



PepsiCo Ingredient Specification
Confidential and Proprietary Information - Do Not Duplicate

Ingredient Code: PV: 17438FRU SAP: #2201743800	Ingredient Name: CRYSTALLINE FRUCTOSE	Status: Routing for Update
Revision #: 01.0		Issue Date: 31-Jan-2017

I. General Requirements

PQP/MRT Material Physical Form:	Powder
Hazards Requiring Preventive Control:	No
Descriptive Statement:	Fructose occurs as white, hygroscopic, odorless, purified crystals or as a purified crystalline powder having a sweet taste. It is a natural constituent of fruit and is obtained from glucose in corn syrup by the use of glucose isomerase. It is soluble in methanol and in ethanol, freely soluble in water, and insoluble in ether. CAS number 57-48-7 This ingredient shall be in conformance with the Food Chemical Codex for Fructose.
Vendor's Ingredient Statement:	Fructose
PepsiCo's Kosher Certification:	Not Kosher
Vendor's Kosher Certification:	See Addendum A - Manufacturing Site dependent
PepsiCo Halal Assessment:	See Addendum A - Manufacturing Site dependent
Organic Certified:	See Addendum A - Manufacturing Site dependent
GMO:	See Addendum A - Manufacturing Site dependent
Allergens With % Protein > 0:	None
Allergens:	Sulfites - Other (Canada)
General Food Safety Statement	All parameters not identified as Food Safety hazards requiring preventive controls (HRPCs) in the tables are considered to be monitored for quality and other food safety requirements. The PepsiCo global supplier quality expectations shall apply to parameters not listed in the specification.

Manufacturer holds no less than a 500 mL retain of each lot for the shelf-life of the ingredient in a container and under conditions that maintain the integrity of the sample.

II. Sensory Parameters

Parameter	Test Method(s)	Supplier Test Frequency	Required on COA
Appearance, Odor, and Taste	TM 168.003 (Appearance Odor and Taste Evaluation of Sugar), TM 507.001 (Sensory Testing: Accept/Reject General Method)	Every Lot	Yes

Parameter	Typical Attributes		Typical Defects	
	Material As Is	Diluted*	Material As Is	Diluted*



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Appearance	Free flowing, white, small crystalline	clear, colorless	Yellow, clumped/caked, foreign matter, black specks	foreign matter, black specs, undissolved matter, turbid, off color
Odor	Odorless	Odorless	Sulfur, ash, grape, cotton candy, fermented	Sulfur, ash, grape, cotton candy, fermented
Texture	Not applicable	Not Applicable	Not applicable	Not Applicable
Taste	sweet, no off-taste	sweet, no off-taste	Sulfur, ash, grape, cotton candy, fermented	Sulfur, ash, grape, cotton candy, fermented

*Dilution Instructions: See test method for further details. Substitute Granular Sugar with Fructose. Prepared a 10% Acidified Solution (10 g/100mL).

III. Physical/Chemical Parameters

Parameter	Test Method(s)	Target	Min	Max	Supplier Test Frequency	Required on COA
5-Hydroxymethylfurfural %w/w	FCC Monograph for Fructose			0.1	Every Lot	Yes
Sulfate %	FCC Appendix IIIB: Chemical Test and Determination, Sulfate Limit Tests			0.025	Upon Request	No
Assay, % (w/w)	FCC Appendix IIB. PHYSICOCHEMICAL PROPERTIES		98.000	102.000	Every Lot	Yes
Loss on drying, % (w/w)	FCC Appendix IIC: Physical Tests and Determinations, Others, Loss on Drying			0.5	Every Lot	Yes
Glucose (Dextrose) - As-Is, % (w/w)	FCC Monograph for Fructose			0.5	Upon Request	No
Residue on Ignition (Sulfated Ash), % (w/w)	FCC-Appendix IIC			0.500	Upon Request	No
Chloride, % (w/w)	FCC Appendix IIIB Limit Tests			0.018	Upon Request	No
Arsenic, mg/kg (ppm)	AOAC 2013.06 Arsenic, Cadmium, Mercury, and Lead in Foods			1.000	Upon Request	No
Heavy Metals as Pb, mg/kg	AOAC 2013.06			5.0000	Upon Request	No



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III. Physical/Chemical Parameters

Parameter	Test Method(s)	Target	Min	Max	Supplier Test Frequency	Required on COA
Lead, mg/kg (ppm)	AOAC 2013.06 Arsenic, Cadmium, Mercury, and Lead in Foods, FCC Appendix IIIB: Chemical Tests and Determinations: Lead Limit Test			0.100	Upon Request	No

FCC = Food Chemical Codex

Upon Request = Frequency is supplier dependent and/or region quality or safety program dependent. The vendor guarantees to meet this parameter.

Loss on drying % is conditioned as 70 degrees under vacuum for 4 hours.

ANALYTICAL TEST METHOD STATEMENT: Alternate analytical methods may be used as long as the following criteria are met: valid (peer reviewed) analytical method in conjunction with either verification via recognized external proficiency scheme or internal validation demonstrating accuracy, precision and specificity of method is suitable for intended use. The most recent published version of the test method is to be used, and will supersede all other editions.

GENERAL FOREIGN MATERIAL STATEMENT: Foreign material is extraneous matter found in food that may render the food unfit for human consumption or reduce the quality of the food. Foreign materials include, but are not limited to, metal, paper, paint, plastic, glass or other inorganic materials, as well as hair, insects, cleaning fluids and even particles of the wrong food, such as meat in a vegetarian product. All suppliers shall have implemented a program to prevent, detect and control extraneous matter in material produced for PepsiCo.

IV. Microbiological Parameters

Parameter	Test Method(s)	Target	Min	Max	Supplier Test Frequency	Required on COA
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IV. Microbiological Parameters

Parameter	Test Method(s)	Target	Min	Max	Supplier Test Frequency	Required on COA
Mesophilic Aerobic Plate Count, CFU/g	FDA BAM (2001) Chapter 3 (Aerobic Plate Count) Conventional Plate Count Method, ICUMSA GS2/3-41 (2011) - Total Mesophilic Bacterial Count in Refined Sugar. Pour Plate Method or Membrane Filtration.			200	Every Lot	Yes
Yeast Count, CFU/10g	FDA BAM 7th ed. (1995) Chapter 18, ICUMSA GS2/3-47, 2015			10	Every Lot	Yes
Mold Count, CFU/10g	FDA BAM 7th ed. (1995) Chapter 18 (Enumeration of Yeasts & Molds, PDA Acidified or Antibiotics), approved for current use. , ICUMSA GS2/3-47, 2015			10	Every Lot	Yes
Coliforms - Must be less than, CFU/g	FDA BAM (2017) Chap. 4 (Enumeration of Escherichia coli and the Coliforms Bacteria), Plate Count, ISO 4832:2006 (Enumeration of Coliforms), pour-plate	10			Upon Request	No



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IV. Microbiological Parameters

Parameter	Test Method(s)	Target	Min	Max	Supplier Test Frequency	Required on COA
Escherichia coli - Must be less than, MPN/g	FDA BAM (2017) Chap. 4 (Enumeration of Escherichia coli and the Coliforms Bacteria), Plate Count, ISO 7251:2005 (Detection and Enumeration of Presumptive Escherichia coli), MPN	3.0			Upon Request	No

Enterobacteriaceae is equivalent to Coliforms <10 CFU/g and Escherichia coli <3MPN/g.

MICRO TEST METHOD STATEMENT: It is required to use the test method(s) specified in the above table. The most recent published edition of the test method may be used and is in compliance with test method expectations.

MICRO HAZARDS STATEMENT: Suppliers must not release their products to any PepsiCo manufacturing or co-manufacturing facility until all pathogen testing is completed and meets PepsiCo specifications (positive release at supplier site). Samples tested for product release purposes must be representative of the entire production lot and taken at the last point in the process at or before filling/packaging to ship to PepsiCo.

V. Packaging, Shipping and Storage

Packaging 1

Packaging:	Ingredient Package Type and Material: Bag: Kraft Paper-PE Lined Packaging Notes: Material must be packaged in food contact approved containers, and sealed with unique tamper evident feature. The package should provide robust product integrity, containment and protection, over the stated shelf life with specified storage and supply chain conditions. Final weight of solid materials must be within 1% of the targeted weight.
Shipping/Storage:	Shipping & Storage Temperature: (Ambient) 46-90F/ 8-32C Sensitivity to light: No Relative Humidity: <55% Humidity Explanation: Recommended storage temperature 77°F (25°C) or lower, and relative humidity less than 55%. Crystalline fructose begins to adsorb moisture at 56% relative humidity and room temperature. Temperature and humidity should be controlled to avoid difficulties in processing and packaging, and maintain fit for purpose.



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Packaging 1

Shelf Life:	Shelf Life, days: 540 Other Shelf Life Information: Materials stacked during long-term storage may develop some pressure compaction and require screening or milling before use. Shelf-life Remaining upon Receipt: All material must be received with 75% of the shelf life remaining, unless otherwise agreed to by authorized Corporate Quality Function.
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SHIPPING INSTRUCTIONS STATEMENT 1: Transport must be absent of previous inventory, debris, pests, entry from the environment, posing no risk of contamination to the material.

SHIPPING INSTRUCTIONS STATEMENT 2: The transporting container shall be closed with identified and logged seals to ensure integrity of inventory.

STORAGE REQUIREMENTS STATEMENT: For optimum shelf life, store in well ventilated, dry, clean and sanitary areas free from pests, strong odors and exposure to direct heat and light sources. Ingredients must be stored and handled under conditions suitable to maintain the sensory, microbiological and physiochemical integrity of the ingredient.



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Packaging 2

Packaging:	Ingredient Package Type and Material: Bulk: Rail Car Packaging Notes: Material must be packaged in food contact approved containers, and sealed with unique tamper evident feature. The package should provide robust product integrity, containment and protection, over the stated shelf life with specified storage and supply chain conditions. Final weight of solid materials must be within 1% of the targeted weight.
Shipping/Storage:	Shipping & Storage Temperature: (Ambient) 46-90F/ 8-32C Sensitivity to light: No Relative Humidity: <55% Humidity Explanation: Recommended storage temperature 77°F (25°C) or lower, and relative humidity less than 55%. Crystalline fructose begins to adsorb moisture at 56% relative humidity and room temperature. Temperature and humidity should be controlled to avoid difficulties in processing and packaging, and maintain fit for purpose.
Shelf Life:	Shelf Life, days: 540 Other Shelf Life Information: Materials stacked during long-term storage may develop some pressure compaction and require screening or milling before use. Shelf-life Remaining upon Receipt: All material must be received with 75% of the shelf life remaining, unless otherwise agreed to by authorized Corporate Quality Function.

SHIPPING INSTRUCTIONS STATEMENT 1: Transport must be absent of previous inventory, debris, pests, entry from the environment, posing no risk of contamination to the material.

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VI. Abbreviations

AOAC=Association of Official Analytical Chemists

FDA=Food and Drug Administration

ISO=International Standards Organisation

TM=PepsiCo Test Method

VII. Revision Notes

Specification Author: Michael Arvizu/Allison Fine

Explanation:: Updated the specification to the latest template including changes to Section I. General Requirements, Section II. Sensory Parameters, Section III. Physical/Chemical Parameters, Section IV. Microbiological Parameters, Section V. Packaging, Shipping and Storage, and Section VII Revision Notes.



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Report Options:

Vendor Manufacturing Location: Tate & Lyle - Lafayette, IN - USA - Mfg - USA: Lafayette

Vendor HQ: Tate & Lyle - Hoffman Estates, IL - USA - HQ

Print Date: 9/26/2018

Kosher			
<i>Kosher Status</i>	<i>Vendor Mfg Location</i>	<i>Vendor Mfg Location Description</i>	<i>Country</i>
Kosher Pareve	VNDR004252	Tate & Lyle - Lafayette, IN - USA - Mfg - USA: Lafayette	USA
Halal			
<i>Halal Status</i>	<i>Vendor Mfg Location</i>	<i>Vendor Mfg Location Description</i>	<i>Country</i>
Meets PepsiCo standard.	VNDR004252	Tate & Lyle - Lafayette, IN - USA - Mfg - USA: Lafayette	USA
GM/GE			
<i>GM/GE Status</i>	<i>Vendor Mfg Location</i>	<i>Vendor Mfg Location Description</i>	<i>Country</i>
Contains GM/GE Material	VNDR004252	Tate & Lyle - Lafayette, IN - USA - Mfg - USA: Lafayette	USA
Organic			
<i>Organic Status</i>	<i>Vendor Mfg Location</i>	<i>Vendor Mfg Location Description</i>	<i>Country</i>
No	VNDR004252	Tate & Lyle - Lafayette, IN - USA - Mfg - USA: Lafayette	USA