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SILK ROAD TRADERS

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MODIFIED CORN STARCH-HOT



Page -01



Due to inherent limitations, native starch cannot be used in some applications. Therefore, it undergoes modifications, resulting in what is known as modified starch.

Some limitations of native starch include:

- Low stability of the starch paste to retrogradation, leading to syneresis and gelling;
- Low stability of the starch paste under high shear forces (e.g., in homogenizers);
- Low freeze-thaw stability;
- Low stability in acidic pH environments.



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Page -02



The modified version overcomes these limitations and, as a result of the modification process, gains the following properties:

- 01** Increased stability under shear forces (homogenizers);
- 02** Improved stability in acidic conditions;
- 03** Greater resistance to retrogradation, which leads to improved paste stability against syneresis and gelling.

- Higher viscosity of the paste;
 - High stability to freeze-thaw;
 - Higher clarity of the paste compared to native starch;
- According to the aforementioned advantages, this starch can be used for various food applications and can improve physicochemical and organoleptic properties of the products. Ketchup production is one of the application areas of this starch. Ketchup with various Brix values can be produced using it. The following are the

properties that the obtained ketchup can have:

- Stable viscosity during storage;
 - Stable against syneresis;
 - Suitable for ketchup with different Brix values;
- Providing a shiny surface;

	Brix 29	Brix 23
Water	40.6	58.0
Tomato paste (Brix 25)	29.5	15.0
Starch MFH180	2.7	2.8
Vinegar (10 %)	5.0	5.0
Sugar	14.0	12.0
Glucose syrup (DE42)	4.0	3.0
Salt	2.0	2.0
Spices	2.0	2.0
Stabilizers	0.2	0.2

Preparation method:

Mix starch and water, then add tomato paste and start cooking for 15 min at 90°C. Add the mixture of sugar, salt and stabilizer followed by glucose syrup addition. When the temperature of ketchup drops to 70–80°C, add vinegar.



Characteristic	Description				
Product group	Modified Starch				
Compounds	Corn Starch, Water				
HS Code	35051050				
Biological	Parameter	Units	Minimum	Maximum	Comments
	Total Count	cfu/g	-	10 ⁴	-
	Yeast & Mold	cfu/g	-	700	-
	Bacillus Cereus	cfu/g	-	10 ³	-
	Sulfite Reducing Clostridia	cfu/g	-	10	-
	Coliform bacteria	cfu/g	-	50	-
	E.Coli	Cfu/g	-	negative	-
	Thermophilic spore forming bacteria	Cfu/10g	-	125	-
	The spore forming bacteria cause corruption without gas	Cfu/10g	-	50	-
	Anaerobic thermophilic spore forming bacteria	Cfu/g	-	<10	-
Chemical	Reaction with iodine	-	-	-	Creating a blue color
	Solubility	-	-	-	Insoluble in cold water and organic solvent
	Moisture	%	-	14	-
	pH	-	4.5	7	In 10%
	Protein	%	-	0.7	Dry basis
	Fat	%	-	0.5	Dry basis
	Lead	ppm	-	0.2	-
	Cadmium	ppm	-	0.2	-
	Arsenic	ppm	-	1	-
	Insoluble Ash	%	-	0.05	Dry basis
	Total Ash	%	-	0.3	Dry basis
	Acidity	ml NaOH/10gr	-	2	-
	Sulfurous Anhydride	mg/Kg	-	80	-
	Viscosity	cP	9500	11000	In 10%
	Color	-	-	-	White/Creamy white
	Odor	-	-	-	Scentless
Physical	Taste	-	-	-	No added flavors
	Foreign material	-	-	-	No foreign material
	Particles Size	%	-	10	Particles larger than mesh No 100 (150 μm)
Shelf-life	2 years after production				
Storage condition	keep in a dry place at ambient temperature away from direct sunlight.				
Packaging method	Keep in bags made of Laminated kraft or laminated polypropylene food grades.				
Labeling relating to food safety	-				
Handling conditions	Transportation standards must be met.				
Terms of preparation and consumption	Depends on the application.				
Distribution methods	The transportation vehicle of use needs to be appropriate, clean & devoid of mal odor.				
Fields of consumption	In food industries.				
Reference	INSO 19623-INSO 381-2/INSO 2843				



MODIFIED CORN STARCH-COLD



Starch MFG130

Starch MFG130 is a modified pregelatinized starch that is used in cold processes. Followings are the properties of this product:

- Properties of Starch MFG130:
- High stability to shear forces (Homogenizers);
- High stability to acidic pHs;
- Higher stability to retrogradation and subsequently higher stability of the paste to syneresis and gelling;
- Higher viscosity of the paste;
- High stability to freeze-thaw;
- Higher clarity of the paste compared to native starch;



This product can be used as thickening agent and fat replacer in sauces that do not undergo the thermal process during production (such as mayonnaise). It is also used in soups, dairy products, filling and other food products that need a stable stabilizer exerting viscosity at ambient temperatures.

Mayonnaise recipe with Starch :

Ingredient	15% Fat	25% Fat	35% Fat	45% Fat
Oil	15.0	25.0	35.0	45.0
Starch MFG130	5.0	3.5	3.0	2.0
Vinegar (10%)	4.0	4.0	4.0	4.0
Sugar	4.0	4.0	4.0	4.0
Salt	1.5	1.5	1.5	1.5
Yolk Powder	0.8	0.9	1.0	1.1
Stabilizers	0.28	0.22	0.18	0.18
Water	69.4	60.8	51.3	42.2

A permitted preservative should be added to the above formulations. Spices or permitted flavoring agents can be also added.



MODIFIED CORN STARCH-COLD



Characteristic	Description				
Product group	Pregelatinized Modified Starch				
Compounds	Corn Starch, Water				
Biological	Parameter	Units	Minimum	Maximum	Comments
	Total Count	cfu/g	-	10 ⁴	-
	Yeast & Mold	cfu/g	-	700	-
	Bacillus Cereus	cfu/g	-	10 ³	-
	Sulfite Reducing Clostridia	cfu/g	-	10	-
	Coliform bacteria	cfu/g	-	50	-
	E.Coli	Cfu/g	-	negative	-
	Thermophilic spore forming bacteria	Cfu/10g	-	125	-
	The spore forming bacteria cause corruption without gas	Cfu/10g	-	50	-
	Anaerobic thermophilic spore forming bacteria	Cfu/g	-	<10	-
	Reaction with iodine	-	-	-	Creating a blue color
	Solubility	-	-	-	Insoluble in cold water and organic solvent
Chemical	Moisture	%	-	14	-
	pH	-	4.5	7	In 10%
	Protein	%	-	0.7	Dry basis
	Fat	%	-	0.5	Dry basis
	Lead	ppm	-	0.2	-
	Cadmium	ppm	-	0.2	-
	Arsenic	ppm	-	1	-
	Insoluble Ash	%	-	0.05	Dry basis
	Total Ash	%	-	0.3	Dry basis
	Acidity	ml NaOH/10gr	-	2	-
	Sulfurous Anhydride	mg/Kg	-	80	-
	Viscosity	cP	9500	11000	In 10%
Physical	Color	-	-	-	White/Creamy white
	Odor	-	-	-	Scentless
	Taste	-	-	-	No added flavors
	Foreign material	-	-	-	No foreign material
	Particles Size	%	-	10	Particles larger than mesh No 100 (150 µm)
Shelf-life	two years				
Storage condition	keep in a dry place at ambient temperature away from direct sunlight.				
Packaging method	Keep in bags made of Laminated kraft or Laminated polypropylene food grades.				
Labeling relating to food safety	-				
Handling conditions	Transportation standards must be met.				
Terms of preparation and consumption	Depends on the application.				
Distribution methods	The transportation vehicle of use needs to be appropriate, clean & devoid of mal odor.				
Fields of consumption	In food industries.				
Reference	INSO 19623				



Maltodextrin

- ▼ Maltodextrin is produced by partial hydrolysis
- ▼ of starch and consists of a mixture of polysaccharides and oligosaccharides. Maltodextrin is soluble in cold water and has a low sweetness
- ▼ and can create desired properties in a wide
- ▼ range of food products.
- ▼ Application of maltodextrin in food industry are
- ▼ as follows:

1- Dairy Industry:

Low-fat cheeses produced by ultrafiltration: Partial replacement of fat; water absorbing and water holding properties; preventing weight loss in salt water cheeses.
Processed cheeses: stabilizing function, thickener, fat replacer and increasing spread-ability.
Low-fat yogurts: fat replacer and preventing dehydration.
Confectionery fillings and ice cream: reducing fat content, acting as a filler and stabilizing properties.

2- Candies, Fondants and Dark Chocolates:

Reducing caramelization;
Increasing transparency and improving texture;
Viscosity reduction and rapid gel formation;
Formation of transparent and appetizing films for candy coating;
Reducing fat content in dark chocolate;
Creating favorable rheological properties in dark chocolate;



MALTODEXTRIN

3- Non-Alcoholic Beverages:

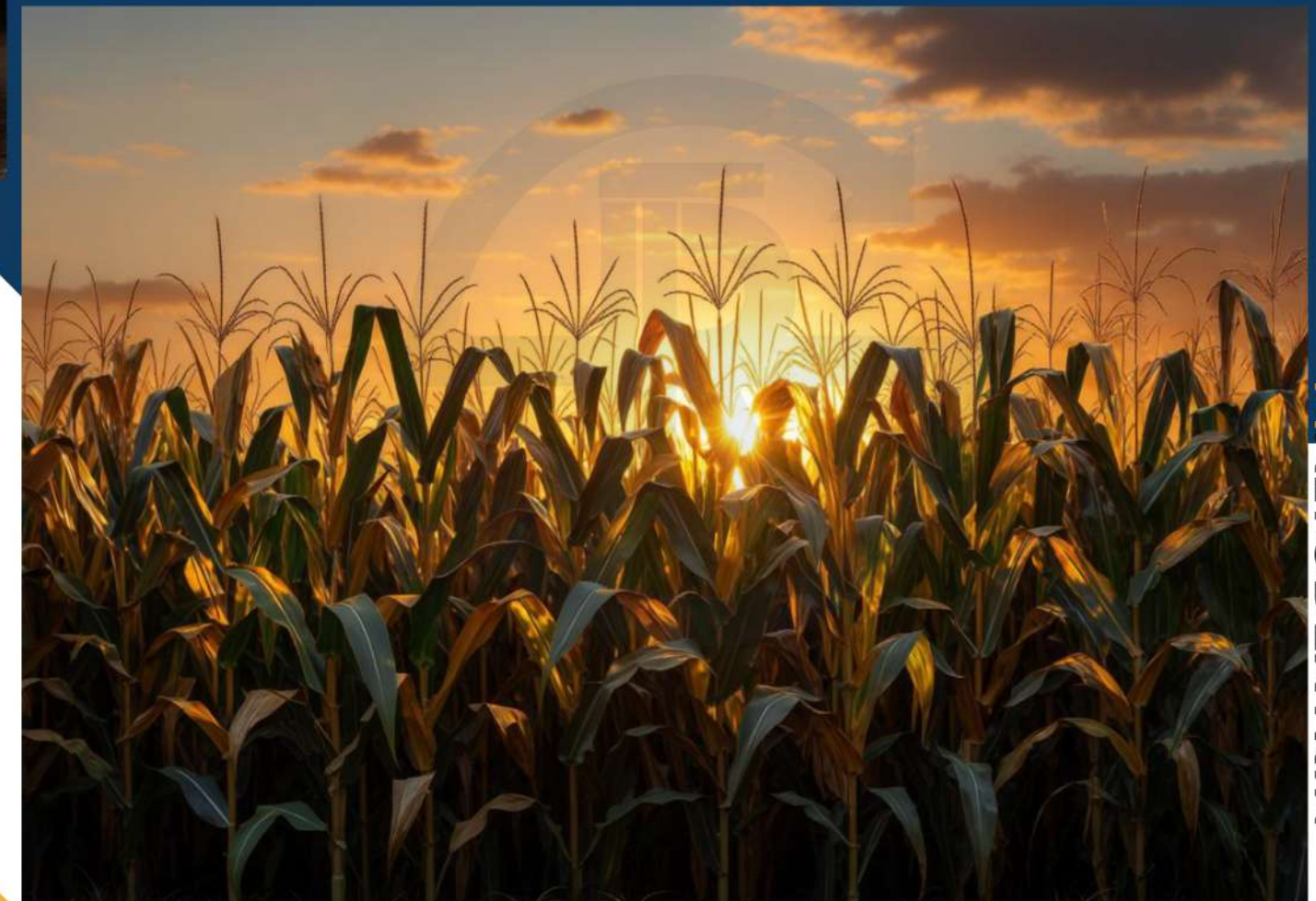
Improving mouthfeel;
High transparency;
No flavor masking effects;

4- Breads and Bakery Products:

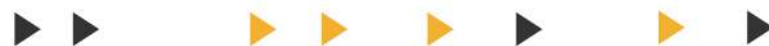
Moisture retention and delaying staleness;
Puffing effect and creating desired texture;
Fat and sugar replacer in the formulation;

5- Canned Foods:

Increasing viscosity and improving consistency;
Improving mouthfeel and creating a smooth texture;
Creating a mild flavor and sweetness.



MALTODEXTRIN



6- Baby Food:

Preventing clumping and crystal formation;
Improving texture and solubilization;
Easy digestion and mild sweetness;

8- Sport Diets:

Energy sports drinks;
Sports recovery drinks;
Sport supplement;

9- Fruit Powders:

Drying aid in production of fruit powder;

10- Pharmaceutical Applications of Maltodextrin:

Maltodextrin is used in various pharmaceutical industries such as:
Excipient in tablets and as a coating material in microencapsulation of various substances such as vitamins;

Production of edible films;

Facilitating the direct compression of active drugs that are difficult to compress;

**PROPERTIES OF MALTODEXTRIN:**

Properties of Maltodextrin	Powdered Maltodextrin	Liquid Maltodextrin
Pasteurase (min.)	Max. 0.1	Max. 0.1
Protein Equivalent	Max. 0.5	Max. 0.5
Proteins	Max. 0.3	Max. 0.3
Dry Solids	90	50

Characteristic	Description				
Product name	Maltodextrin with high DE				
Compounds	polysaccharides, oligosaccharides				
	Parameter	Units	Minimum	Maximum	Comments
Chemical	Dextrose Equivalent	% /on ds	15	20	-
	Protein	% /on ds	-	0.5	-
	Dry Solids	% /on ds	90	-	-
	Lead	ppm		0. 5	
	Heavy Metal	ppm	-	5	-
	Ash	%	-	0.5	-
	Sulfur dioxide	%	-	0.0025	-
Physical	Color	-	-	-	White
	Odor	-	-	-	Scentless
	Taste	-	-	-	No added flavors
	Foreign material	-	-	-	No foreign material
Shelf-life	2 years				
Storage condition	Keep in room temperature, away from sunlight.				
Packaging method	Keep in bags made of Laminated polypropylene food grades				
Labeling relating to food safety	-				
Handling conditions	Transportation standards must be met.				
Terms of preparation and consumption	Depends on the application				
Distribution methods	The transportation vehicle of use needs to be appropriate, clean & devoid of mal odor.				
Fields of consumption	In food industries, pharmaceuticals,...				
Reference	isiri 6091				

Shelf-life	2 years
Storage condition	Keep in room temperature, away from sunlight.
Packaging method	Keep in bags made of Laminated polypropylene food grades
Labeling relating to food safety	-
Handling conditions	Transportation standards must be met.
Terms of preparation and consumption	Depends on the application
Distribution methods	The transportation vehicle of use needs to be appropriate, clean & devoid of mal odor.
Fields of consumption	In food industries, pharmaceuticals,...
Reference	isiri 6091
producer	Approver
Research and Development Manager:	Administration Manager:
Date signed:	Date signed: