

## American Cheese Sauce

SCS-01

### Benefits of Viscarin® carrageenan in cheese sauce:

- Ability to augment dairy proteins
- Provides good meltdown in the mouth and clean flavor
- Improves cling and maintains viscosity when heated
- Produces sauce that won't break down after freezing

### Comments

Viscarin carrageenan products can be used as structural replacements for dairy proteins from natural cheese or casein/caseinates, at substantially reduced cost. They provide desired texture, flavor and rheological properties of cheese sauces over a wide range of temperatures. When frozen, cheese sauces containing carrageenan, can be thawed without experiencing syneresis.

The prototype formulation shown below has been developed to demonstrate these properties in an American (cheddar) cheese sauce. This clean-flavored cheese sauce will melt rapidly at the desired temperature and maintains high viscosity when hot. The sauce offers improved cling to products like vegetables or chips and features smooth, even breakdown in the mouth.

### Formulation Guideline: 30% Cheddar Cheese Sauce

<u>Ingredients</u>	<u>% by Weight</u>
Water	54.00
Cheddar cheese (4-5 month age)	30.00
Nonfat dry milk	10.00
Sodium chloride	1.75
Shortening (Melomix P)	1.15
Sodium citrate	0.75
<b>Viscarin GP 109F carrageenan*</b>	0.75
<b>Viscarin SD 389 carrageenan*</b>	0.25
Mustard flour	0.25
Worcestershire sauce	0.25
Lactic acid (85-88%)	0.25
Sorbic acid	0.25
Monosodium glutamate	0.20
Annatto butter color	0.08
Acetic acid (100%)	0.05
Oleoresin paprika (60,000 c.u.)	0.02
	100.00%

\* FMC BioPolymer

## Processing Guidelines:

- Heat the shortening until melted.
- In a dry blender, mix the fluid shortening and the carrageenans.
- Add in order, to the shortening and carrageenans, the nonfat dry milk, mustard flour, monosodium glutamate, sorbic acid and coloring.
- Add ground cheddar cheese and mix for 5-8 minutes.
- Blend in the cool water, and the lactic acid, acetic acid, Worcestershire sauce (all diluted in 1-2% of the formula water) and the sodium chloride to complete the premix. (If direct steam heating will be used to cook the product, subtract the % condensate from the % added water.)
- The sodium citrate can be blended into the premix (after the sodium chloride) for continuous cooking or it can be added at the cooker for batch cooking.
- Heat the premix/sodium citrate to about 76-79°C (170-175°F) in a cooker and mix at this temperature for 3-5 minutes. Homogenization of the hot product prior to filling is optional. Refrigerate product (if to be used within two weeks) or freeze.

### Regulatory Information

All products manufactured by FMC BioPolymer meet all standards of quality as defined by:

- US Code of Federal Regulations (21 CFR)
- Food Chemicals Codex
- J.E.C.F.A. Specifications issued by FAO/WHO
- European Economic Community Directives

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## **Technical Service Centers: FMC BioPolymer**

### The Americas:

#### **U.S.A.**

FMC BioPolymer  
Headquarter Office  
1735 Market Street  
Philadelphia, PA 19103  
Phone: 1-215-299-6234  
**1-800-526-3649**

Fax: 1-215-299-5809

#### **BRAZIL**

Galeria Plaza  
Av. Dr. Jose Bonifácio  
Coutinho Nogueira 150-1° A  
13091-611 Campinas  
Sao Paulo, Brazil  
Phone: 55-19-3735-4465  
Fax: 55-19-3735-4480

#### **MEXICO**

Av. De las Granjas No. 300  
Colonia Electricistas  
Del. Azcapotzalco  
C.P. 02060, Mexico, D.F.  
Phone: 52-55-352-3589  
Fax: 52-55-352-3273

### Europe:

FMC BioPolymer  
Avenue E. Mounier 83  
1200 Brussels, BELGIUM  
Phone: +32-2-775.83.11  
Fax: +32-2-775.83.00

#### **BELGIUM**

**Phone: 0800-12402**

#### **FRANCE**

**Phone: 0800-506444**

#### **GERMANY**

**Phone: 0800-1818841**

#### **NETHERLANDS**

**Phone: 0800-0220272**

#### **SPAIN**

**Phone: 0900-973251**

#### **UNITED KINGDOM**

**Phone: 0800-0183079**

### Asia Pacific:

FMC (Shanghai) Commercial Enterprise  
Room 105, Innovation Building  
1009 Yi Shan Lu  
Shanghai 200233  
Peoples Republic of China  
Phone: 86-21 5427-1177  
Fax: 86-21 5427-0193

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[www.fmcbiopolymer.com](http://www.fmcbiopolymer.com)**

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