

# Technical Tips

## Coloring Process Cheese using Naturally Derived (Non-Synthetic) Ingredients

Consumer demand for snacks, prepared meals, and sandwiches has increased the market for process cheese. Retail sales of process cheese now exceed \$2.2 billion\* in the United States. Process cheese accounts for 15 to 20 percent of the U.S. retail market for cheese overall. In a finished process cheese product, annatto pigment content is typically 15 to 20 ppm.

Process cheese is generally a blend of one or more natural cheeses with water and emulsifying salts heated to a homogeneous consistency, poured into a mold, and cooled. Other ingredients may include whey, casein, dry milk, cream, lactose and coloring. Some process cheese contains gums, sweeteners, vegetables, herbs and spices.

\* Mintel International Group Limited



### Forms of Process Cheese

Block/loaf	Spread
Sliced	Sauce or dip
Shredded	'Spray can'
Stick	Cold-pack

#### Standard of Identity

Pasteurized process cheese  
 Pasteurized process cheese food  
 Pasteurized process cheese spread  
 Cold-pack cheese food  
 Others

#### Non Standard of Identity

Process cheese 'prepared cheese product'  
 Process cheese sauce  
 Process cheese dip  
 Cold-pack spread  
 Others

### Individually Wrapped Slices (IWS) %

Uncolored white cheddar	61.0
Cheddar cheese	20.0
Non fat dairy milk solids	3.0
Sodium citrate and phosphate blends	1.6
Water	14.3
<b>Annatto, oil soluble (Product 423033) or Annatto/Paprika (Product 428034)</b>	<b>0.1</b>

Total 100%

### Cold-pack Spread\*\* %

Cheddar cheese (aged 6 months)	41.15
Cream	28.51
Water	20.25
Delactosed whey powder	5.15
Mayonnaise	3.75
Salt	0.75
Sorbic acid	0.20
Xanthan gum	0.20
<b>Annatto extract (Product 423033)</b>	<b>0.04</b>

Total 100%

\*\* University of Wisconsin Process Cheese Seminar

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For samples or technical questions,  
 please e-mail us at [info@ddwmsn.com](mailto:info@ddwmsn.com)

**Annatto/paprika blend\*  
provides cost advantage vs. alternative**



**Annatto/Paprika 1310  
Product 428034**



**Beta-apo-8'  
carotenal**

\* Stored 7 months @ 4°C

Factors associated with pinking	Solutions to avoid pinking
Prolonging loaf cooling cycles	Stack loaves for optimum air flow during cooling
Using emulsifying salts with higher ratios of sodium citrate to disodium phosphate	Select emulsifying salts with a higher ratio of disodium phosphate to sodium citrate
Including natural cheese colored with norbixin in the formulation	Minimize (less than 25%) the use of norbixin colored natural cheese in the formulation
pH of the process cheese is below 5.5	Adjust the pH of the process cheese with disodium phosphate and trisodium phosphate to above pH 5.5
Using acid whey in the formula	Use sweet whey in place of acid whey
Adding annatto (bixin) to the pre-warmed or hot cheese	Add coloring to cheese prior to the heating process
Adding sorbic acid and annatto simultaneously	Prevent the annatto and sorbic acid from blending with each other during addition

Typical DDW natural colors** for process cheese				
Product	Concentration	Product number	Dosage %	Hue
Annatto OS 07	0.7% Bixin	423030	0.01 – 0.10	Yellow to orange
Annatto OS 07 KP***		423031		
 Certified Organic Annatto OS 07		423007		
Annatto OS 15	1.5% Bixin	423033	0.005 – 0.10	Orange
Annatto/Paprika OS 1310	1.3% Bixin 10,000 CU Paprika	428034		
Annatto/Paprika OS 1218	1.2% Bixin 18,000 CU Paprika	428035		Orange to red

\*\* Custom products are available upon request

\*\*\* Kosher for Passover



*For samples or technical questions,  
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