

## **SECTION C**

This document covers wet pack fruit in a flexible pouch for use by the Department of Defense as a component of operational rations.

### **C-1 ITEM DESCRIPTION**

#### **PCR-F-002C FRUITS, WET PACK, PACKAGED IN A FLEXIBLE POUCH, SHELF STABLE**

##### Types and Packages.

###### Types.

- Type I - Applesauce, natural color and flavor, sweetened, regular style
- Type II - Pineapple, sweetened, tidbits or chunks
- Type III - Peaches, sweetened, sliced or diced
- Type IV - Pears, sweetened, sliced or diced
- Type V - Mixed fruit, sweetened
- Type VI - Applesauce, with raspberry puree, sweetened, regular style
- Type VII - Applesauce, carbohydrate enhanced, sweetened, regular style
- Type VIII - Applesauce, with mango and peach puree, sweetened, regular style
- Type IX - Applesauce, carbohydrate enhanced, sweetened, regular style, cinnamon

###### Packages.

- Package C - Meal, Ready-to-Eat™ (MRE™)
- Package J - First Strike Ration® (FSR®)

### **C-2 PERFORMANCE REQUIREMENTS**

A. Product standard. A sample shall be subjected to first article (FA) or product demonstration model (PDM) inspection as applicable, in accordance with the tests and inspections of Section E of this Performance-based Contract Requirements (PCR) document. The approved sample shall serve as the product standard. Should the contractor at any time plan to, or actually produce the product using different raw material or process methodologies from the approved product standard, which result in a product non comparable to the product standard, the contractor shall submit a replacement FA or PDM

for approval. In any event, all product produced must meet all requirements of this document including Product Standard comparability.

B. Commercial sterility. The packaged food shall be processed until commercially sterile.

C. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80°F.

D. Appearance.

(1) General. The finished product shall be free from foreign materials.

(2) Grade standards. The grade standards for types I, II, III, IV, V, and VII include appearance, flavor and finish (texture) requirements. For types III and V, the finished product shall be practically free from pit(s) or portion(s) thereof.

a. Type I. Applesauce shall be U.S. Grade A of the U.S. Standards for Grades of Canned Applesauce.

b. Type II. Pineapple shall be U.S. Grade B or better of the U.S. Standards for Grades of Canned Pineapple.

c. Type III. Peaches shall be U.S. Grade B or better of the U.S. Standards for Grades of Canned Clingstone Peaches.

d. Type IV. Pears shall be U.S. Grade B or better of the U.S. Standards for Grades of Canned Pears.

e. Type V. Mixed fruit shall meet or exceed the odor, flavor, clearness of liquid media, color, and uniformity of size requirements for U.S. Grade B of the U.S. Standards for Grades of Canned Fruit Cocktail. The character shall meet or exceed the requirements for U.S. Grade B of the U.S. Standards for Grades of Canned Fruit Cocktail, except for the peaches component. The peach component shall contain not greater than 40 percent, by weight, of excessively frayed or mushy peaches.

f. Type VI. The applesauce shall be produced from U.S. Grade A applesauce and shall contain raspberry puree. The raspberry applesauce shall have a reddish to reddish purple color.

g. Type VII. The applesauce shall be produced from U.S. Grade A applesauce.

h. Type VIII. The applesauce shall be produced from U.S. Grade A applesauce and shall contain mango and peach purees. The mango peach applesauce shall have a medium golden orange color.

i. Type IX. The applesauce shall be produced from U.S. Grade A applesauce and shall contain cinnamon. The cinnamon applesauce shall have a medium brown color with ground cinnamon throughout.

E. Odor and flavor.

(1) General. The packaged food shall be free from foreign odors and flavors.

(2) Type VI. Applesauce shall be sweetened applesauce with a moderate to strong odor and flavor of raspberry puree.

(3) Type VIII. Applesauce shall be sweetened applesauce with a moderate odor and flavor of mango and peach.

(4) Type IX. Applesauce shall be sweetened applesauce with a moderate to strong odor and flavor of cinnamon.

F. Texture.

(1) Types VI and VIII. Applesauce shall have a smooth, fine pulp.

(2) Type IX. Applesauce shall have a smooth, fine pulp, with no undissolved particles.

G. Net weight. The average net weight shall be not less than 4.5 ounces (128 grams). The net weight of an individual pouch shall be not less than 4.0 ounces (113 grams).

H. Drained weight (not applicable to all types of applesauce). The average drained weight shall be not less than 3.5 ounces (99 grams). The drained weight in an individual pouch shall be not less than 3.0 ounces (85 grams).

I. Palatability and overall appearance. The finished product shall be equal to or better than the approved product standard in palatability and overall appearance.

J. Analytical requirements.

(1) pH. The pH of applesauce shall be less than 4.00. The pH of pineapple, peaches, pears, and mixed fruit shall be 3.85 to 4.15.

(2) Brix (not applicable to types VI and VIII applesauce). The pineapple, peaches, pears, and mixed fruits shall be not less than 18° and not more than 22° brix measurement. Type I applesauce shall meet brix requirements for U.S. Grade A as per U.S. Standards for Grades of Canned Applesauce. Type VII and IX applesauce shall be not less than 25° brix measurement.

(3) Ascorbic Acid. The ascorbic acid content of applesauce shall be 1500 – 2800 ppm. The ascorbic acid content of pineapple, peaches, pears, and mixed fruit shall be 200 – 1500 ppm.

(4) Carbohydrate content. The total carbohydrate content in the types VII and IX applesauce shall be not less than 25 percent and the complex carbohydrate content shall be not less than 9 percent.

**C-3 MISCELLANEOUS INFORMATION**

THE FOLLOWING IS INFORMATION ONLY TO PROVIDE THE BENEFIT OF PAST GOVERNMENT EXPERIENCE. THIS IS NOT A MANDATORY CONTRACT REQUIREMENT.

A. Type VI, VII and IX applesauce ingredients/formulation. Ingredients and formulation percentages for the types VI, VII and IX applesauce may be as follows:

<u>Type VI Applesauce</u>	
<u>Ingredient</u>	<u>Percent by weight</u>
Applesauce, sweetened, canned	84.0
Raspberry puree	16.0

Type VII Applesauce

<u>Ingredient</u>	<u>Percent by weight</u>
Applesauce, unsweetened, canned	86.0
Maltodextrin 580 <u>1/</u>	9.0
Sucrose	5.0

Type IX Applesauce

<u>Ingredient</u>	<u>Percent by weight</u>
Applesauce, unsweetened, canned	85.4
Maltodextrin 580 <u>1/</u>	9.0
Sucrose	5.0
Cinnamon	0.6

1/ Maltrin 580 from Grain Processing Corporation, 1600 Oregon St., Muscatine, IA 52761-1494, USA

B. Type VIII applesauce ingredients. Applesauce (apples, sugar, water, ascorbic acid (Vitamin C)), mango puree, peach puree, sugar, and ascorbic acid.

**SECTION D**

**D-1 PACKAGING**

Product shall be filled into pouches and each pouch shall be packed in a carton in accordance with MIL-PRF-44073, Packaging of Food in Flexible Pouches. Applesauce shall be packaged in a side or center spout pouch without a carton.

**D-2 LABELING**

A. Pouches (except applesauce). Each pouch shall be correctly and legibly labeled. Printing ink shall be permanent black ink or any other contrasting color, which is free of carcinogenic elements. Prior to thermal processing of the pouches, the product name, lot number, filling equipment number and time stamp shall be applied. All other marking may be applied before or after thermal processing.

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(1) Product name (not less than 1/8 inch high). Commonly used abbreviations may be used.

(2) Pouch code includes: 1/

Lot Number

Filling equipment identification number

Company code

Retort identification number and Retort cook number (Optional)

Time stamp (hour and minute of filling/sealing operation)

1/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 14 February 2011 would be coded as 1045). The Julian code shall represent the day the product was packaged into the pouch and processed. Following the four digit Julian code, the other required code information shall be printed in the sequence as listed above.

NOTE: Commercial pouch graphics (colors, design and labeling) shall be submitted to the Contracting Officer for review and approval and to the US Army Natick Soldier Research, Development and Engineering Center (RDNS-CFF) for review.

B. Spout pouches. Each pouch shall be correctly and legibly labeled. Printing ink shall be permanent black ink or any other contrasting color, which is free of carcinogenic elements. Prior to thermal processing of the pouches, the product name, lot number, filling equipment number and time stamp shall be applied. All other marking may be applied before or after thermal processing. For Types VII and IX, the label shall be as shown in figure 1 and figure 2 respectively.

(1) Product name (not less than 1/8 inch high). Commonly used abbreviations may be used.

(2) Pouch code includes: 1/

Lot Number  
Filling equipment identification number  
Company code  
Retort identification number and Retort cook number (Optional)  
Time stamp (hour and minute of filling/sealing operation)

1/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 14 February 2011 would be coded as 1045). The Julian code shall represent the day the product was packaged into the pouch and processed. Following the four digit Julian code, the other required code information shall be printed in the sequence as listed above.

The pouches shall also be labeled with:

Product name (7/32 to 9/32 inch block letters)  
Ingredients  
Net weight  
Name and address of packer  
“Nutrition Facts” label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA regulations

NOTE: Commercial pouch graphics (colors, design and labeling) shall be submitted to the Contracting Officer for review and approval and to the US Army Natick Soldier Research, Development and Engineering Center (RDNS-CFF) for review.

C. Cartons.

(1) The cartons shall be clearly printed on one of the largest panels with permanent black ink as follows:

Product name (7/32 to 9/32 inch block letters)  
Ingredients  
Net weight  
Name and address of packer  
Code (same as pouch code, see pouches) 1/ 2/ 3/  
“Nutrition Facts” label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA regulations

1/ Code may be ink printed on any outside carton panel. Code may be embossed on any outside carton panel except the largest panels of the carton.

2/ Company code not required in carton code.

3/ Cartons shall be time stamped with the hour and minute that the pouch is sealed into the carton. (Cartons are not expected to bear same time stamp as pouch). Alternatively, the optional Retort identification number and Retort cook number shall be used.

(2) The MRE<sup>TM</sup> Post Card label shall be printed on the product cartons large panel opposite to the panel printed with the data in D-2,B(1) above. The information, provided by the contracting officer, shall be clearly printed with permanent black ink in an area no smaller than 3-3/4 inches by 5-3/4 inches.

(3) The product shall be formulated and labeled in accordance with all FDA labeling regulations and policies. The cartons or pouches shall be labeled with the following product names, as applicable.



<u>Types</u>	<u>Product Name</u>
I	APPLESAUCE
II	PINEAPPLE
III	PEACHES
IV	PEARS
V	MIXED FRUIT
VI	APPLESAUCE WITH RASPBERRY PUREE
VII	APPLESAUCE ENHANCED WITH MALTODEXTRIN
VIII	MANGO PEACH APPLESauce
IX	CINNAMON APPLESauce ENHANCED WITH MALTODEXTRIN

### **D-3 PACKING**

A. Packing. Not more than 40 pounds of pouches in cartons shall be packed in a fiberboard shipping box constructed in accordance with style RSC of ASTM D 5118/D 5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. Not more than 40 pounds of pouches shall be packed in a fiberboard shipping box constructed in accordance with style RSC-L of ASTM D 5118/D 5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, grade 200 of ASTM D 4727/D 4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Each box shall be closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

### **D-5 MARKING**

A. Shipping containers. Shipping containers shall be marked in accordance with DSCP FORM 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence.

## **SECTION E INSPECTION AND ACCEPTANCE**

The following quality assurance criteria, utilizing ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, single sampling plans indicated in ANSI/ASQ Z1.4 will be utilized. When required, the manufacturer shall

provide the Certificate(s) of Conformance to the appropriate inspection activity. Certificate(s) of Conformance not provided shall be cause for rejection of the lot.

A. Definitions.

(1) Critical defect. A critical defect is a defect that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the item; or a defect that judgment and experience indicate is likely to prevent the performance of the major end item, i.e., the consumption of the ration.

(2) Major defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

(3) Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

B. Classification of inspections. The inspection requirements specified herein are classified as follows:

(1) Product standard inspection. The first article or product demonstration model shall be inspected in accordance with the provisions of this document and evaluated for overall appearance and palatability. Any failure to conform to the performance requirements or any appearance or palatability failure, shall be cause for rejection of the lot. The approved first article or product demonstration model shall be used as the product standard for periodic review evaluations. All food components that are inspected by the USDA shall be subject to periodic review sampling and evaluation. The USDA shall select sample units during production of contracts and submit them to the following address for evaluation:

US Army Research, Development and Engineering Command  
Natick Soldier Research, Development and Engineering Center  
RDNS-CFF  
15 Kansas Street  
Natick, MA 01760-5056

One lot shall be randomly selected during each calendar month of production. Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six (6) sample units shall be shipped to Natick within five working days from the end of the production month and upon completion of all USDA inspection requirements. The sample

units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality.

(2) Conformance inspection. Conformance inspection shall include the examinations/tests and methods of inspection cited in this section and in Section 4 of MIL-PRF-44073.

**E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)**

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Performance-based Contract Requirements document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in pouches. The sample unit shall be the contents of one pouch. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 4.0 for minor defects. Defects and defect classifications are listed in table I.

TABLE I. Product defects 1/ 2/ 3/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u>
101		Not fruit, wet pack type as specified on pouch label.
102		Type III peaches or type V mixed fruit not free from pit(s) or portion(s) thereof. <u>4/</u>
103		Type VI applesauce with raspberry puree not reddish to reddish purple color.
104		Type VIII mango peach applesauce not medium golden orange color.
105		Type IX cinnamon applesauce not medium brown color with ground cinnamon throughout.
		<u>Odor and flavor</u>
106		Type VI not typical of canned, sweetened applesauce with a moderate to strong odor or flavor of raspberry puree.

TABLE I. Product defects 1/ 2/ 3/ - Continued

<u>Category</u>		<u>Defect</u>
<u>Major</u>	<u>Minor</u>	
107		Type VIII not typical of canned, sweetened applesauce with a moderate odor or flavor of mango and peach.
108		Type IX not typical of canned, sweetened applesauce with a moderate to strong odor and flavor of cinnamon.
		<u>Texture</u>
	201	Type V peach component greater than 40 percent, by weight, excessively frayed or mushy peaches.
	202	Types VI and VIII not smooth or not a fine pulp.
	203	Type IX not smooth or not a fine pulp or has undissolved particles.
		<u>Net weight</u>
	204	Net weight of an individual pouch less than 4.0 ounces (113 grams). <u>5/</u>
		<u>Drained weight</u>
	205	Drained weight of fruit in an individual pouch less than 3.0 ounces (85 grams). <u>6/</u>

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, glass, wood, or metal, or any foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, stale, musty or moldy shall be cause for rejection of the lot.

2/ Finished product not equal to or better than the approved product standard in palatability and overall appearance shall be cause for rejection of the lot.

3/ Failure to meet the grade requirement shall be cause for rejection of the lot, except on the character requirement for peaches component in type V.

4/ For types III and V, presence of any sharp pit material, whole pit or piece of pit material measuring more than 3/8 inch in any dimension shall be cause for rejection of the lot.

5/ Sample average net weight less than 4.5 ounces (128 grams) shall be cause for rejection of the lot.

6/ Sample average drained weight (types II, III, IV, and V) less than 3.5 ounces (99 grams) shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with FDA regulations.

(2) Shelf life. The contractor shall provide a Certificate of Conformance that the product has a 36 month shelf life when stored at 80°F. Government verification may include storage for 6 months at 100°F or 36 months at 80°F. Upon completion of either storage period, the product will be subjected to a sensory evaluation panel for appearance and palatability and must receive an overall score of 5 or higher based on a 9 point hedonic scale to be considered acceptable.

(3) Net weight. The net weight of the filled and sealed pouches shall be determined by weighing each sample unit on a suitable scale tared with a representative empty pouch. Results shall be reported to the nearest 0.1 ounce or to the nearest 1 gram.

(4) Drained weight. The drained weight shall be determined in accordance with the drained weight method described in the applicable U.S. Standards for Grades. The drained weight shall be reported to the nearest 0.1 ounce or to the nearest 1 gram.

(5) pH testing. Three filled and sealed pouches shall be randomly selected from one production lot and prepared and analyzed for pH in accordance with the following method of the Official Methods of Analysis (OMA) of AOAC International.

<u>Test</u>	<u>Method Number</u>
pH	981.12

Test results shall be reported to the nearest 0.01. Government verification will be conducted through actual testing by a Government laboratory. Any individual result not conforming to the pH requirement shall be cause for rejection of the lot.

(6) Brix testing. Three filled and sealed pouches shall be randomly selected from one production lot and prepared and analyzed for density of the liquid packing media (degrees

brix) in accordance with the following method of the Official Methods of Analysis (OMA) of AOAC International.

<u>Test</u>	<u>Method Number</u>
Brix	932.14

Test results shall be reported to the nearest whole number. Government verification will be conducted through actual testing by a Government laboratory. Any individual result not conforming to the Brix requirement shall be cause for rejection of the lot. Brix requirements for type I Applesauce are in the U.S. Standards of Grades of Canned Applesauce.

(7) Ascorbic acid testing. Three filled and sealed pouches shall be selected at random from one production lot and individually tested for ascorbic acid with the method in Methods of Vitamin Assay of the Association of Vitamin Chemists, Incorporated: Vitamin A Carr Price Blue Colormetric Method and Ascorbic Acid 2,6 dichloroindophenol Photometric Method with the Loeffler and Ponting modification. Any individual pouch not conforming to the requirements of Section C of this Performance-based Contract Requirements document shall be cause for rejection of the lot.

(8) Carbohydrate content. The carbohydrate content of types VII and IX applesauce shall be verified by Certificate of Analysis. Product not meeting requirements of Section C of this Performance-based Contract Requirements document shall be cause for rejection of the lot.

**E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS)**

A. Packaging.

(1) Pouch material testing. The pouch material shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

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Characteristic	Lot size expressed in	Sample unit	Inspection level
Oxygen transmission rate	Yards	1/2 yard	S-1
Water vapor transmission rate	Yards	1/2 yard	S-1
Camouflage	Yards	1/2 yard	S-1
Thermal processing	Pouches	1 pouch	S-2
Low temperature	Pouches	1 pouch	S-2
High temperature	Pouches	1 pouch	S-2

(2) Filled and sealed pouch testing. The filled and sealed thermoprocessed or hot-fill processed pouches shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

Characteristic	Lot size expressed in	Sample unit	Inspection level
Residual gas volume	pouches	1 pouch	S-2
Internal pressure	pouches	1 pouch	S-2 <u>1/</u>
Directional tear, when applicable	pouches	1 pouch	S-2

1/ When a three-seal tester is used, a separate set of samples is required for testing of the closure seal.

(3) Examination of pouch and carton assembly. When applicable, the completed pouch and carton assemblies shall be examined for the defects listed in table III of MIL-PRF-44073. The lot size shall be expressed in units of completed assemblies. The sample unit shall be one pouch and carton assembly. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects. Fifty sample pouch and carton assemblies shall be examined for critical defects. The finding of any critical defect shall be cause for rejection of the lot.

**B. Packing.**

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table II. The lot size shall be expressed in shipping containers. The sample unit shall be one shipping container fully packed. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 10.0 for total defects.

TABLE II. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking missing or incorrect or illegible.
102		Inadequate workmanship. <u>1/</u>
	201	More than 40 pounds of product.

1/ Inadequate workmanship is defined as, but not limited to, incomplete closure of container flaps, loose strapping, inadequate stapling, improper taping, or bulged or distorted container.

## **SECTION J REFERENCE DOCUMENTS**

Unless otherwise specified, the issues of these documents are those active on the date of the solicitation or contract.

### DSCP FORMS

DSCP FORM 3556    Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence

### MILITARY SPECIFICATIONS

MIL-PRF-44073    Packaging of Food in Flexible Pouches

### GOVERNMENT PUBLICATIONS

#### U.S. STANDARDS FOR GRADES

U.S. Standards for Grades of Canned Applesauce  
U.S. Standards for Grades of Canned Pineapple  
U.S. Standards for Grades of Canned Clingstone Peaches  
U.S. Standards for Grades of Canned Pears  
U.S. Standards for Grades of Canned Fruit Cocktail



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NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ) [www.asq.org](http://www.asq.org)

ANSI/ASQ Z1.4                      Sampling Procedures and Tables for Inspection by  
Attributes

ASTM INTERNATIONAL [www.astm.org](http://www.astm.org)

D 1974                                      Standard Practice for Methods of Closing, Sealing, and  
Reinforcing Fiberboard Boxes

D 4727/ D 4727M                      Standard Specification for Corrugated and Solid  
Fiberboard Sheet Stock (Container Grade) and Cut  
Shapes

D 5118/D 5118M                      Standard Practice for Fabrication of Fiberboard  
Shipping Boxes

AOAC INTERNATIONAL [www.aoac.org](http://www.aoac.org)

Official Methods of Analysis (OMA) of the AOAC International

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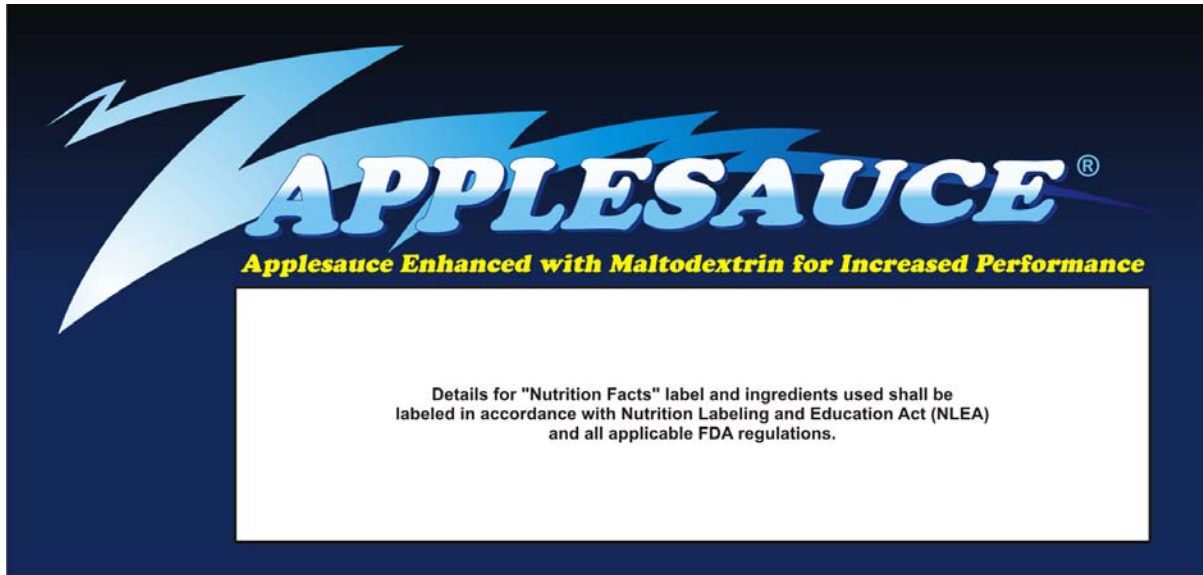


Figure 1

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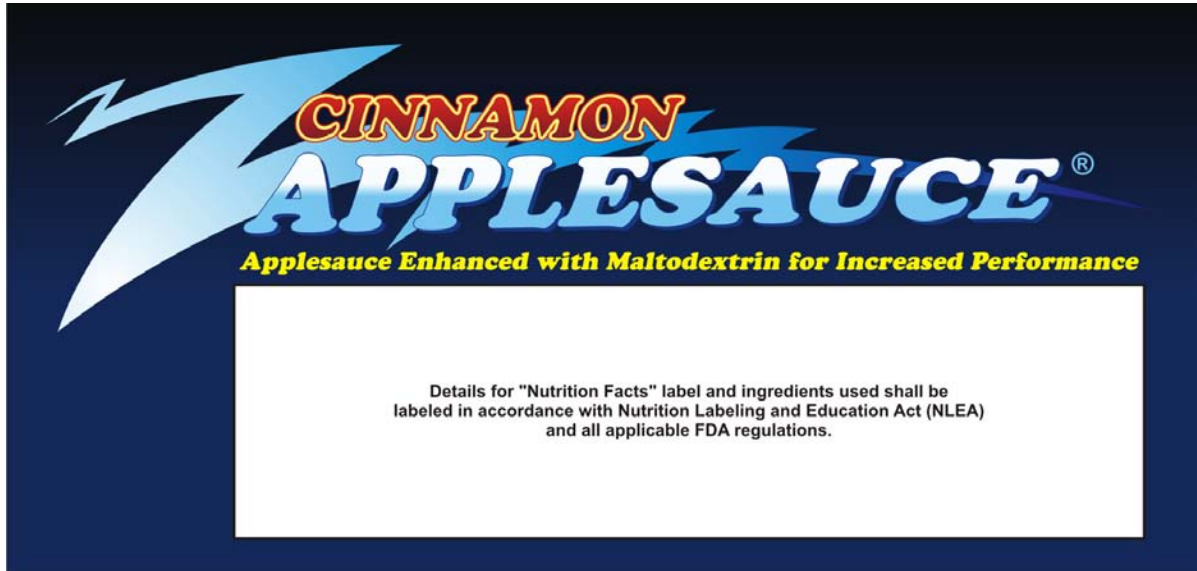


Figure 2