

MIL-P-35029C
15 June 1977
SUPERSEDING
MIL-P-35029B
26 March 1968

MILITARY SPECIFICATION

PIE FILLING, FRUIT, PREPARED

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for prepared fruit pie fillings for use by the Department of Defense as items of general issue.

1.2 Classification. Prepared fruit pie fillings shall be made from the following kinds of fruit, as specified (see 6.1):

Apple
Apricot
Blueberry
Cherry
Peach
Pineapple

2. APPLICABLE DOCUMENTS

- * 2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

- | | |
|----------|---|
| TT-C-495 | - Coatings, Exterior, For Tinned Food Cans. |
| PPP-C-29 | - Canned Subsistence Items, Packaging And Packing Of. |
| PPP-C-96 | - Cans, Metal, 28 Gage and Lighter. |

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Natick Research and Development Command, ATTN: DRXNM-TDS, Natick, MA 01760 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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- MIL-L-1497 - Labeling of Metal Cans for Subsistence Items.
- MIL-L-35078 - Loads, Unit: Preparation of Nonperishable Subsistence.

STANDARDS

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-668 - Sanitary Standards for Food Plants.

(Copies of specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

LAWS AND REGULATIONS

US DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Federal Food, Drug, and Cosmetic Act and Regulations Promulgated Thereunder.

(Application for copies should be addressed to the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402).

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

NATIONAL RESEARCH COUNCIL

Food Chemicals Codex (F.C.C.)

(Application for copies should be addressed to the Office of Director, National Academy of Sciences, National Research Council, Washington, DC 20418.)

3. REQUIREMENTS

3.1 Materials.

- * 3.1.1 Fruits. The product shall be prepared from clean, sound, mature, properly prepared fresh, frozen, or canned fruit, or a combination thereof. Dried or dehydrated fruit shall not be used, except in the case of apples. Fresh, frozen, or canned fruit and dehydrated or dried apples shall not be prepared by the use of sulfur dioxide or compounds which yield sulfur dioxide. In addition, fruits shall conform to the following varieties and styles for the respective kind of fruit used:

<u>Kind of fruit</u>	<u>Varieties</u>	<u>Styles</u>
Apple	Winter (suitable for processing)	Slices
Apricot	Tilton, Blenheim, Modesto, Royal	Halves
Blueberry	Cultivated or Wild	Whole
Cherry	Montmorency (Red Tart) pitted	Whole
Peach	Yellow-fleshed Freestone or Clingstone (Amber Gem, Baby Gold or Similar Varieties suitable for processing)	Slices or Strips
Pineapple	Hawaiian or Puerto Rican	Tidbits, cubes or crushed

3.1.2 Sweetening ingredients. Sweetening ingredients shall be any one or more safe and suitable nutritive carbohydrate sweeteners in such proportions as will result in a finished product meeting the requirements of 3.3.

3.1.3 Thickening ingredients. Thickening ingredients shall be starch in various forms and modifications, pectin, Irish moss extractives, or cellulose gums approved by the Federal Food and Drug Administration, or a combination of these ingredients. All of the thickening ingredients used shall be of such quality as is normally used in the trade, and shall be used in such proportion as to result in maximum shelf life and meet the requirements of 3.3.

- * 3.1.4 Optional ingredients. The ingredients specified in 3.1.4.1 through 3.1.4.6 may be used.

3.1.4.1 Lemon juice. Lemon juice shall be produced from fresh, sound, ripe, and thoroughly cleansed fruit of the species Citrus limon (Limonia). Such lemon juice may be fresh or frozen, fresh concentrated or frozen concentrated.

- * 3.1.4.2 Citrates. Citric acid or sodium citrate shall meet the requirements of the Food Chemicals Codex.

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3.1.4.3 Fruit essence. Fruit essence shall be recovered from vapors of natural fruits and shall be true to name.

3.1.4.4 Coloring. Coloring shall be of vegetable origin or US certified food coloring.

3.1.4.5 Seasonings. Seasoning shall be of such quality and shall be used in such quantity as is normally used in the trade.

* 3.1.4.6 Chemical preservatives. Chemical preservatives shall be of the types and quantities approved by the Food and Drug Administration.

3.2 Processing. The product shall be prepared by mixing fruit, sweetening ingredients, thickening agents, and potable water together with one or more of the optional ingredients, if used, in such quantities as to meet the requirements of 3.3 and to result in an acceptable pie. The product shall be heated for such time and temperature as will assure adequate preservation in hermetically-sealed containers, but will not adversely affect the product. After processing, the cans shall be cooled as rapidly as practicable to a temperature that inhibits further product change. The cans shall not be cased until the temperature of the center of the can is cooled to 100°F (38°C).

* 3.3 Finished product. The finished product shall have a color and flavor characteristic of the particular kind of fruit used and shall contain no free liquid. In addition, the product shall conform to the following respective requirements when tested in accordance with 4.4:

	Minimum soluble solids (degrees Brix)	pH not lower than	Minimum percent washed drained weight to net weight	Spreadometer range in cm after 1 min. at 72°F + 10°F (22°C + 5.5°C)
Apple	27.0	3.2	55.0	7.5 to 10.0
Apricot	31.0	3.3	41.0	8.5 to 11.5
Blueberry	27.0	3.2	29.0	8.5 to 11.5
Cherry	27.0	3.2	36.0	8.5 to 11.5
Peach	28.0	3.3	38.0	8.5 to 11.5
Pineapple	28.0	3.3	45.0	8.5 to 11.5

3.3.1 Washed drained fruits. The washed drained fruits shall comply with tables I through IX (see 4.3.3). All references to weight and percentage therein shall be construed to mean washed drained weights plus the defects remaining on the US Standard No. 20 sieve after straining of the aqueous portion.

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Table I. Allowable defects and acceptable characteristics for apples.

Defects						
Harmless extraneous material <u>2/</u>	Damaged units <u>1/</u>		Carpel tissue <u>4/</u>	Charac- ter and texture <u>5/</u>	Color	Piece size
	Total allow- ance includ- ing serious- ly damaged	Allowance for seriously damaged <u>3/</u>				
Not more than two pieces	Not more than 15 percent, by weight	Not more than 3 percent, by weight	Not more than 2 square inches (1290 mm ²)	Not more than 15 percent, by weight, that are markedly hard or mushy.	Typical of the var- iety or of the color produced by the addition of spices.	Fairly uni- form. Not less than 60 percent, by weight, whole or practically whole slices 3/4 inch (19 mm) in length or longer

- 1/ Slices with green peel exceeding, in the aggregate, the area of a circle 1/2 inch (13 mm) in diameter, or red peel exceeding, in the aggregate, the area of a circle 1/4 inch (6 mm) in diameter; slices with light brown bruises exceeding, in the aggregate, the area of a circle 1/2 inch (13 mm) in diameter or more than 1/4-inch (6 mm) deep; slices affected by blossom end material, dark brown bruises, other discoloration, pathological or insect injury to such degree as to materially affect their appearance or eating quality.
- 2/ Material such as a leaf, stem or portions thereof, and seeds.
- 3/ Slices affected by defects to such degree as to seriously affect their appearance or eating quality.
- 4/ Seed cell material.
- 5/ Mushy texture means slices or pieces that are a pulpy mass. Hard apple slices are those which have an objectionably firm texture.

* TABLE II. Allowable defects and acceptable characteristics (other than color) for apricots

Defects							
Blemishes <u>1/</u>							
Harmless extraneous material <u>3/</u>	Total allowance	Allowance for serious blemishes <u>2/</u>	Pit material <u>4/</u> and peel	Short stems <u>5/</u>	Crushed or broken units <u>6/</u>	Character	Uniformity of size and symmetry
Not more than one piece.	Not more than 20 percent, by count.	Not more than 10 percent, by count.	Not more than one pit or portions thereof per 50 halves. Not more than 3/4 square inch (484 mm ²) peel per fifty halves.	Not more than two short stems, by count.	Not more than 5 percent, by count.	Not less than 90 percent of the units shall possess a reasonable uniform, reasonably tender, and reasonably fleshy texture typical of properly ripened and properly processed canned apricots. The units shall be reasonably thick and may have variable tenderness ranging from soft to slightly firm, but shall not be mushy and may be slightly ragged.	Apricot halves shall be reasonably symmetrical, shall contain not more than 10 percent by count of units which have been cut at a distance greater than 1/4 inch (6 mm) from the suture, and shall be of such size that the weight of the largest full-size unit does not exceed the weight of the smallest full-size unit by more than 75 percent.

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- 1/ Minor blemishes include "freckles", light brown to brown surface areas which, singly or in combination on a unit, exceed, in the aggregate, the area of a circle 1/8 inch (3 mm) in diameter, but do not exceed, in the aggregate, the area of a circle 1/4 inch (6 mm) in diameter, or single dark brown surface areas that do not exceed the area of a circle of 1/8 inch (3 mm) in diameter, but which, singly or in combination with other minor blemishes on a unit, affect materially, but not seriously, the appearance of the unit. Light brown to brown surface areas and "freckles" that are insignificant and less than the area of a circle 1/8 inch (3 mm) in diameter and which do not affect materially the appearance of the unit are not considered defects.
- 2/ Serious blemishes include units affected by scab, hail injury, discoloration, light brown to brown surface areas, which singly or in combination on a unit exceed, in the aggregate, the area of a circle 1/4 inch (6 mm) in diameter, blemishes that extend into the fruit tissue regardless of area or depth, single dark brown surface areas that exceed the area of a circle 1/8 inch (3 mm) in diameter, or any other blemish which seriously affects the appearance of the unit, but is not a filthy or decomposed substance.
- 3/ Material such as a leaf or portion thereof or a large stem.
- 4/ An apricot pit or fragments thereof whose combined size does not exceed one pit.
- 5/ Short, thick, woody stems which attach the apricot to the twig of the tree or other stem material of equivalent woodiness and shortness.
- 6/ Crushed units are those that have definitely lost their normal shape and bear marks of crushing or are otherwise crushed not due to ripeness. Broken units are those that have been severed into definite parts, and portions equivalent to a full size unit shall be considered as one unit in determining percentage compliance by count.

TABLE III. Allowable defects and acceptable characteristics for color of apricots

Color	Pale yellow area	Light greenish yellow areas	Light green areas
No apricot halves may possess.		More than 1/2 unit	More than 1/4 unit.
Not more than 10 percent count of apricot halves may possess.	More than 1/2 unit	More than 1/4 but less than 1/2 unit.	Less than 1/4 unit.
Remaining apricot halves may possess.	Less than 1/2 unit	Less than 1/4 unit	None.

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* TABLE IV. Allowable defects and acceptable characteristics for blueberries

Defects					
<u>Harmless extraneous material</u>			Defective berries <u>4/</u>	Character	Color
Leaves and stems <u>1/</u>	Capstems <u>2/</u>	Clusters <u>3/</u>			
Not more than a combined total of four whole leaves and large stems.	Not more than 80 in wild berries or not more than 40 in cultivated berries.	Not more than 20 in wild berries or not more than 8 in cultivated berries.	Not more than 8 berries.	Not more than 15 percent, by weight, crushed, mushy, and broken berries of which not more than 5 percent, by weight, of the sample are mushy.	Typical dark blue-purple. Not off-color.

1/ Leaves and other portions of leafy material shall not exceed 3/4 square inch (484 mm²). A large stem is the branch-like stem larger than capstems.

2/ Small stems which attach berries to the branch, including capstems and joined double capstems with or without berries attached.

3/ Three or more joined capstems with or without berries attached.

4/ Undeveloped, "mummified" berries, with wrinkled or tough skins; berries damaged by disease or insects, and edible berries other than blueberries.

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* TABLE V. Allowable defects and acceptable characteristics for cherries

Defects					
Harmless extraneous material <u>1/</u>	Damaged units		Pits	Character	Color
	Total mutilated	minor blemished and blemished cherries <u>2/</u> <u>3/</u>			
Not more than one piece.	Not more than 15 percent, by count, of which not more than 7 percent by count, may be blemished.		Average one pit. Not more than two in any sample unit.	Reasonably thick-fleshed and may be slightly soft.	Reasonably good color ranging from slight yellowish to slightly mottled reddish brown. Food colors permissible.

- 1/ Harmless vegetable substance, including but not limited to a leaf or a stem or any portion thereof.
- 2/ Mutilated cherries are those so pitter-torn or damaged by other means that the entire pit-cavity is exposed and the appearance of the cherry is seriously affected.
- 3/ Minor blemished cherries are those with skin discoloration (other than scald) having an aggregate area of a circle $9/32$ inch (7 mm) or less in diameter which more than slightly affects the appearance of the cherry but does not extend into the fruit tissue. Blemished cherries are those blemished by skin discoloration (other than scald) which in the aggregate exceeds the area of a circle $9/32$ inch (7 mm) in diameter. A cherry affected by skin discoloration extending into the fruit tissue or by scab, hail injury, scar tissue or other abnormality regardless of size is considered a blemished cherry.

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4/ "Pit" means a whole pit or portion of pits computed as follows:

A single piece of pit shell, whether or not within or attached to a whole cherry, that is larger than one-half pit shell is considered as one pit.

A single piece of pit shell, whether or not within or attached to a whole cherry, that is not larger than one-half pit shell is considered as one-half pit.

Pieces of pit shell, within or attached to a whole cherry, when their combined size is larger than one-half pit shell are considered as one pit.

Pieces of pit shell, within or attached to a whole cherry, when their combined size is not larger than one-half pit shell are considered as one-half pit.

* TABLE VI. Allowable defects and acceptable characteristics for peaches (other than color and uniformity of size and symmetry)

Harmless extraneous Material 1/	Blemished units 2/	Peel	Pits	Character
Not more than one piece.	Not more than 6 percent by count. However, any container may contain one blemished unit even though it exceeds 6 percent by count, provided, the average count of all containers does not exceed 6 percent.	Not more than 1-1/2 inches (968 mm ²).	Not more than one whole pit, two pieces 3/8 inch (10 mm) or larger in any dimension or six pieces less than 3/8 inch (10 mm) in any dimension.	Not less than 90 percent, by count, of the units shall possess a fleshy or reasonably fleshy texture typical of mature, properly ripened, prepared and processed canned freestone or clingstone peaches (as applicable). Freestone peach units may be soft or materially frayed, but not mushy, or may be slightly firm or may vary in tenderness within a unit. Clingstone peach units shall be tender or reasonably tender although tenderness may vary within the unit, shall be intact or reasonably intact with no more than slightly frayed edges and may be slightly firm or slightly soft but not mushy. A single unit not meeting the above requirements and exceeding 10 percent, by count, in any container is permissible, provided, the average of non-conforming units in all sample containers does not exceed 10 percent by count.

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- 1/ Material such as a leaf or stem and portions thereof.
- 2/ Blemished units are those affected by scab, hail injury, discoloration or other abnormality which materially affects the appearance or edibility or both.
- 3/ Soft to slightly firm texture. Mushy units are those appearing as a pulpy mass.

* TABLE VII. Allowable defects and acceptable characteristics for color and uniformity of size and symmetry for peaches

Color	Uniformity of size and symmetry
<p>Not less than 90 percent, by count, of the peach units shall possess a bright or reasonably bright color that is equal to or better than pale yellow for freestone units or light orangish yellow for clingstone units. The units may possess discoloration due to oxidation, pit pigmentation or other causes which do not more than slightly affect the appearance or edibility or both, of the product. A single unit not meeting the above requirements and exceeding 10 percent, by count, in any containers is permissible, provided the average of nonconforming units in all sample containers does not exceed 10 percent by count.</p>	<p>Freestone peaches or clingstone peach units shall be practically or reasonably uniform in size and symmetry. No more than 15 percent by count of freestone peach slices, slivers, and slabs, of which no more than 1/2 or 7-1/2 percent, by count, may be slabs. No more than 10 percent, by count, of clingstone peach slices shall be partial slices, slivers, and slabs, of which no more than 1/2 or 5 percent, by count, may be slabs. Not less than 90 percent, by count, of the freestone peach or clingstone peach strips shall be $3/8 \pm 1/8$ inch (10 ± 3 mm) in width and $1-1/2 \pm 1/8$ inch (38 ± 3 mm) in length.</p>

- 1/ Partial slices are those that resemble a slice with respect to thickness and shape but are less than 3/4 of an apparent full slice. Slivers are units that are substantially smaller than the general size of slices or weigh 3 grams or less. Slabs are units which do not conform to the shape of a definite slice due to improper cutting.

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* TABLE VIII. Allowable defects and acceptable characteristics for pineapple except for piece size

<u>Blemished and seriously blemished material 1/</u>			
<u>Tidbits or cubes</u>	<u>Crushed</u>	<u>Character</u>	<u>Color</u>
Not more than, 12-1/2 percent, by weight, including not more than 6-1/4 percent, by weight, seriously blemished.	Not more than 1-1/4 percent, by weight.	Units shall be of reasonably uniform ripeness, shall be fairly free from porosity, and the fruitlets shall be reasonably compact in structure. Not more than 7 percent, by weight, may be core material. 2/	May be slightly dull, but shall be characteristic of properly matured pineapple of similar varietal characteristics. Marked variations in shades of such characteristic color and white radiating streaks may be present provided they do not seriously affect the appearance of the product.

1/ Blemished units are pieces showing:

- (a) Any of the following if in excess of 1/16 inch (2 mm) in the longest dimension on the exposed surface of the unit: Eyes, pieces of shell, brown spots.
- (b) Deep fruit eyes.
- (c) Bruised portions.
- (d) Other abnormalities that materially affect their appearance or edibility. "Seriously blemished" means that the blemish seriously affects the appearance or edibility of the unit.

Blemished material is based on the total weight of the pieces showing blemishes.

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2/ Material definitely identified as hard material characteristic of the center structure of the pineapple. Weight of core material is determined by cutting such material cleanly from the rest of the fruit.

* TABLE IX. Allowable defects and acceptable characteristics for piece size of pineapple

Tidbits	Cubes
<p>Not more than 12-1/2 percent, by weight, may consist of units which may fail to conform to any one or more of the following dimensions: Width of outside are more than 3/8 inch (10 mm), but not more than 3/4 inch (19 mm); thickness more than 5/16 inch (8 mm) but not more than 1/2 inch (13 mm); length more than 11/16 (17 mm) but not more than 1-1/4 inches (32 mm). Not more than 15 percent of the units may weigh less than 3/4 of the average tidbit weight.</p>	<p>Not more than 10 percent, by weight, of the units may pass through a sieve with 5/16-inch (8 mm) square openings and not more than 15 percent, by weight, of the units may weigh more than 3/32 ounce (3 g) each.</p>

3.4 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

* 3.5 Workmanship. The product shall be prepared, processed and packaged under modern sanitary conditions and in accordance with good commercial practice. The product shall be processed in establishments meeting the requirements of MIL-STD-668.

* 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Inspection records of the examination and tests shall be complete and made available to the Government as specified in the contract. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government.

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The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

- * 4.2 Preacceptance inspection (plant sanitation inspection). The product shall be rejected if produced in plants not meeting the requirements of 3.5.
- 4.3 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.
- * 4.3.1 Inspection of components and materials (examination and testing). In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.
- * 4.3.1.1 Examination of components. Determination of compliance with 3.1.1 through 3.1.4.6 as concerns identity (i.e., kinds, variety, style, method of manufacture, conformance to Food Chemicals Codex, quality grade, etc.), shall be ascertained by examination of labels, certificates, invoices, or other valid documents. In addition, each ingredient shall be examined to determine conformance to condition requirements as specified in 3.1 and as may be contained in the respective requirement paragraph. The sample unit for examination shall be 1 pound (0.45 kg) of each required ingredient and 4 ounces (113 g) of each optional ingredient extracted from a primary container. The sample size shall be five sample units, except that if a lot of ingredients consists of less than five primary containers, a sample unit shall be withdrawn and examined from each container in the lot. Use of nonconforming ingredient(s) as determined by the examination shall be cause for rejection of the involved quantity of finished product.
- * 4.3.2 Process examination. Process examination shall be performed at time of formulation to determine compliance with 3.2. A record of formulations shall be maintained. Nonconformance as determined by actual examination or as reflected by the formulation record shall be cause for rejection of the involved quantity of product. Examination as pertains to temperature requirements shall be conducted at time of packing. Sample unit shall be one filled and sealed can and the sample size shall be the number of cans indicated by inspection level S-2. The acceptable quality level (AQL) shall be 1.5, expressed in terms of percent defective. Temperature in center of product in excess of 100°F(38°C) shall be considered a major B defect. Lot size shall be expressed in terms of cans.

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4.3.3 Examination of end item. Classification of defects found during examination shall be in accordance with tables XI and XII and 4.3.3.1 through 4.3.3.6. The sampling and acceptance criteria of the above referenced tables shall be as shown in table X. Acceptable quality levels (AQLs) shall be expressed as percent defective for table XI and as defects per hundred units for table XII.

TABLE X. End item examination criteria

Table	Sample unit	Lot size expressed in <u>1/</u>	Inspection level	AQL	
				Major	Minor
XI	One filled and sealed can	Cans	S-3	2.5	2.5
XII	Contents of one can <u>2/</u>	Cans	S-2 <u>3/</u>	1.0	-

1/ Lots shall be composed of one type of fruit only.

2/ For the preparation of washed, drained fruit taken from 307 x 409 cans, as applicable, see 4.3.3.5 for procedure.

3/ In the examination of washed, drained fruit taken from 307 x 409 cans, limit examination to three sample units each of which is to be made up as specified in 4.3.3.5.

TABLE XI. Examination for net weight 1/ 2/ and drained weight 3/

Category		Defect
<u>Major</u>	<u>Minor</u>	
	201	Net weight less than 21-1/2 ounces (610 g) (for cans required to have a net weight of 22 ounces (624 g)).
	202	Net weight less than 6 pounds and 14 ounces (3.1 kg) for cans required to have a net weight of 7 pounds (3.2 kg).
151		Percent washed drained weight to net weight less than specified in 3.3 for each specific product (see 4.4.3).

1/ Lot shall be rejected if sample data indicate that lot average net weight is less than labeled net weight.

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2/ Report weight to nearest 1/4 ounce (gram), for 307 x 409 cans or nearest ounce (10 grams), for 603 x 700 cans.

3/ Report ratio to the nearest 0.1 percent.

* TABLE XII. Examination of product(s) characteristics 1/

<u>Category</u>	<u>Defect</u>
<u>Major</u>	
151	Presence of free liquid.
152	One or more defects in excess of the allowable number, or nonconformance to the physical quality characteristics as specified in tables I through IX as applicable to the pertinent product (see 3.3.1 and 4.3.3.5).
153	Flavor and color not characteristic of product.
154	Presence of any off flavor or odor (e.g., moldy, sour, bitter, etc.)

1/ Presence of foreign material (e.g., rust, dirt, grease, wood particles, paint, enamel, insect(s), insect part(s), glass, metal or other extraneous materials) shall be cause for rejection of the entire lot.

- * 4.3.3.1 Examination of the primary container. The examination of the primary container for external appearance, vacuum, and interior coating shall be in accordance with the examination criteria of PPP-C-29.
- * 4.3.3.2 Examination of can labeling. Examination of can labeling shall be in accordance with the examination criteria of MIL-L-1497.
- * 4.3.3.3 Examination of can coating. Examination of can coating, when applicable, shall be in accordance with the examination criteria of TT-C-495.
- * 4.3.3.4 Examination of shipping container. Examination of the filled and closed shipping container shall be in accordance with the examination criteria of PPP-C-29.
- * 4.3.3.5 Examination of washed drained fruits. Material retained on the U. S. Standard No. 8 sieve, plus material retained on the U. S. Standard No. 20 sieve, shall be examined to insure compliance with the respective requirements in 3.3.

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In the case of No. 2 cans (307 x 409), a quantity of washed drained fruit equivalent to the minimum in a No. 10 can (603 by 700) shall be examined to determine conformance with tables I through IX. For example, from No. 2 cans (307 by 409) examine 3.85 pounds (1.7 kg), 7 pounds (3.2 kg) net weight x 55.0 percent minimum washed drained weight per No. 10 of representative washed drained apples and defects therefrom retained on a U. S. Standard No. 20 sieve upon straining the aqueous portion.

- * 4.3.3.6 Examination of unit loads. Unit loads shall be examined in accordance with the quality assurance provisions of MIL-L-35078 and the applicable specification sheet for the type and class of load specified (see 5.3).
- * 4.3.4 Sampling procedures and acceptance criteria for testing of finished product. The finished product shall be tested for soluble solids, pH, and product spread. Procedures for testing shall be in accordance with 4.4.1, 4.4.2, and 4.4.4. The sample unit shall be one filled and sealed can. Test requirements shall be applicable to the sample unit. Lot size shall be expressed in terms of cans, and the sample size for testing shall be the number of sample units indicated by inspection level S-2. The acceptable quality level in defects per hundred units shall be 4.0 for each characteristic. Results shall be reported as follows: soluble solids, nearest 0.1 degree; pH, nearest 0.1; and product spread test, nearest 0.5 centimeter.

4.4 Tests. Test procedures and controls which differ from those specified herein may be used by the contractor if they provide quality assurance equivalent to that specified. If the contracting officer determines that such procedures and controls do not provide, as a minimum, such quality assurance, the contractor shall use the test procedures set forth herein. In case of dispute as to the test results, the test methods specified herein will govern.

4.4.1 Soluble solids. Soluble solids shall be determined by means of a refractometer at 20°C either directly with use of a sugar refractometer or correlated with refractive indices of sucrose solutions at 20°C if the readings are in terms of refractive index. An aliquot of a thoroughly mixed can shall be comminuted in a food chopper such as the Waring blender or equivalent. (It is suggested that if a clear reading is difficult to obtain, the material be filtered through a milk pad. Slight pressure may be applied to force liquid through the filter.)

4.4.2 Determination of pH. The pH shall be determined on a thoroughly mixed sample. Allow pH meter with glass and calomel electrodes to warm up before use according to instructions issued by the manufacturers. Check and adjust meter to pH of 4.00 at 20°C with 0.05M acid potassium phthalate. Rinse electrodes free of phthalate solution with distilled water, then place electrodes in sample. Rinse electrodes free of sample and recheck instrument with phthalate solution.

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* 4.4.3 Percent washed drained weight to net weight 1/. The washed drained weight shall be determined by the following method:

1. Pour can contents into a large grading pan.
2. Add two cans of water at 70°F(21°C).
3. Dissolve gel from the fruit by gently agitating the product and the water with fingers widespread for at least 2 minutes and not to exceed 4 minutes, taking care to separate all gel.
4. Pour contents of grading pan into a 12-inch (305 mm) diameter, U. S. Standard No. 8 sieve, distributing the product evenly over the surface of the screen. (The aqueous portion shall be strained through U. S. Standard No. 20 sieve and the defects found therein shall be added to those retained on the U. S. Standard No. 8 sieve).
5. Drain product for 2 minutes in an inclined position (17 to 20 degree angle).
6. Weigh screen and fruit and subtract the weight of the dry screen. Express the weight of fruit as a percentage of net weight of the can contents.

1/ NOTE: The washed drained weight should be related to the net weight determined for that can.

4.4.4 Spreadometer test. Spreadometer test shall be performed as follows:

Equipment:

1. A 24-inch (610 mm) square platform scribed with 30 concentric circles 1 centimeter apart, equipped with leveling screws and a glass plate over.
2. Spreadometer lifting device (fig. 1) or its equivalent.
3. No. 2 can (307 by 409) with two holes punched in the closed end which have been covered with tape.
4. A sheet of aluminum insulating foil.

Test Procedure:

1. Condition samples until a product temperature of 72° ± 10°F(22 ± 5.5°C) has been reached.
2. Level platform.
3. In the case of a No. 2 can (307 by 409), open and use can contents as is or, in the case of a No. 10 can, thoroughly mix the contents, taking care not to crush the individual fruit particles, and place 22 ounces (624 g) net weight in the No. 2 can with the two taped holes.

4. Carefully place can with open end down over the center of the spreadometer with the aid of the aluminum foil. Remove aluminum foil. Punch two or more holes in the unopened end of the can or remove tape from the previously punched can and raise can smoothly without jerking so that the bottom edge is 1-1/4 inches (32 mm) above the glass plate. (In the case of a heavy viscosity apple pie filling, it may be necessary to raise the can to a height of 1-1/2 inches (38 mm) to allow the product to flow freely from the can. This latter adjustment may be made during the spread time.)
5. Hold can in this position and record the extent of spread at four equally-spaced radial points after 1 minute.
6. Calculate the average of the four readings to determine compliance with 3.3.

4.4.5 Tin coating weights. Tin coating weights shall be determined by any method specified in PPP-C-96.

* 5. PACKAGING

5.1 Preservation-packaging level, A or C. Twenty-two ounces (624 g) shall be packaged in a 307 by 409 size can or 7 pounds (3.2 kg) shall be packaged in a 603 by 700 size can in accordance with level A or C requirements of PPP-C-29 (see 6.1). The filled and sealed can shall have a vacuum of not less than 8 inches (200 mm) and a pressure of not more than (74 kPa) when examined in accordance with PPP-C-29.

5.2 Packing, all levels. The product shall be packed in accordance with the requirements of PPP-C-29 for the can size specified and the level specified (see 6.1).

5.3 Unit load. The product, packed as specified in 5.2, shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.1).

5.4 Marking.

- * 5.4.1 Cans. Cans shall be labeled in accordance with MIL-L-1497 and shall contain the following information:

Name of product
Net weight
Directions for use (as applicable)

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307 by 409 can.

1. Prepare pastry for one two-crust pie.
2. Place pie filling in unbaked pie shell.
3. Cover with top crust. Seal edges.
4. Bake in hot oven (425°F) until crust is golden brown, about 30-35 minutes.

NOTE: Pie fillings which have been subjected to adverse storage conditions may be affected by syneresis (weeping and free liquid). This material can be mixed uniformly and prepared as above.

603 by 700 can. For 100 servings, use 4 cans.

1. Prepare pastry for 4 two-crust 9-inch pies.
2. Divide pie filling equally between each unbaked pie shell.
3. Cover with top crusts. Seal edges.
4. Bake in hot oven (425°F) until crust is golden brown, about 30-35 minutes.

NOTE: Pie fillings which have been subjected to adverse storage conditions may be affected by syneresis (weeping and free liquid). This material can be uniformly mixed and prepared as above.

5.4.2 Shipping containers. Shipping containers shall be marked in accordance with MIL-STD-129.

5.4.3 Unit loads. Unit loads shall be marked in accordance with MIL-L-35078.

6. NOTES

* 6.1 Ordering data. Procurement document should specify the following:

- (a) Title, number, and date of this specification.
- (b) Kind of fruit pie filling required (see 1.2).
- (c) Applicable level of packaging and packing required (see 5.1 and 5.2).
- (d) Size of can required (see 5.1).
- (e) Type and class of unit load when unit loading is specified (see 5.3).

6.2 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a

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convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - GL
Navy - SA
Air Force - 45

Preparing activity:

Army - GL
Project No. 8940-0224

Review activities:

Army - MD
Navy - MC, MS
DP - SS

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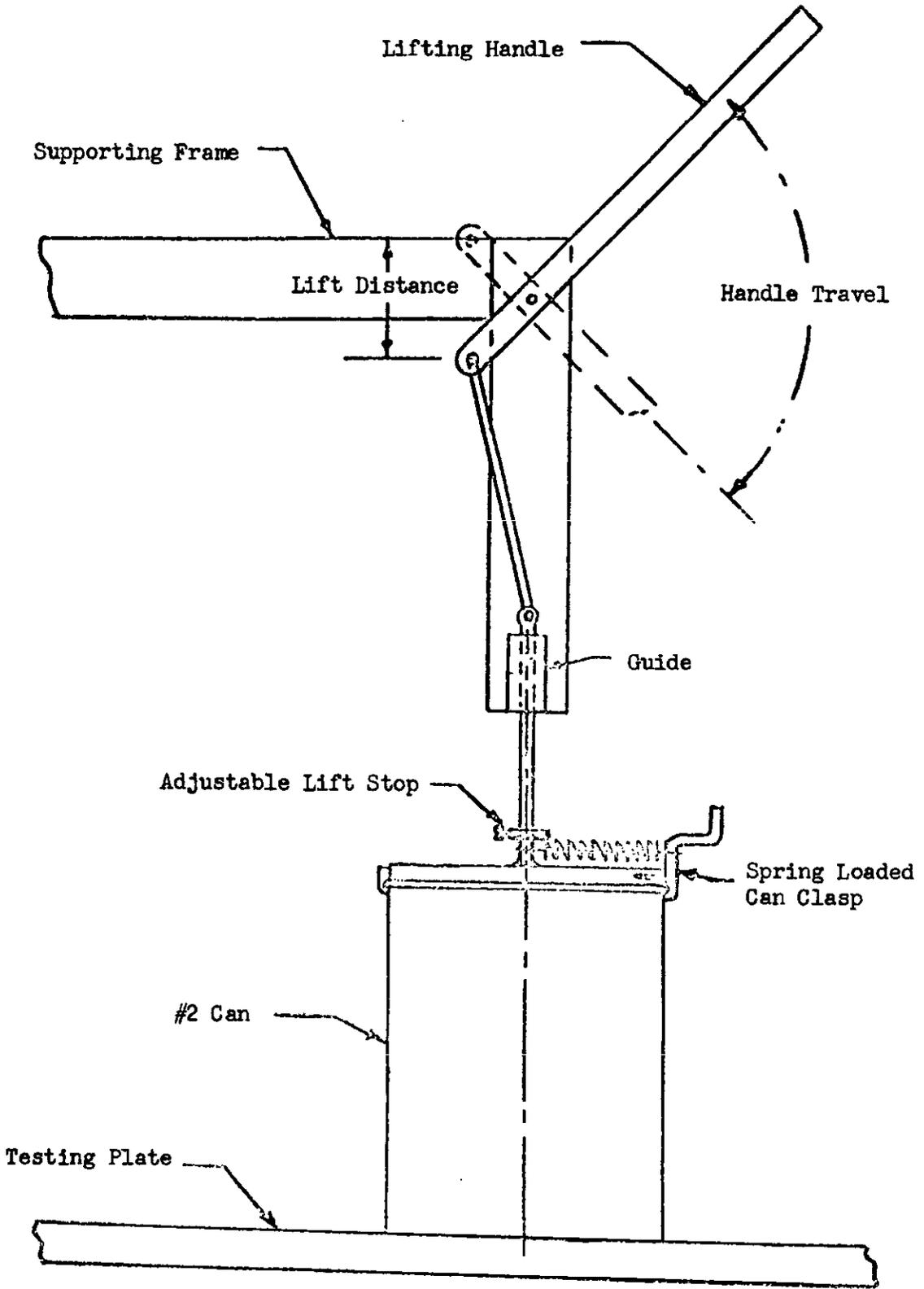


Figure 1. Spreadometer Lifting Device

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL		OMB Approval No. 22-R255
<p>INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.</p>		
DOCUMENT IDENTIFIER AND TITLE MIL-P-35029C Pie Filling, Fruit, Prepared		
NAME OF ORGANIZATION AND ADDRESS	CONTRACT NUMBER	
	MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT	
<p>1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING.</p> <p>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p>		
2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID		
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