

Excipients

NISSO HPC

Hydroxypropyl Cellulose

USP/NF, EP, JP · Silica/additive-free

TECHNICAL DATA SHEET

HPC Grades

NISSO HPC		SSL	SL	L	M	H	SFP
mPa·s @20°C/2%aq		2.0 ~ 2.9	3.0 ~ 5.9	6.0 ~ 10.0	150 ~ 400	1,000 ~ 4,000	-
Molecular Weight/GPC method		40,000	100,000	140,000	620,000	910,000	-
Availability	Regular type - 99% passes through 40 mesh (350µm)	✓	✓	✓	✓	✓	
	Fine Powder type - 99% passes through 100 mesh (150µm)		✓	✓	✓	✓	
	Super Fine Powder type - (D50 < 20µm)						✓
Application	Film coating	—————					
	Binding	—————					—————
	Sustained release				—————		
	Thickening			—————			

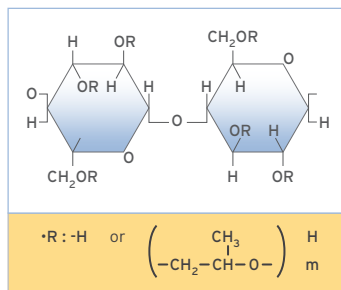
Solubility

HPC is soluble in water, water-free lower alcohols and polar solvents. Solutions are transparent and have a smooth feel. Solubility in organic solvents is limited only by the viscosity increase.

Soluble	Water, Methyl alcohol, Ethyl alcohol, Isopropyl alcohol, Pyridine, Cyclohexanone, Cellosolve, Acetic acid
Hazy	Acetone, Tertiary butanol, Dioxane, Cyclohexanol, Cyclohexanol, Lactic acid, Methyl ethyl ketone
Insoluble	Aliphatic hydrocarbons, Benzene, Xylene, Glycerin, Toluene, Gasoline

Chemical Structure

Hydroxypropyl Cellulose
(cellulose, 2-hydroxypropyl ether)



CAS No. 9004-64-2

Viscosity Change

Viscosity of HPC in aqueous solution is virtually unchanged in pH range from 1-12. HPC viscosity is also unaffected by UV irradiation. Viscosity change caused by change in HPC concentration or change in temperature are shown in figures below.

Fig 1: Viscosity change vs. Concentration, Aqueous solution

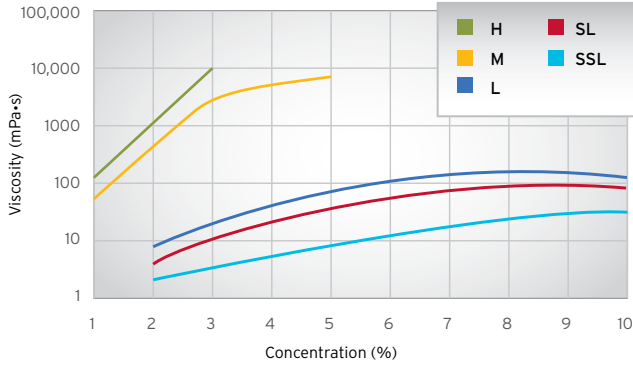


Fig 2: Viscosity change vs. Concentration, Ethanol solution

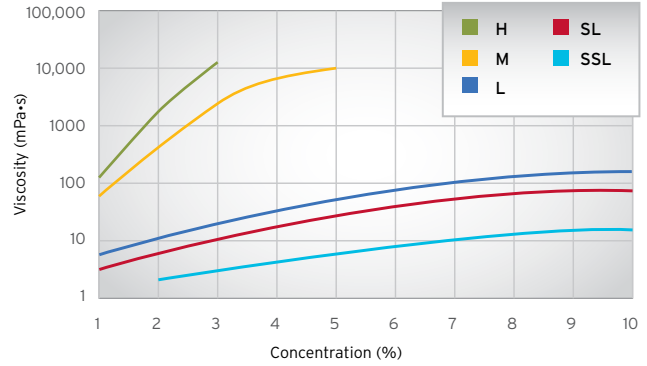


Fig 3: Viscosity change vs. Temperature, Aqueous solution

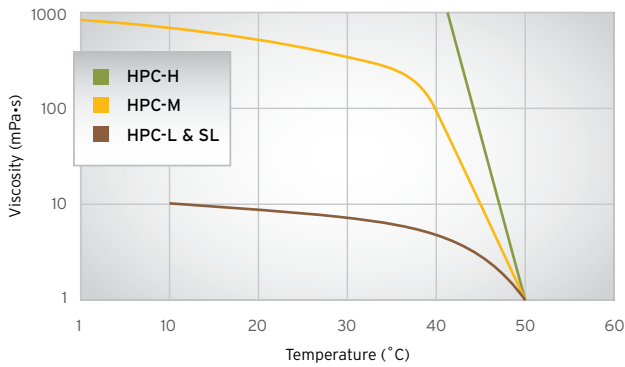


Fig 4: Viscosity change vs. Temperature, Ethanol solution

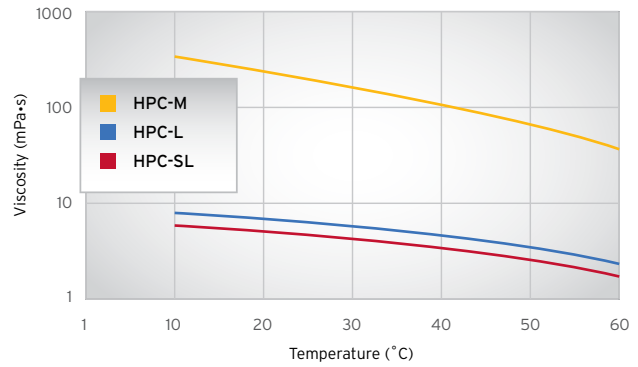


Fig 5: Phase transition effect is completely reversible upon cooling

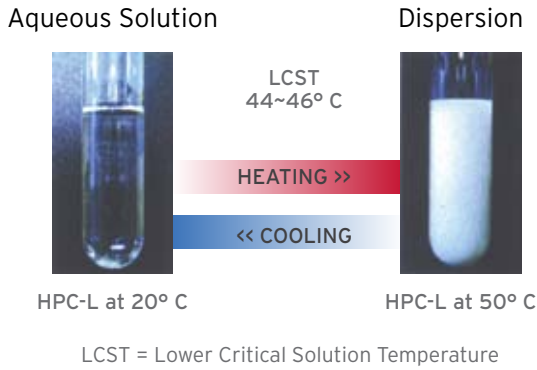


Fig 6: Viscosity change vs. pH

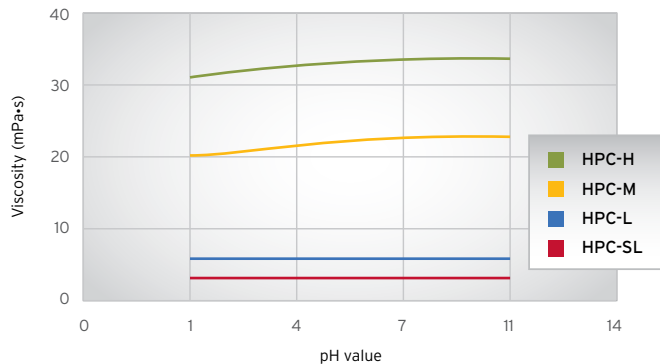
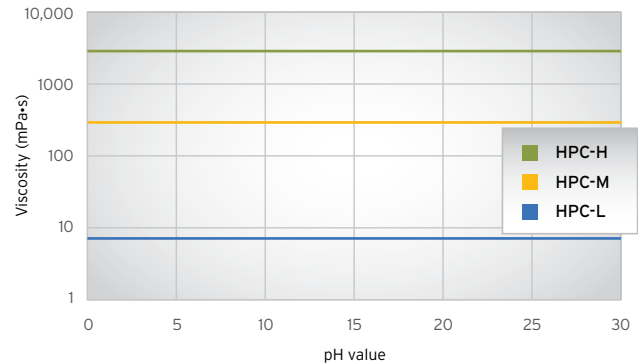


Fig 7: Viscosity change vs. Days lapsed under UV radiation



Powder Characteristics

		HPC-SSL	HPC-SL	HPC-L	HPC-M	HPC-H
Bulk density loose	(g/cc)	0.37	0.39	0.37	0.44	0.44
Bulk density tapped	(g/cc)	0.55	0.51	0.48	0.54	0.53
Compressibility	(%)	32.7	23.5	22.9	18.5	17.0
Angle of repose	(Degree)	49	46	45	42	40
Particle size (D ₅₀)	(µm)	50-70	70-90	100-120	130-150	130

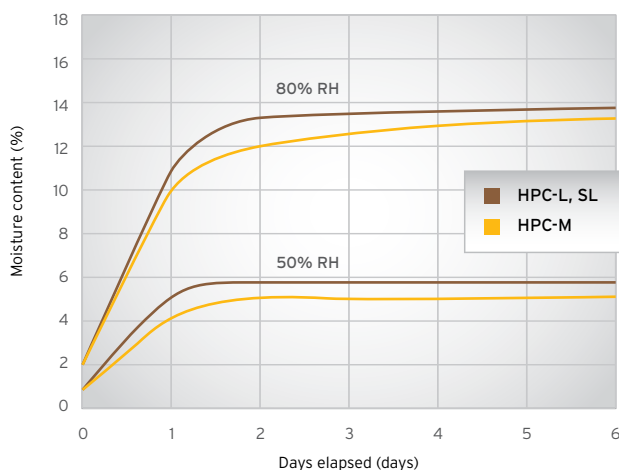
		HPC-SFP	HPC-SL (FP)	HPC-L (FP)	HPC-M (FP)	HPC-H (FP)
Bulk density loose	(g/cc)	0.24	0.32	0.33	0.37	0.33
Bulk density tapped	(g/cc)	0.41	0.49	0.48	0.50	0.48
Compressibility	(%)	41.5	34.7	31.3	26.0	22.3
Angle of repose	(Degree)	50	47	47	46	44
Particle size (D ₅₀)	(µm)	< 20	60-80	60-80	60-80	50-70

Physical and Chemical Properties

Specific gravity (particles)	1.2224
Coloring temperature	195-210°C
Charring temperature	260-275°C

Moisture Uptake

Fig 8: Moisture uptake at 50% and 80% relative humidity



Softening Temperature

	Softening temperature (°C)	
	1st transition	2nd transition
HPC-H	73	164
HPC-M	68	178
HPC-L	60	185
HPC-SL	68	192
HPC-SSL	75	183

Additives

Nisso HPC contains no silica or other additives.

Compendial Status

USP/NF, EP, JP compliant; Food use approved 21 CFR 172.870, E463

Expiration

Expiration date is (3) years from date of manufacture.

Packaging

Nisso HPC is available in a 10kg box.

Site of Manufacture

Nippon Soda Co., Ltd.
Nihongi Plant
350 Fujjisawa, Joetsu city
Niigata prefecture, Japan

Notice

The information described in this sheet is believed to be accurate and are presented in good faith with no guarantee or obligation as to accuracy and no assumption of liability. Users should make their own tests to determine the suitability of products for their own particular use. NISSO makes no warranty of any kind, express or implied, including those of merchantability and fitness for particular purpose other than the material conforms to its applicable current standard specifications.



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