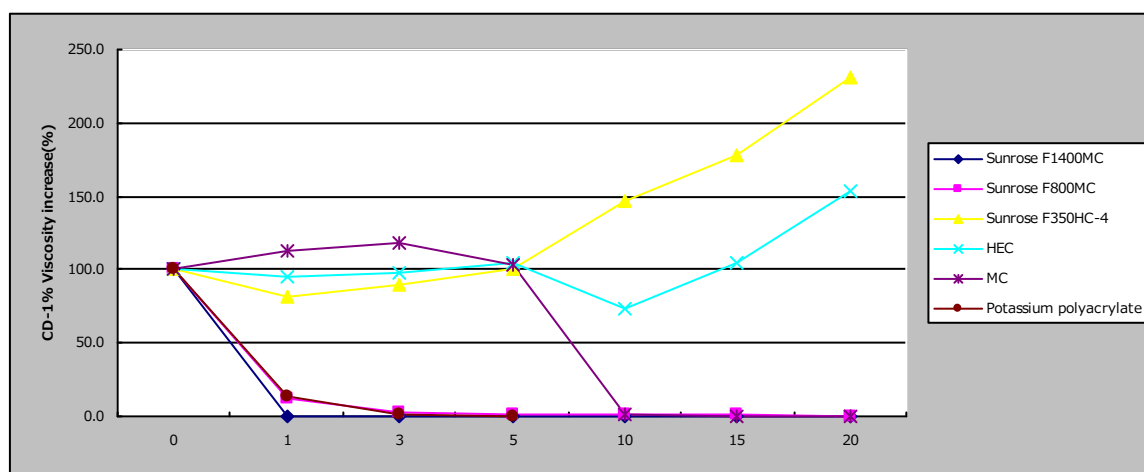
Graph 2: Anti-salt resistance testing – OD-1% viscosity (mPa.s)

Product	pH	Concentration of Anti-salt solution (%)						
		0	1	3	5	10	15	20
Sunrose® F1400MC	7.0	14000	25.7	8.5	7.2	7.0	7.0	7.4
Sunrose® F800HC	7.0	7480	960	174	82	91.5	68.5	39.5
Sunrose® F350HC-4	7.1	3200	2605	2864	3200	4680	5700	7400
HEC	6.8	5840	5560	5700	6100	4260	6100	9000
MC	4.1	2160	2440	2560	2240	16.0	4.5	6.5
Potassium polyacrylate	7.1	62800	8480	1220	300	-	-	-



Graph 3: Anti-salt resistance testing – OD-1% viscosity increase (%)

Product	pH	Concentration of Anti-salt solution (%)						
		0	1	3	5	10	15	20
Sunrose® F1400MC	7.0	100	0.2	0.1	0.1	0.1	0.1	0.1
Sunrose® F800HC	7.0	100	12.8	2.3	1.1	1.2	0.9	0.5
Sunrose® F350HC-4	7.1	100	81.4	89.5	100.0	146.3	178.1	231.3
HEC	6.8	100	95.2	97.6	104.5	72.9	104.5	154.1
MC	4.1	100	113.0	118.5	103.7	0.7	0.2	0.3
Potassium polyacrylate	7.1	100	13.5	1.9	0.5	-	-	-



Recommended Applications

Food	Soups (corn soup, ramen noodle soup, miso soup, consommé); sauces, dressings, ketchups, mayonnaises; jam, yogurts; fillings; dry goods (dried processed food, instant ramen, pasta); other processed foods and food processing applications
Cosmetics	Shampoos, conditioners, hair dyes, facial cleansing creams, moisture creams, moisturizers, foundations
Daily goods	Toothpastes; cleansers for kitchens, utensils, bathtubs, tiles, car wash; cat litter, pet food, air fresheners; humidity absorbers, cooling gels

For more details on our products, please contact:

Nippon Paper Industries Co.,Ltd. < <http://www.npchem.co.jp/form/index.html> >

**Chemical Division**

4-6, Kandasurugadai, Chiyoda-ku, Tokyo 101-0062, Japan

**Sales Department No.2**

Phone: +81-3-6665-5900 Facsimile: +81-3-6665-0360

**Kansai Sales Department**

MID Imabashi Building, 2-3-16, Imabashi, Chuo-ku, Osaka 541-0042, Japan

Phone: +81-6-6228-6300 Facsimile: +81-6-6228-6303