AnyAddy®

Water Soluble Cellulose Ether For Nutraceutical

www.lotte-cellulose.com

LOTTE FINE CHEMICAL

AnyAddy®

AnyAddy® is the brand name of HPMC (Hydroxypropyl methylcellulose) and HPMCP (Hydroxypropyl methylcellulose phthalate) for nutraceutical and food applications.

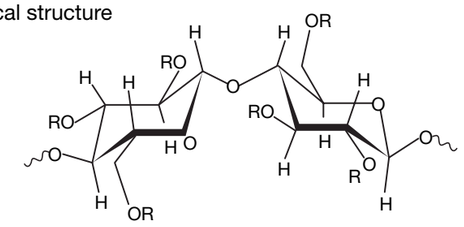
AnyAddy® is derived from natural wood pulp, meeting all the requirements of the current USP, EP, and JP and etc. Besides, AnyAddy® is along with Kosher and Halal Certifications. AnyAddy® is also produced in compliance with FDA, EU and FAO/WHO guidelines and retaining FSSC22000 (Global Food Safety Initiatives), ISO9001 and ISO14001 certifications as well.

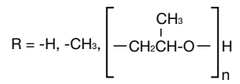
LOTTE Fine Chemical provides special values to customers with pharmaceutical formulation development over 20 years.
Our experiences enable the customers the superior technical support for saving your time and cost.

General Characteristics

HPMC

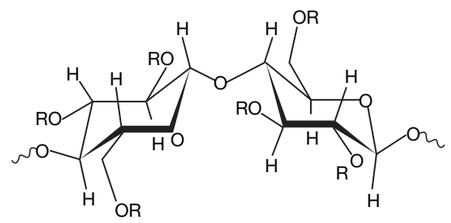
CAS No.	9004-65-3
INS No.	E464
Generic name	Hydroxypropylmethylcellulose, Hypromellose
Reference	FCC, USP
Chemical structure	

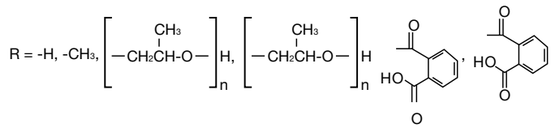




HPMCP

CAS No.	9050-31-1
Generic name	Hydroxypropylmethylcellulose phthalate
Reference	USP/NF
Chemical structure	





General Properties

HPMC

- White or slightly yellowish white powder
- Tasteless and odorless
- Soluble in mixed organic or aqueous solvent
- Making the transparent film when solvent is removed
- Generally, no chemical reaction with nutrients due to its non-ionic property
- Listed as GRAS by FDA
- LD50(mouse, IP) : 5g/kg, LD50(rat, IP) : 5.2g/kg

HPMCP

- White granule or powder
- Soluble in mixed organic solvent
- Making a transparent film when solvent is removed
- Insoluble in acidic solution
- Shielding nutrients against the degradation by gastric acid or keeping them from bringing about side effects in the stomach

Package

HPMC

- 2910 type - 25kg paper bag & fiber drum
- 2906, 2208 type - 20kg paper bag & fiber drum

HPMCP

- 20kg fiber drum

Applications & Benefits

Substitution type		HPMC												HPMCP		Functional Category	
		2910				2906				2208				220824	200731		
Viscosity		3	6	15	50	4	50	400	4,000	100	4,000	15,000	100,000	55	40	Effects	Possible Applications
Grade		AN3	AN6	AN15	AN50	BN4	BN50	BN45M	BN40H	CN10M	CN40H	CN15U	CN10T	HP55	HP50		
Tablet	Film Coating Aqueous Solvent	●	●	●												Once soluble in water and volatilized through solvent, AnyAddy® makes transparent film with high tensile strength	Vitamins Minerals Herbal extracts
	Enteric Coating													●	●	With pH dependent profile and film-forming capability, AnyAddy® helps nutrients dissolve not in stomach but intestine.	Vitamins Minerals Probiotics Fish oil Garlic oil
	Sustained Release				○					○	●	●	●			Hydrophilic matrix used along with AnyAddy® hydrates to create a gel layer, controlling release pattern.	Vitamin C Caffeine Glucosamine CoQ10
	Binder (Wet Granulation)	●	●	●	○	○										AnyAddy® delivers binding property and enhances the hardness of tablet.	Vitamins Minerals
Liquid	Thickening															The viscosity of AnyAddy® exponentially increases in relation to the concentration.	
	Suspending						●	●	●	○	○	○	○			AnyAddy® with hydrophobic and hydrophilic properties as well provides viscous and suspending aid.	
Others	Solid Dispersion	●	●	●	○	○								●	●	As a suspending aid and solid carrier for dietary supplement having low solubility, AnyAddy® provides excellent properties.	Herbal extracts

● Highly recommended ○ Recommended

* HPMC : 2.0 wt % aqueous solution at 20℃

* HPMCP : 2.0 wt % of methanol:dichloromethane=1:1 at 20℃

Example formulation

Immediate Coating

AnyAddy®, which is widely used for the coating application, is water-soluble and soluble in the mixture of solvents as well.

Used primarily as the storage and protection of the tablet and pellet, AnyAddy®, a nonionic, does not react with nutrients, but work compatibly with other additives such as colorant, lubricant, plasticizer, and opacifier.

AnyAddy® can facilitate the differentiation of the tablet surface by making the printability and logo easy. AN3, AN5, AN6, AN15 are recommended for the application of the tablet coating.

Formulations	%
AN6	10.0
Acetylated monoglyceride	1.0
Fermented ethanol	71.2
Distilled water	17.8

Example formulation

Delayed Release Coating

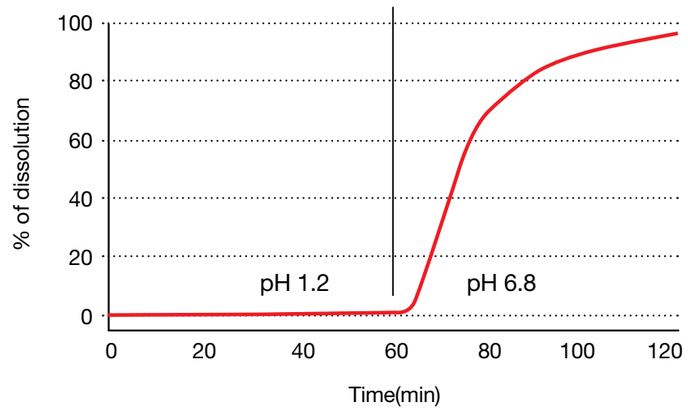
Delayed release coating with AnyAddy® makes nutrients at the right place by delivering to the intestine. Delayed release delivering system is to reduce the side effect from occurring in stomach by not disintegrating the nutrients affected by gastric fluid.

In addition, AnyAddy® can prevent the unpleasant taste and odor. Because of these features, AnyAddy® can applied to various nutrients such as Vitamins, Minerals, Fish oil, CoQ10, Bacillus subtilis, Bromelain, etc. and various forms such as tablets, granules, soft and hard capsules.

HP50 and HP55 are recommended for delayed release coating.

Formulations	%
HP-55	10.0
Acetylated monoglyceride	1.0
Fermented ethanol	75.7
Distilled water	13.3

Scheme of delayed release



Example formulation

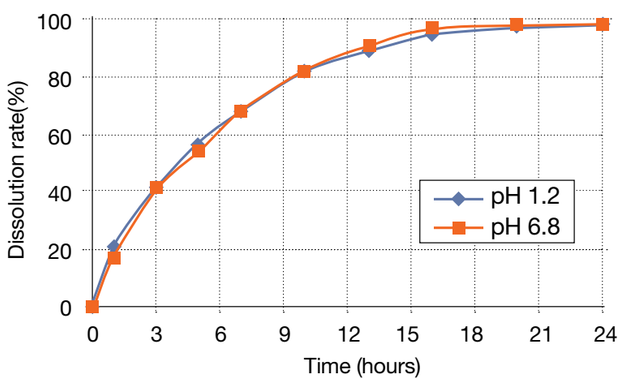
Sustained Release Tablet

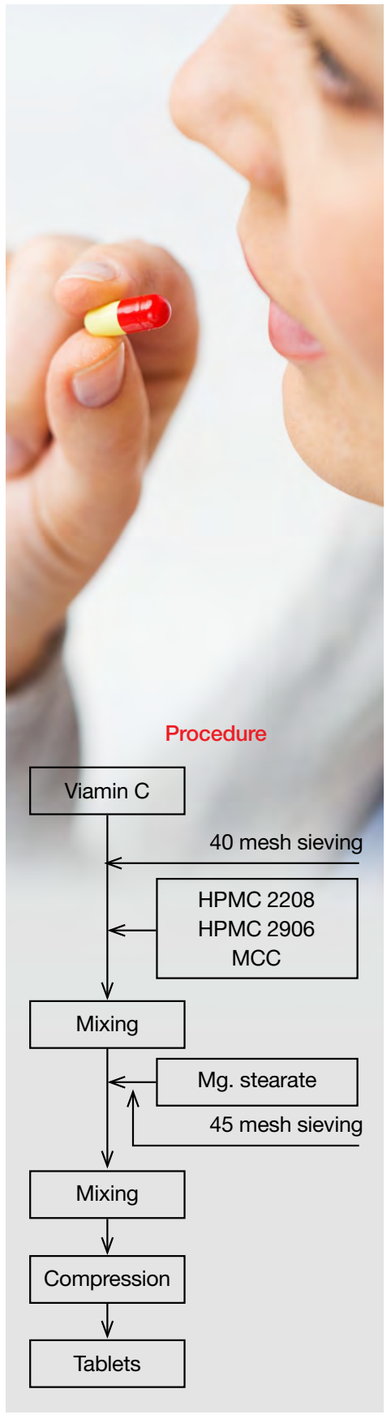
Cellulose derivative fabricated into hydrophilic matrices for sustained-release dosage form and it is one of the most popular approaches in formulation an sustained-release system. Sustained-release technology can minimize the dosing frequency, making the nutrients more convenient and easy to use for consumers.

Matrix systems with AnyAddy® have numerous formulation benefits. AnyAddy® makes it easier to develop a formulation by direct compression as well as wet granulation of the powder mixture.

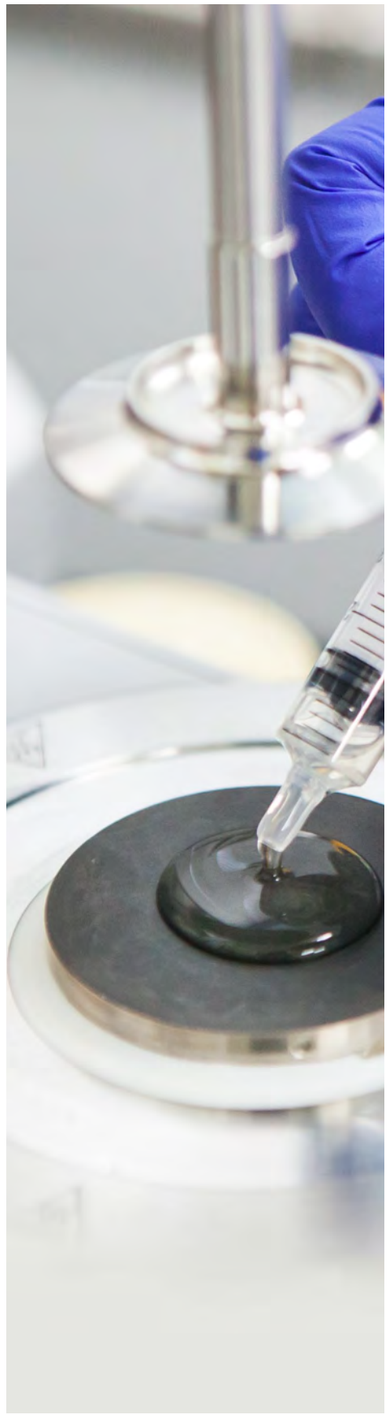
AnyAddy®, especially CN grades, have been preferred of HPMC in matrix systems.

Formulations	%
Vitamin C	62.5
CN10T	15.0
BN4	5.0
Microcrystalline cellulose	16.5
Magnesium stearate	1.0





Example formulation



Binder

AnyAddy® comes in diverse viscosity range from 3 to 200,000 mPa·s, and it can widely use for direct compression and wet granulation binders.

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Direct compression binder

Direct compression method is expected to reduce the manufacturing cost. BN4 is recommended.

Formulations	%	Formulations	%
Yeast powder	95.0	Chlorella powder	77.0
BN4	4.3	Red ginseng extract powder	13.0
Colloidal silicon dioxide	0.7	**BN4**	10.0

02

Wet granulation binder

AnyAddy® functions to form granules for tableting.

AN6 is recommended.

Formulations	%
Glucosamine hydrochloride	62.0
AN6	2.6
Fermented ethanol	20.0
Microcrystalline cellulose	13.9
Magnesium stearate	1.5

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