

BACKGROUND

In your role on the Product Development team at in the Salty Snacks department at the Bad Axe Snacks Company, you are leading a project to evaluate an **alternate vendor for the critical flour ingredient** in the largest volume sku in your portfolio. The purpose of evaluating this vendor is to both have a back-up supply source for emergencies and to find potential cost savings in parallel. Critical success factors of the approved project state that any changes to finished product specifications, finished product flavor/texture or labeling triggered by this ingredient disqualify the new vendor.

At the project kick-off, you have access to your current Bad Axe Snacks Company internal specifications, both ingredients and finished product, and your Procurement Sourcing team has provided a specification from a new vendor called Lummel for evaluation.

For this assessment, use the following specification documents to answer the 5 questions.

SPECIFICATION #1 – Bad Axe Snacks Company Flour Ingredient Specification

SPECIFICATION #2 – Lummel Wheat Flour Ingredient Specification

SPECIFICATION #3 – Bad Axe Snacks Company Pretzel Tiny Twist Finished Product Specification

QUESTION #1

Fundamental core principles of the Bad Axe Snacks Company are product quality and food safety. As such, prior to any ingredient qualification it is essential to confirm suppliers are capable to meet the quality standards of the brand.

The factory Quality/Food Safety Manager wants to understand if this new ingredient will meet the Extraneous Matter standards set forth in the specification for flour before any testing can be completed inside the factory

Based on the standard identified in the Bad Axe Snacks Company flour specification, identify the correct conclusion:

- a) The Lummel flour production has appropriate extraneous matter mitigation steps in place in their manufacturing environment.
- b) The Lummel flour production meets none of the Bad Axe Snacks Company requirements for extraneous matter mitigation.
- c) A further inquiry on the specific manufacturing practices for management of extraneous matter is required from Lummel before you would be able to confirm the fit for use of this ingredient in your process.
- d) It is incumbent on the Bad Axe Snacks factory quality and food safety team to screen out all extraneous matter so the inbound ingredient contents do not matter.
- e) As long as the product is safe for humans, there is no requirement for suppliers to have a foreign material program in place.

QUESTION #2

As the Senior Product Development scientist on your team, you are responsible for a line of pretzel products that have been consumer validated to have superior product texture versus your key competitor's portfolio. To maintain this product positioning with consumers, it is critical that any changes you make to ingredients or process still deliver the same finished product attributes your consumers have come to expect.

A key finished product attribute is texture, which you've determined to be influenced by the inbound moisture of the flour to balance finished product moisture after baking.

Based on the ingredient moisture specified for flour used in your process, you can determine that:

- a) The Lummel flour specification moisture is too high to be swapped into your formula without other changes to manage moisture.
- b) The Lummel flour specification moisture is too low to be swapped into your formula without other changes to manage moisture.
- c) The Lummel flour specification moisture is under the maximum limit needed for your process, but it is unclear if the lower limit will be acceptable without further discussion with the vendor.
- d) The Lummel flour specification moisture is above the lower limit needed for your process, but it is unclear if the upper limit will be acceptable without further discussion with the vendor.
- e) There is insufficient data contained within these specifications to draw this conclusion.

QUESTION #3

To qualify Lummel flour as a viable alternate for a current product, all specification criteria must be compliant with current packaging graphics for finished goods for the Pretzel Tiny Twists.

Identify the correct statement below:

- A) The Lummel flour specification is an unacceptable substitute due to cross-contamination risk from other products manufactured within the Leesburg, KS facility.
- B) The Lummel flour specification can be considered as a substitute ingredient as the allergen declaration of WHEAT FLOUR is consistent with the current Pretzel Tiny Twists ingredient statement.
- C) There is not enough information contained in these two documents to proceed with current graphics.
- D) The allergen statement will need to change on the finished package graphics from Wheat Flour to Gluten if the Lummel flour is substituted in the Pretzel Tiny Twists.
- E) The Bad Axe Snacks Company does not need to label any allergens based on the spec documents provided.

QUESTION #4

A key consideration in your ability to utilize ingredients in your manufacturing process is the physical handling of the inbound packaged material in your process.

Based on the specification requirements of your current process at the Bad Axe Snacks Company factory for wheat flour used in baked snacks and the packaging for the new ingredient from Lummel, which of the following statements is true:

- A) The Bad Axe Snacks Company is capable of handling any type of inbound packaging for Wheat Flour and this new ingredient is ACCEPTABLE.
- B) The Bad Axe Snacks Company is able to handle 20kg bags of flour in the Salty Snacks manufacturing process and the Lummel ingredient can be shipped in this way so the new ingredient is an ACCEPTABLE option for your project.
- C) The Bad Axe Snacks Company dispenses product from a supersack with a 900-1100 lb. range preference. The Lummel ingredient can be shipped this way so the new ingredient is an ACCEPTABLE option for your project.
- D) The Bad Axe Snacks Company dispenses product from a supersack with a 900-1100 lb. range preference. The Lummel ingredient is only shipped in 20kg bags so the ingredient from Lummel is NOT AN ACCEPTABLE choice for your project.
- E) The Bad Axe Snacks Company dispenses product from a supersack and the Lummel ingredient only ships in tanker trucks with piped unloading capability. Based on this requirement, the Lummel ingredient is NOT AN ACCPETABLE choice for your project.

QUESTION #5

After Pretzel Tiny Twists are baked, they are packaged in bags and jars for sale to your consumers. The nutrition facts and net weight of the finished product are calculated based on the product bulk density. To validate the Lummel ingredient will produce consistent finished product, your project team conducted a series of trials to assess the variability of the ingredient.

The following information was collected from your 3 trials:

Bulk Density Analysis			
	Beginning	Middle	End
Trial Run #1	30.1	30.2	29.8
Trial Run #2	29.8	28.6	27.4
Trial Run #3	30.9	31.5	32.5

Based on this data, select the correct statement:

- A) There is a wider variation of bulk density than your finished product spec allows and
- B) The bulk density of your product is consistently within the finished product specification limits.
- C) The bulk density of your product is consistently outside of the finished product specification limits.
- D) There is insufficient data available to determine the impact of this ingredient change on bulk density.
- E) Bulk Density is not specified and is not a critical success factor to this project.

Bad Axe Snacks Company

Document Number: SPEC_04301 Revision: 5
Owners: BASC-BU-MaterialDev-DocOwner
Alternate Number: 1237669
Title: SP: ING 1237669 Flour, Soft SS
Effective Date: 6/27/2023
Review Date: 6/27/2024

BAKED PLATFORM: Salty Snacks

DESCRIPTION: Unbleached soft wheat flour. Must be free flowing and free of clumps. Each lot shall be of uniform color, composition, and texture. Consists principally of wheat flour together with fine particles of wheat bran, wheat germ, and the offal from the "tail of the mill". This product must be obtained in the usual process of commercial milling and must contain not more than 1.5% crude fiber. Test Weight: 30 - 42 lb./cu. Ft. Texture: Fine ground, free flowing. Free of weeds, seeds, and chaff.

SOURCING REQUIREMENTS:

Geography: N/A
Natural: Yes
Non GMO: Not Determined
Grain Free: No
Other: N/A

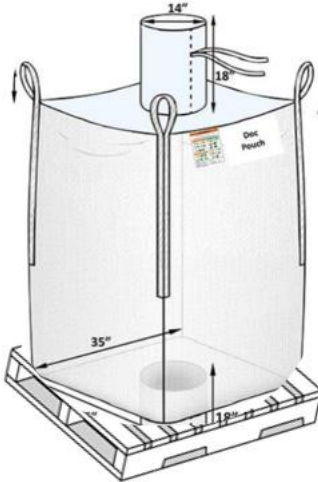
MATERIAL NAME: Flour, Soft, SS

LABELING FOR INGREDIENT DECLARATION/ALLERGEN DECLARATION: Wheat Flour

SHELF LIFE: Shelf life is 6-months from the date of manufacture. However, no product shall be shipped that is older than 4 months from the date of manufacture. This will allow for 2-months product storage.

SPECIFICATION DOCUMENT #1 – BAD AXE SNACKS COMPANY FLOUR INGREDIENT SPECIFICATION

PACKAGING: Supersacks on GMA standard 4-way pallets shall be used, containing 900-1100 kg of product based on handling equipment. Supersacks must be properly palletized, allowing minimal overhang. Wire bag ties or metal staples and seals are not allowed.



RECEIVING AND STORAGE:

- Bad Axe Snacks Company personnel will verify seals are intact and match Bill of Lading.
- Purchase order number on invoice and bills of lading.
- Maximum shelf life is 6-months from date of manufacture.
- Verify Bill of Lading (BoL), Certificate of Analysis (COA) and/or Certificate of Conformance (COC) as indicated in table below.

SPECIFICATION DOCUMENT #1 – BAD AXE SNACKS COMPANY FLOUR INGREDIENT SPECIFICATION

EVALUATION & REJECT CRITERIA

Parameter / Characteristic	Bill of Lading Analysis Parameters	Plant Test	Minimum	Target	Maximum	Mandatory Reject Criteria (Action)	Analysis Method
Bill of Lading (BoL)	Yes	BoL	N/A	N/A	N/A	No BoL. Please refer to Labeling and Documentation.	N/A
Acceptable Material Age from DOM for	Yes	BoL	N/A	N/A	4	> 4	N/A
Protein (%)	No	Yes	7.0	N/A	11.5	< 7.0 or > 11.5	AOAC 990.03
Moisture (%)	No	Yes	N/A	13.0	14.5	> 14.5	AOAC 930.15
Ash (%)	No	Yes	N/A	0.6	1.5	> 1.5	AOAC 942.05
Vomitoxin (ppm)	No	Yes	N/A	N/A	2.0	> 2.0	ELISA
Color	No	Yes	N/A	Off white. Typical of ground wheat	N/A	Off color	Visual
Odor	No	Yes	N/A	Cereal like	N/A	Musty, moldy, sour, or other objectionable odors	Organoleptic
Screen Standard: Minimum % thru U.S. # 100	No	Yes	99.0	N/A	N/A	N/A	Texture/Granulation
Foreign Material (FM)	No	Yes	N/A	None	N/A	Please refer to Foreign Materials and Impurities	Visual
Infestation (Live)	No	Yes	None	None	None	Any	Visual
Infestation (Dead)	No	Yes	None	None	3/300g	> 3/300g	Visual

ADDITIONAL MATEIRAL REQUIREMENTS

<u>Parameter / Characteristic</u>	<u>Minimum</u>	<u>Target</u>	<u>Maximum</u>	<u>Analysis Method</u>
Aflatoxin (ppb) *	—	—	20	US-Multitoxin LCMSMS SOP023
Fumonisin (ppm) *	—	—	10	US-Multitoxin LCMSMS SOP023
Ochratoxin (ppb) *	—	—	50	US-Multitoxin LCMSMS SOP023
T2/HT2 (ppb)*	—	—	100	US-Multitoxin LCMSMS SOP023
Zearalenone (ppb)*	—	—	400	US-Multitoxin LCMSMS SOP023
Fiber (%)**	—	1.5	2.0	AOAC 978.10

SPECIFICATION DOCUMENT #1 – BAD AXE SNACKS COMPANY FLOUR INGREDIENT SPECIFICATION

*Tests will be performed by Bad Axe Snacks Company per annual crop screening process and as required. Bad Axe Snacks Company may evaluate and reject material against more restrictive limits to ensure safe finished products.

**Test will be performed as needed

LABELING AND DOCUMENTATION:

Failure to provide information as requested will cause delay and potential rejections.

BoL should contain all of the following information:

- Purchase order number
- Material name and number
- Supplier name
- Temperature controls for this specification
- Net weight/unit
- Bulk Tote label information

STORAGE AND TRANSPORTATION

Carrier shall ensure that temperature control units are properly operating and maintained at all times. Transporting vehicles, packaging, materials or containers shall not impart off-odors or off-flavors nor expose the material to adulteration, chemical residues, infestation, unsanitary conditions, water damage or extremes of heat, cold and relative humidity

FOREIGN MATERIALS AND IMPURITIES

Supplier must have a foreign materials control program in place. The product shall not contain any level of contaminate that may be harmful, injurious or poisonous to humans. Product must be free of plastic, rubber, stones, metal, glass, wood and any other foreign material which would adulterate the product and/or represent a potential health hazard. Pollutant residues and environmental chemicals (e.g., pesticides, heavy metals, and dioxin) must not exceed limits defined in relevant International, EU or National legislation. The facilities and equipment shall be maintained in a manner and condition to minimize the potential of the inclusion of industrial chemicals (e.g. hydraulic fluid, lubricants or foreign material) into the product. The systematic use of metal detectors and/or magnets and screens, along with formal GMPs, SOPs, and pre-requisite programs are recommended to facilitate the prevention of such inclusions. If metal detection is used, the system must

SPECIFICATION DOCUMENT #1 – BAD AXE SNACKS COMPANY FLOUR INGREDIENT SPECIFICATION

be properly calibrated to detect at minimum: ferrous metal at 5.0 mm (2.5 mm is preferred) and non-ferrous metal at 3.0 mm, or to the machine's highest detection capability. Any evidence of intentional economic adulteration through the use of a chemical additive (e.g. melamine) will result in the immediate suspension of supply from the facility and potential regulatory involvement.

SPECIFICATION #2 – LUMMEL WHEAT FLOUR INGREDIENT SPECIFICATION

PRODUCT SPECIFICATION

ISSUE DATE: April 12, 2023

Replaces:

Prepared by: QA Department

Lummel



Service, Quality, Consistency - Leesburg, KS

PRODUCT: 1263227 Soft Flour

STANDARD TREATMENT: None

ALLERGENS: Wheat

Product Description:

Produced from cleaned and tempered soft red wheat of sound quality. It is sifted, entoleted and free from undesirable flavors or aromas.

FDA STATUS

This product is produced in the flour mill in accordance with 21 C.F.R. Part 117, Subpart B Current Good Manufacturing Practices according to the Food Safety Modernization Act of 2011.

SPECIFICATIONS subject to Crop year

PHYSICAL & CHEMICAL

LIMITS

METHOD

% MOISTURE

14.0 Max.

AACC 44-16.01

% PROTEIN

10.0-13.0

AACC 46-30.01

% ASH

.90-1.2

AACC 08-02.01

EXTRANEOUS MATTER

Program specifications available upon request.

STORAGE CONDITIONS

70°F and 40% relative humidity. Product stored at conditions with higher temperatures and/or relative humidity may see product quality deterioration sooner than the listed shelf-life.

SHELF LIFE

Three hundred sixty-five days when stored at the above conditions.

LOT CODING SYSTEM

A six digit number comprised of the last two digits of the year, the two digit month of the year and two digits for the day of the month. A two-digit extension indicates the order the load that day (Ex: 230122-09 = the ninth load on January 22, 2023). The reference day corresponds to the day the product is transferred to a packer or bulk loadout bin.

SPECIFICATION #2 – LUMMEL WHEAT FLOUR INGREDIENT SPECIFICATION

LABEL DECLARATION

Wheat Flour

ALLERGEN STATEMENT

The Lummel Company processes only wheat at the Leesburg, KS facility. Wheat and its by-products are considered allergens. Likewise, gluten, a wheat protein derivative, is also considered an allergen. We do not process, distribute, nor handle any allergens other than wheat at this facility.

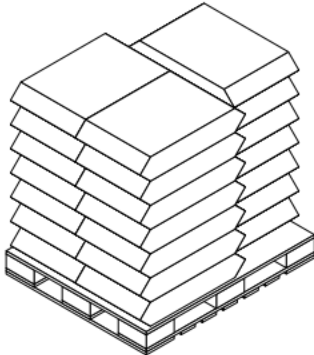
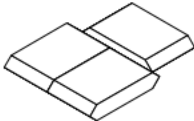
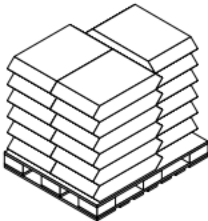
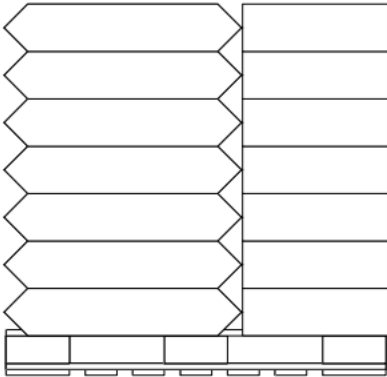
MICROBIOLOGICAL STATEMENT

Because this product is milled from raw agricultural products, NO microbiological parameters are included in the product specification.

FINISHED PRODUCT PACKAGING

Product will be delivered in 20kg bags, palletized on a CHEP pallet 3 bags/layer, 9 layers high for 27 bags per pallet. (See attachment #1-A)

THIS PRODUCT IS NOT INTENDED AS READY TO EAT AND REQUIRES FURTHER PROCESSING.

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**SPECIFICATION DOCUMENT #3 – BAD AXE SNACKS COMPANY PRETZEL TINY TWISTS
FINISHED PRODUCT SPECIFICATION**

BAD AXE SNACKS COMPANY

**Finished Product Specification No
45078**

Pretzel Tiny Twists



Description:

Bad Axe Snacks tiny twists pretzels are a crispy, salty snack for consumption or to be used as an ingredient in snack mixes. These pretzels can be packaged in individual bags or multi serve containers.

- Bulk Density: 29.2-31.66 lb/cu ft
- Material Description: Pretzel Tiny Twists
- Material SUPC: 89098678
- Brand: Bad Axe Snacks

Ingredients:

Wheat Flour, Salt, Corn Oil, Corn Syrup, Ammonium Bicarbonate, Malt Extract and Yeast. Contains: Wheat Flour

Nutrition Facts	
Serving Size about 17 pretzels (28g) (28 grams)	
Amount Per Serving	
Calories	110
% Daily Value*	
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 450mg	20%
Total Carbohydrate 23g	8%
Dietary Fiber less than 1g	4%
Total Sugars 1g	
Includes 1g Added Sugars	2%
Protein 2g	
Vitamin D NA	NA%
Calcium 10mg	0%
Iron 1.20mg	6%
Potassium 80mg	2%
The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	
Kosher	Yes
Gluten Free	NA
Halal	NA
Vegetarian	NA
Vegan	NA
Without beef	NA
Without pork	NA
Organic	NA
Dietetic	NA
Diabetic	NA
School Meal Equivalents	
Product Formulation Statement	No
Child Nutrition	No

The supplier/manufacturer of this product has not provided a value for the fields displayed as NA.