Methyl Cellulose

Super-gel METHOCEL MX™

MC&HPMC Product List

Properties of METHOCEL Food Gums in 2% Aqueous Solutions

METHOCEL Food Gum Type	NAME Food Grade (FG)	Viscosity (mPa•s or centipoise)		Optimal Hydration Temperature†	Hot Gel Formation Temperature
MC					
"A" Grade SuperGelling Category	SG A150 FG SG A7C FG SG A16M FG SG A50M FG	150 700 16,000 50,000	Low Med High High	< 50°F (10°C)	Very Firm Gel Forms at 100–114°F (38–44°C)
"A" Grade Methylcellulose	A15 FG A4C FG A15C FG A4M FG A40M FG	15 400 1,500 4,000 40,000	Low Low Med Med High	< 55°F (13°C)	Firm Gel Forms at 122–131°F (50–55°C)
	MX	**50,000**	**High**		
HPMC					
"E" Grade Hydroxypropyl Methylcellulose	E15 FG E50 FG E4M FG	15 50 4,000	Low Low Med	< 77°F (25°C)	Semi-Firm Gel Forms at 136–147°F (58–64°C)
"F" Grade Hydroxypropyl Methylcellulose	F50 FG F450 FG F4M FG	50 450 4,000	Low Low Med	< 77°F (25°C)	Semi-Firm Gel Forms at 143–154°F (62–68°C)
"K" Grade Hydroxypropyl Methylcellulose	K99 FG K4M FG K15M FG K100M FG K250M FG	100 4,000 15,000 100,000 250,000	Low Med High High High	< 85°F (29.5°C)	Soft Gel Forms at 158–194°F (70–90°C)

†METHOCEL Food Gums will hydrate (just more slowly) up to the hot gel formation temperature.

MC&HPMC – Effect of Temperature

	Hydration Range	Gelation Range	Gel Strength
High Gel MC	<50° F (10° C)	100 - 114° F (38 - 44° C)	Very Firm
Conv. MC	<55° F (13° C)	122 - 131° F (38 - 44° C)	Firm
HPMC	< 77° F - 85° F (25° C - 30° C)	143 - 194° F (62° C - 90° C)	Semi-Firm - Soft

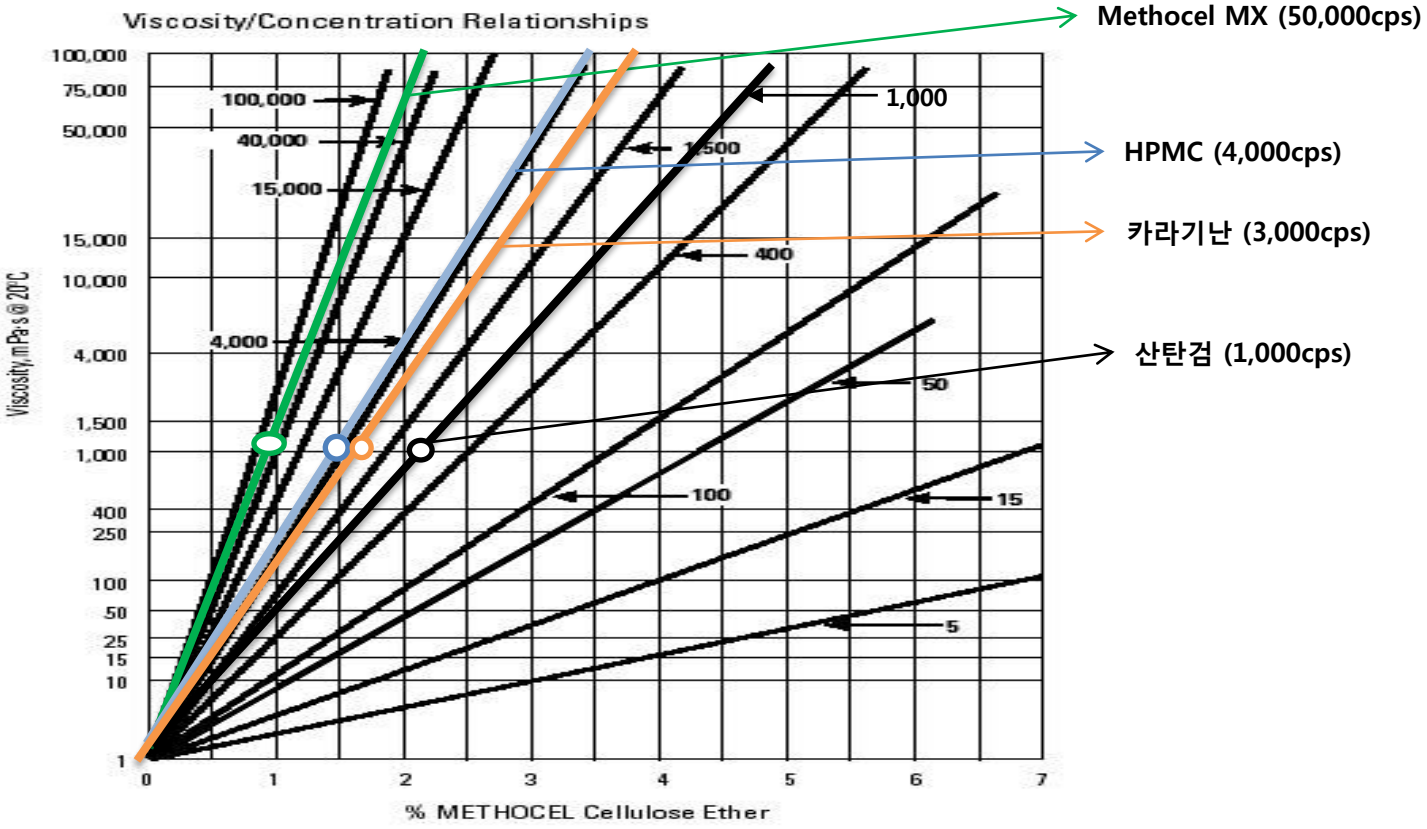
Methocel MX™

- 제품유형 : 식품첨가물**(화학적합성품)**
- 주성분 : **메틸셀룰로오스**
- 성상 : White Powder
- 특성 : Thermal gelling, High viscosity
- 효과 : **결착력 강화, 이수현상 방지, 내냉동성 & 열성형 가공성 향상**
- 향미 : Tasteless, Odorless
- 용해도 : **100% Soluble** (in Cold Water)
- 적용농도 : 배합 중 0.1~1.5%
- 적용분야 : 육가공품(햄, 소시지), 베이커리, 디저트, 냉동식품 등

* 포장단위 : 22.68 kg/1bag

❖ Viscosity

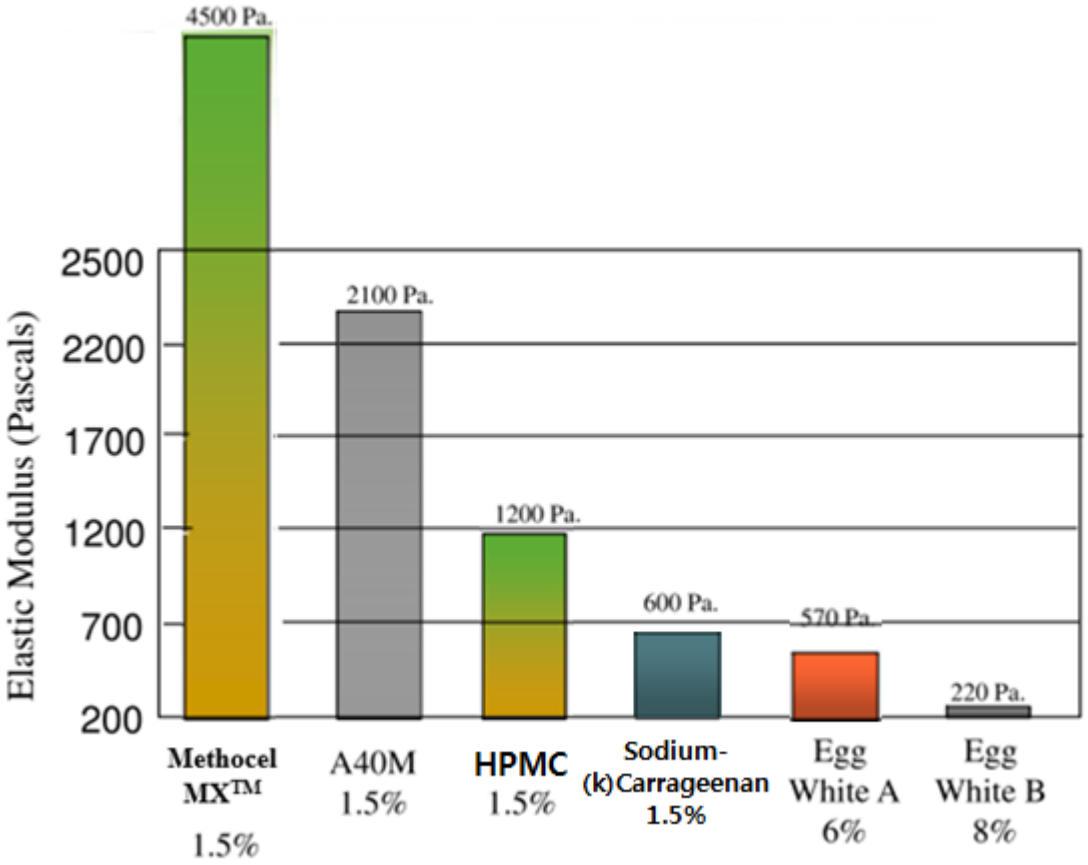
고점도 (HPMC x10배, 산탄검 x40배)



- 블랜딩 : yield ↑, dosage ↓ (synergy 효과)

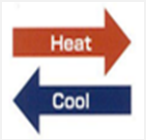
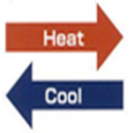
❖ Gel strength of food binder

높은 결착력 (난백 분말 x30배, HPMC x3배)



❖ Gel-Sol transition (with temp.)

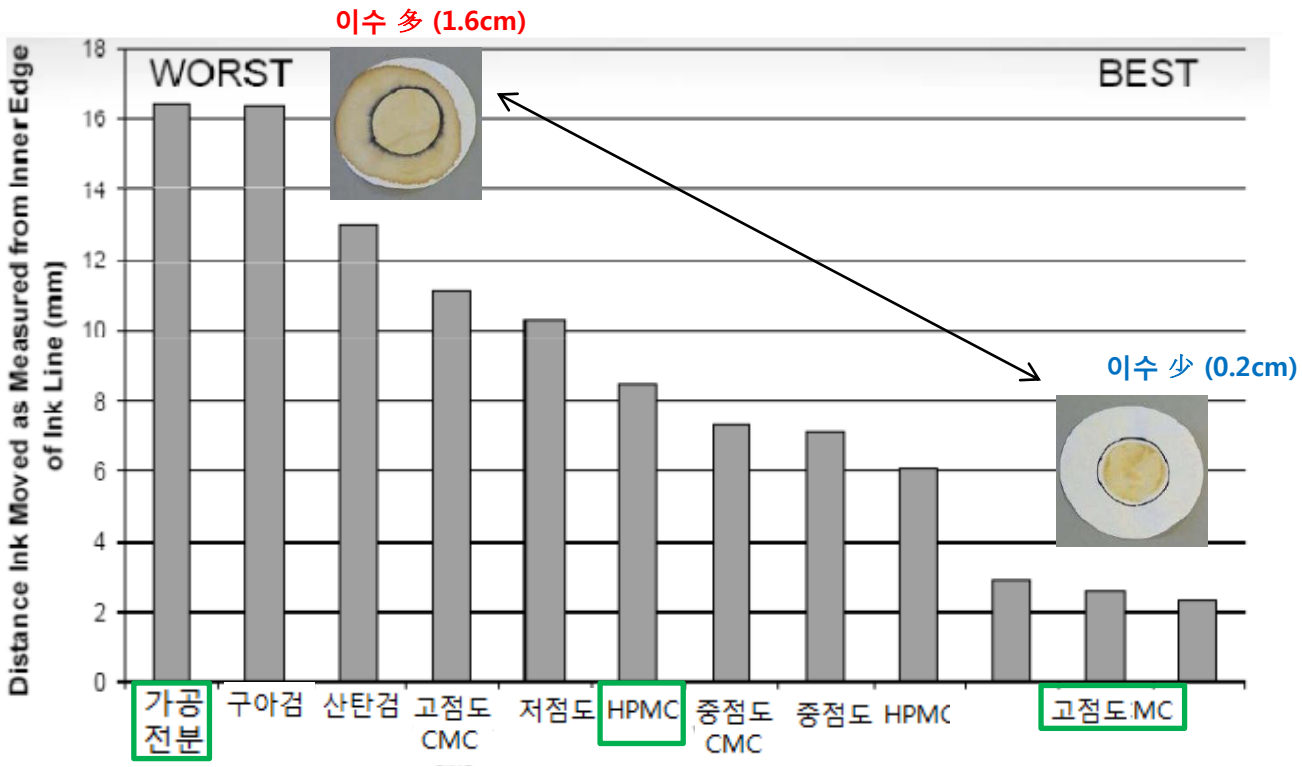
성형안정성(내냉성&내가열성) ↑

	냉수		열수
Methocel MX (MC)	10℃, Hydrosol 	가역적 	45℃, Very firm gel 
HPMC	25℃, Liquid 		65℃, Soft gel 
Pecti, Gelatin, Carrageenan	25℃, gel 		65℃, liquid 

❖ 수분결합력

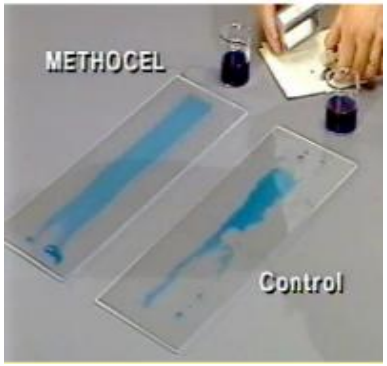
High water binding (가공전분의 x8, HPMC의 x3배)

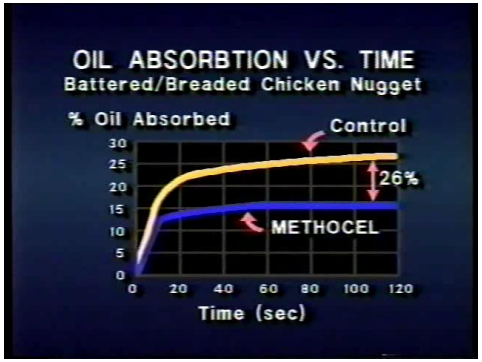
Water migration control test (0.2% conc. of various gums)

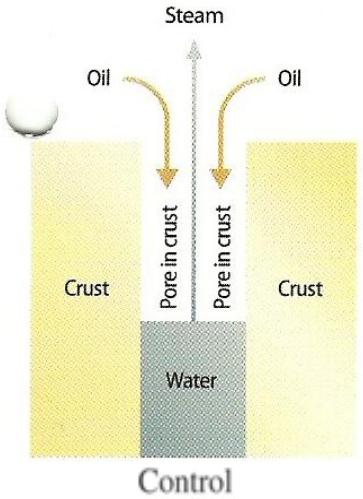


❖ Coating / film formation

수분 증발 제어 20% ↑, Oil uptake 26%↓

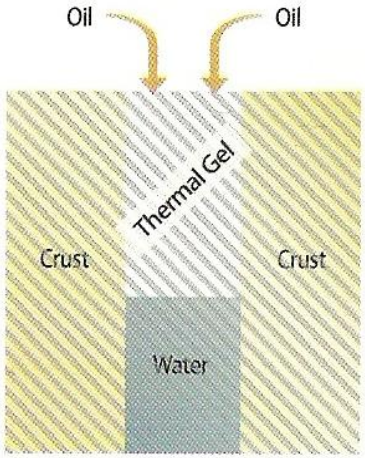






Control

- During frying, water in the crust evaporates through the pores.
- Oil penetrates the crust where water has evaporated resulting in a fat-concentrated crust.



Methocel MX

- Water remains in the crust and blocks the penetration of oil resulting in fried food with reduced overall fat content.

Application （ Case study ）

1) 햄버거/소시지

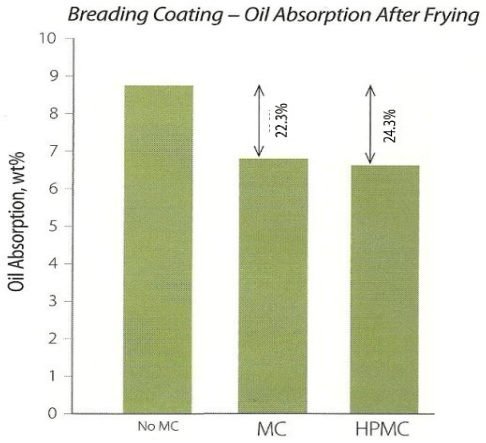
- 50% fat down, volume up
- full-fat like 식감 유지

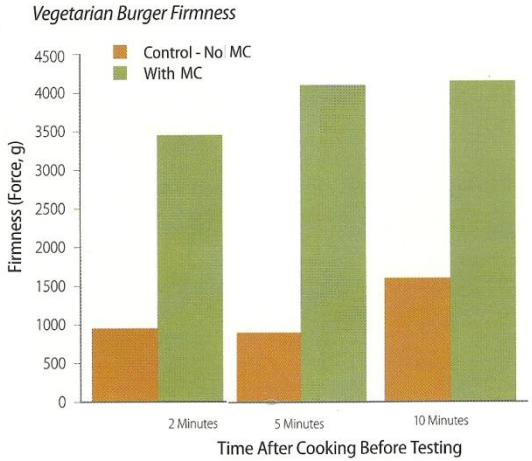
2) 냉동 미트볼

- 성형가공성 향상 (freeze-thaw stable)
- filling제 boil-out 제어

3) 배터믹스

- Oil-uptake↓,식감 개선(crispy)





Success stories (미국/유럽) : > 300ea products

[적용 대상 : 저지방 육가공품 & 베이커리]

기존 spec	변경 후 spec	개선 효과
산탄검 0.23% + Egg 17%	**Methocel ™ 0.7% + egg 5.6%**	**No-산탄검. Egg 함량 65%까지 감량. Volume up . 생산성 향상**
카라기난 1% + 변성전분 12%	Methocel ™ 0.1% + 카라기난 0.5% + 변성전분 2%	Volume up. 성형가공성(내냉성/내가열성) 향상.
라드(지방) 8.4%	Methocel ™ 0.5% + 라드(지방) 3.74%	Calorie down (54%) , 풍미유지, Juicy한 식감 부여
HPMC 1.7%	Methocel ™ 0.7%	Cost down (20%). 점도 향상,

Question?