



United States  
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Agriculture

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Service

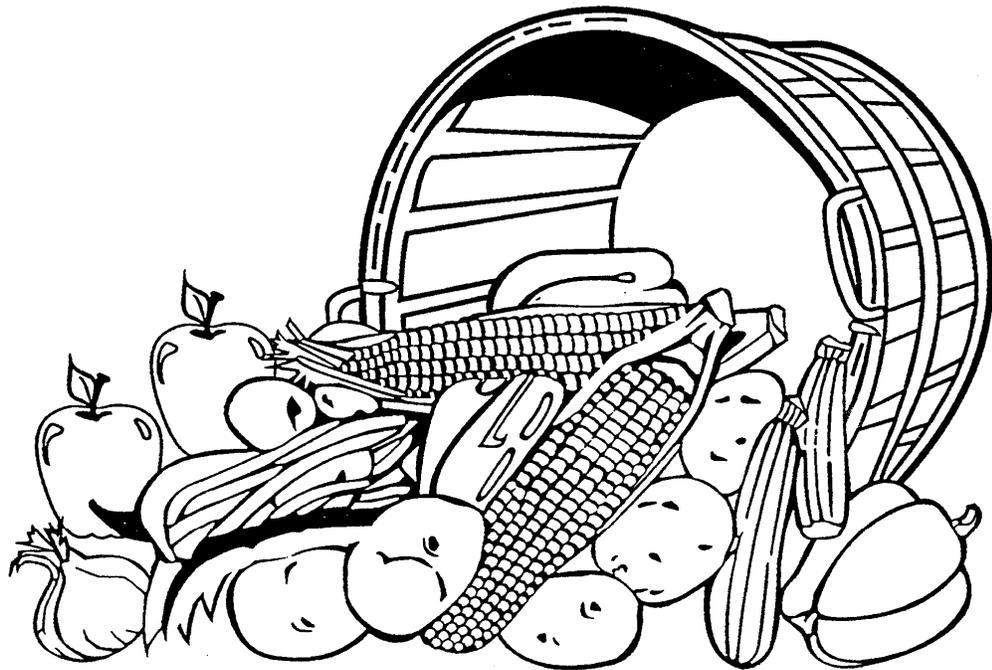
Fruit and  
Vegetable  
Programs

Fresh Products  
Branch

December 2005

# Tomatoes

## Shipping Point and Market Inspection Instructions



# Shipping Point and Market Inspection Instructions for Tomatoes

These inspection instructions are specifically developed by the Fresh Products Branch to assist officially licensed inspectors in the interpretation and application of the U.S. Standards for Grades of Fresh Tomatoes, Section 51.1855.

These instructions do not establish any substantial rule not legally authorized by the official grade standards. This publication supersedes any previously issued inspection instructions.

Refer to the General Inspection Instructions for additional information pertaining to date, inspection point, carrier, condition of carrier, lading, etc. that is not covered in this handbook. Reference to "General Inspection Instructions" in all Fresh Products Branch publications refers to any one or all of the following - General Shipping Point Inspection Instructions, General Market Inspection Instructions, or Fresh Fruit and Vegetable Certificate Writing Handbooks.

Any portion of these instructions beginning with the section number §51.--- and followed by **bold** print are sections or portions of sections copied directly from U.S. standards. The U.S. Standards for Grades of Fresh Tomatoes, Section 51.1855 are printed in the appendix of this handbook. All U.S. standards are available on the Internet under the USDA homepage.

**December 2005**

**This publication may be duplicated without authorization from USDA.**

*This replaces Shipping Point Inspection Instructions for Fresh Tomatoes dated November 1987 and Market Inspection Instructions for Fresh Tomatoes dated October 1986.*

Factors noted with **(Q)** are considered quality only. Factors noted with **(C)** are considered condition at market. Factors noted with **(Q or C)** may be quality or condition depending on the circumstances. Factors not designated do not pertain to either category.

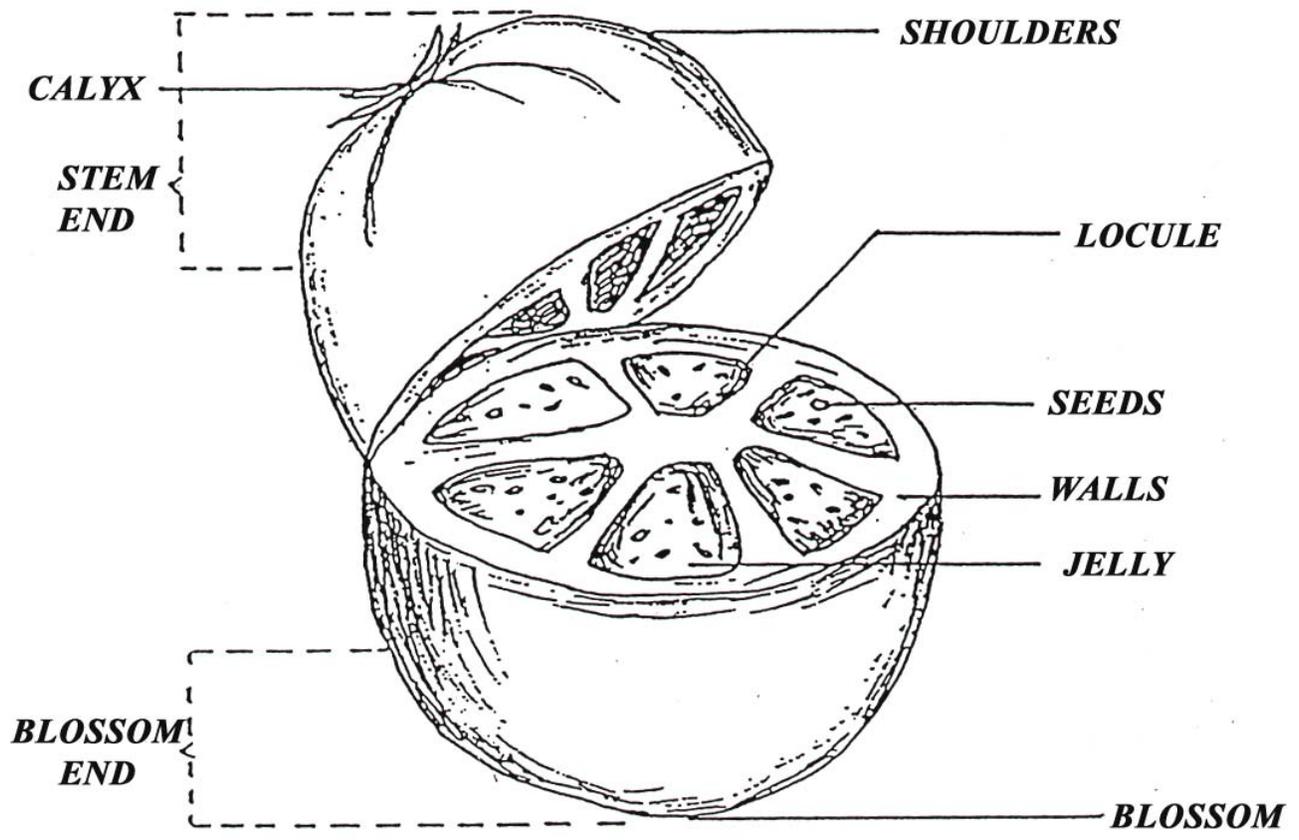
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**TOMATO**

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## GENERAL

“Tomatoes” as referenced in these instructions refers to all fresh field grown tomatoes unless specifically referred to as cherry, grape, roma, plum or pear type tomatoes, tomatoes on the vine, heirloom tomatoes or other similar types. For these types there may be more specific instructions noted throughout the handbook.

Greenhouse tomatoes are covered by a separate U.S. grade standard and are not covered in this handbook.

\*\*\*\* Tomatoes on the vine are covered by a separate U.S. grade standard and are briefly referenced in this handbook. \*\*\*\*

Imported tomatoes are also regulated by the Marketing Order Administration Branch (MOAB). Fresh tomatoes are subject to Section 8e of the Agricultural Marketing Agreement Act of 1937, only during the period of time that the domestic commodity is also being shipped and regulated, (October 10th thru June 15th). The Act provides that when certain domestically produced commodities are regulated under a Federal marketing order, imports of the commodity must meet the same or comparable grade, size, quality and maturity requirements. For summaries of the Section 8e Import Requirements for Tomatoes, refer to Appendix II.

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## REPRESENTATIVE SAMPLING

The importance of obtaining representative samples cannot be over emphasized. Accurate certification is possible only if the samples examined are truly representative of the entire lot or accessible portion. All portions of a lot or load should receive the same attention in sampling regardless of the difficulty involved in reaching all layers or parts of a lot or load. Anytime the entire lot requested is not accessible for sampling, the inspection and certificate must be restricted to the accessible portion.

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### Size of Sample

The tolerances in the U.S. Standards for Grades of Fresh Tomatoes are determined on the basis of count.

#### Regular Tomatoes

**Shipping Point:** A minimum of 25 tomatoes shall be examined for containers larger than 10 pounds. If a container does not contain 25 tomatoes or is less than 10 pounds, the entire contents will be the sample unit.

**En Route or Destination:** At least 50 tomatoes shall be examined from each sample container. If the container does not contain 50 tomatoes, the entire contents will be the sample. Do not open adjacent containers to get a minimum of 50 tomatoes. Whenever defects exceed the container or lot tolerance in one or more samples, the entire contents of at least one of these samples must be examined.

**Cherry, Grape and Similar Type Tomatoes**

The individual cup or basket will be the unit for inspection. Samples should be selected at random from various locations within the flats. When not packed in cups, baskets or similar consumer units, the sample size will be a minimum of 50 tomatoes. If 100 count samples are taken, it will not be necessary to double the sample size to 200 specimens. The portion of the application of tolerances pertaining to samples of 5 pounds and less will apply for individual cups or baskets or similar consumer units.

**Cello Wrapped "Tubes" and Trays**

These are generally consumer packages packed in master containers. The individual tube/tray will be the sample unit with a maximum of 2 samples per master container taken. Total samples taken should equal at least double the number of packages contained in the master container, i.e., if master containers contain 8 tubes/trays, the total number of samples for that lot will be at least 16.

\*\*\*\*

**Tomatoes on the Vine**

All tomatoes in the container shall be included in the sample with the container being the unit of inspection. However, when cluster cherry tomatoes are packed in mesh bags and placed in flats, the unit of inspection is the individual bag. Additional columns for factors affecting the vines shall also be kept based on the number of tomatoes in the container.

\*\*\*\*

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**Number of Samples**

As a general rule a minimum of 1% of the lot must be examined. For lots of less than 300 packages a minimum of 3 samples must be examined. It is the inspectors' responsibility to examine additional representative samples when the quality, condition, or size in samples is decidedly different to ensure an accurate description of the lot.

# TOLERANCES AND APPLICATION OF TOLERANCES

In order to allow for variations incident to proper grading and handling in each of the following grades, the following tolerances shall be determined by count.

## Summary of Tolerances

### **Shipping Point\*:**

	U.S. No. 1	U.S. Comb.**	U.S. No. 2	U.S. No. 3
<b>A. Total defects,</b>	10%	10%	10%	10%
Included in "A" above:				
1) very serious damage	5%	5%	5%	5% (insects only)
Included in "1" above:				
a) soft or decay	1%	1%	1%	***1%
<b>B. Off-size</b>	10%	10%	10%	10%
<b>C. Off-color:</b>	10%	10%	10%	10%
Included in "C" above:				
1) For tomatoes which are green in color, when any color other than "Green" is specified	5%	5%	5%	5%

\*Shipping Point, as used in these standards, means the point of origin of the shipment in producing area or as port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

\*\*The U.S. Combination grade consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: *Provided*, That at least 60 percent, by count, meet the requirements of the U.S. No. 1 grade. Higher percentage combinations can be specified, however lower percentage combinations cannot be specified. In addition, the only grades allowed in the U.S. Combination grade are U.S. No. 1 and U.S. No. 2.

No part of any tolerance shall be allowed to reduce for the lot as a whole the percentage of U.S. No. 1 tomatoes required in the combination, but individual containers may have not more than 10 percent less than the percentage of U.S. No. 1 required: *Provided*, That the entire lot averages within the required percentages.

\*\*\*This 1% decay tolerance is not included in the 5% very serious damage tolerance.

**En Route or at Destination:**

	U.S. No. 1	U.S. Comb.*	U.S. No. 2	U.S. No. 3
<b>A. Total defects,</b>	15%	15%	15%	15%
Included in "A" above:				
1) soft and decay	5%	5%	5%	5%
2) shoulder bruises or discolored or sunken scars	10%	10%	10%	10%
3) otherwise defective	10%	10%	10%	10%
Included in "2" & "3" above:				
a) very serious damage	5%	5%	5%	5%
				(insects only)
<b>B. Off-size</b>	10%	10%	10%	10%
<b>C. Off-color:</b>	10%	10%	10%	10%
Included in "C" above:				
1) For tomatoes which are green in color, when any color other than "Green" is specified	5%	5%	5%	5%

\*The U.S. Combination grade consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: *Provided*, That at least 60 percent, by count, meet the requirements of the U.S. No. 1 grade. Higher percentage combinations can be specified, however lower percentage combinations cannot be specified. In addition, the only grades allowed in the U.S. Combination grade are U.S. No. 1 and U.S. No. 2.

No part of any tolerance shall be allowed to reduce for the lot as a whole the percentage of U.S. No. 1 tomatoes required in the combination, but individual containers may have not more than 10 percent less than the percentage of U.S. No. 1 required: *Provided*, That the entire lot averages within the required percentages.

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**Application of Tolerances**

**§51.1862 Application of tolerances. The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations:**

**(a) For packages which contain more than 5 pounds (2.27 kg), and a tolerance of 10 percent or more is provided, individual packages shall have not more than 1-1/2 times the tolerance specified, and for a tolerance of less than 10 percent individual packages shall have not more than double the tolerance specified, except that at least one defective and one off-size specimen may be allowed in any package: *Provided*, That the averages for the entire lot are within the tolerances specified for the grade; and,**

**(b) For packages which contain 5 pounds (2.27 kg) or less individual packages shall have not more than 4 times the tolerance specified, except that at least one tomato which is soft, or affected by decay, and one off-size specimen may be permitted in any package: Provided, That the averages for the entire lot are within the tolerances specified for the grade.**

**Summary of Application of Tolerances**

\*\*\*\* **Shipping Point\*** – (For packages containing more than 5 pounds)

	U.S. No. 1, U.S. Comb.** and U.S. No. 2	U.S. No. 3
<b>A. Total defects,</b>	10% x 1-1/2 = <b>15%</b>	10% x 1-1/2 = <b>15%</b>
Included in "A" above:		
1) very serious damage	5% x 2 = <b>10%</b>	5% x 2 = <b>10%</b> (insects only)
Included in "1" above:		
a) soft or decay	1% x 2 = <b>2%</b>	***1% x 2 = <b>2%</b>
<b>B. Off-size</b>	10% x 1-1/2 = <b>15%</b>	10% x 1-1/2 = <b>15%</b>
<b>C. Off-color:</b>	10% x 1-1/2 = <b>15%</b>	10% x 1-1/2 = <b>15%</b>
Included in "C" above:		
1) For tomatoes which are green in color, when any color other than "Green" is specified	5% x 2 = <b>10%</b>	5% x 2 = <b>10%</b>

\*Shipping Point, as used in these standards, means the point of origin of the shipment in producing area or as port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

\*\*The U.S. Combination grade consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: *Provided*, That at least 60 percent, by count, meet the requirements of the U.S. No. 1 grade. Higher percentage combinations can be specified, however lower percentage combinations cannot be specified. In addition, the only grades allowed in the U.S. Combination grade are U.S. No. 1 and U.S. No. 2.

No part of any tolerance shall be allowed to reduce for the lot as a whole the percentage of U.S. No. 1 tomatoes required in the combination, but individual containers may have not more than 10 percent less than the percentage of U.S. No. 1 required: *Provided*, That the entire lot averages within the required percentages.

\*\*\*This 1% decay tolerance is not included in the 5% very serious damage tolerance.

\*\*\*\*

***Packages which contain 5 pounds or less shall have not more than 4 times the tolerance specified.***

**En Route or at Destination - (For packages containing more than 5 pounds)**

	<b>U.S. No. 1, U.S. Comb.* and U.S. No. 2</b>	<b>U.S. No. 3</b>
<b>A. Total defects,</b>	$15\% \times 1\text{-}1/2 = \mathbf{22.5\%}$	$15\% \times 1\text{-}1/2 = \mathbf{22.5\%}$
Included in "A" above:		
1) soft and decay	$5\% \times 2 = \mathbf{10\%}$	$5\% \times 2 = \mathbf{10\%}$
2) shoulder bruises or discolored or sunken scars	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$
3) otherwise defective	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$
Included in "2" & "3" above:		
a) very serious damage	$5\% \times 2 = \mathbf{10\%}$	$5\% \times 2 = \mathbf{10\%}$ (insects only)
<b>B. Off-size</b>	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$
<b>C. Off-color:</b>	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$	$10\% \times 1\text{-}1/2 = \mathbf{15\%}$
Included in "C" above:		
1) For tomatoes which are green in color, when any color other than "Green" is specified	$5\% \times 2 = \mathbf{10\%}$	$5\% \times 2 = \mathbf{10\%}$

\*The U.S. Combination grade consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: *Provided*, That at least 60 percent, by count, meet the requirements of the U.S. No. 1 grade. Higher percentage combinations can be specified, however lower percentage combinations cannot be specified. In addition, the only grades allowed in the U.S. Combination grade are U.S. No. 1 and U.S. No. 2.

No part of any tolerance shall be allowed to reduce for the lot as a whole the percentage of U.S. No. 1 tomatoes required in the combination, but individual containers may have not more than 10 percent less than the percentage of U.S. No. 1 required: *Provided*, That the entire lot averages within the required percentages.

***Packages which contain 5 pounds or less shall have not more than 4 times the tolerance specified.***

## **NOTESHEET AND CERTIFICATE**

Entries on the notesheet and certificate must be kept in a legible and accurate manner. It is mandatory that all information which appears on the certificate be supported by information on the notesheet. It is the responsibility of the inspector to ensure that all information is properly recorded. Notations shall be recorded so that anyone familiar with inspection procedures can interpret them and write a certificate. Also remember that notesheets and certificates are prima facie evidence and must be able to withstand legal scrutiny.

Detailed instructions pertaining to date, inspection point, place of inspection, type of carrier, lading, etc., which are not covered by these instructions may be found in the General Inspection Instructions. Additional information and instructions may be given by your supervisor.

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## Product

The common name shall be used to describe this commodity in the product heading. Type may be reported in conjunction with tomatoes or may be reported in the "Product/Variety" section on the shipping point inspection certificates or in the "Lot ID" section on market notesheet and certificate. The following common names may be used:

- Tomatoes
- Roma, Plum or Pear type tomatoes
- Cherry tomatoes
- Grape tomatoes
- Tomatoes on the Vine

\*\*\*\*

\*\*\*\*

Do not certify variety. At applicant's request, the inspector may certify as to shape, such as "globe, flat or elongated shape," preceded by general quantity terms as necessary.

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## Number/Type of Containers

The number of containers shall always be reported. In the market and at shipping point locations for stationary lot certification, the inspector shall always verify the container count provided by the applicant for each lot and report it as the "inspector's count." If the number of containers available for inspection does not match the application it is the inspector's responsibility to confirm that the amount presented for inspection constitutes the lot. If an accurate count cannot be determined, the inspector may report the count at someone else's authority. However, the reason for doing so must be reported on the notesheet (e.g., numerous pallets with mixed product.)

At shipping point locations for "days-run" certification the applicant generally provides a manifest for count and it is acceptable to use this for the number of containers.

Tomatoes are generally packed in lidded, fiberboard containers. The most popular size containers are the 25 pound volume fill carton, and the two and three layer place pack cartons.

Some tomatoes may also be packed in "consumer packages." These packages usually contain from two to eight tomatoes, packed in over wrapped "tubes," or "trays," and are usually packed in master flats or cartons.

Roma, Plum or Pear types, or other similar types are generally packed in 25 pound volume filled fiberboard cartons.

Cherry tomatoes are generally packed in individual cups, plastic hinged containers or baskets in master fiberboard flats or cartons.

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## Brands/Markings

The brand, variety, size, count, grade, weight, point of origin and other important information appearing on the container should be reported on the notesheet in the "Brands/Markings" section. Only the brand name and other key markings necessary to properly identify the lot for certification should appear in this section on the certificate.

Federal and Federal-State lot numbers may be stamped on containers. Inspectors should take special care in recording PLI markings on the notesheet and certificate. Tomatoes from the regulated area of the Florida Marketing Order No. 966 are typically positive lot identified (PLI'd). Tomatoes from the non-regulated area in Florida are generally not PLI'd. In addition, tomatoes shipped from other parts of the United States using similar brands and markings may or may not be PLI'd. For specific requirements for tomatoes grown under the Florida Marketing Order No. 966, refer to Appendix II.

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## Origin

The inspector should not make a positive statement on their own authority, but when container markings list the state or country of origin, it should be quoted in the appropriate space on the notesheet and the certificate. If origin is not marked, it is the inspector's responsibility to make an effort to obtain this information from the applicant. This policy is necessary because some firms may use one mark on the same product packed in several states. The inspector can certify only to the marks and has no means of verifying what state or country the tomatoes are grown.

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## CONDITION OF PACK

Tomatoes are either machine filled (usually mature greens) or place-packed (usually vine-ripes) depending on the ripeness, shipping location and packing facilities. If place-packed, a thin fiberboard sheet is usually placed between the layers. If tomatoes are in bulk, pack should not be reported.

The following terms shall be used to describe the fill of containers when the tomatoes are jumble packed in lidded or un-lidded containers, face-packed, or volume-filled:

**Well filled** - tomatoes are in firm contact with container cover.

**Fairly well filled** - tomatoes are not more than 1/2 inch below top edge of container.

**Slack** - pack cannot be described with any of the preceding terms. Report the degree of slackness in inches and fractions thereof.

The following terms shall be used to describe tightness of pack when the tomatoes are place-packed in containers:

**Very tight** - too tight for best results, tomatoes are packed so tightly that some injury to the tomatoes may result.

**Tight** - the tomatoes are packed tight enough in layers so as to prevent movement within the container, but not so tightly that injury may result. Tomatoes may be in contact with the lid.

**Fairly tight** - the tomatoes are packed sufficiently tight in layers so as to prevent movement that could cause injury under normal handling conditions.

**Loose** - the tomatoes are decidedly loose within layers allowing movement which may cause damage to the tomatoes; and, there is sufficient space so that an additional row of tomatoes can be readily added to each layer in the container.

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## TEMPERATURE OF PRODUCT

Inspectors would not normally determine or report temperatures at shipping point. However, due to the importance of the pulp temperature of fresh fruits and vegetables when in transit or at destination, it is essential that the inspector accurately determine and report the temperature or range in temperatures on each lot. Pulp temperature should be reported regardless of the location of the product, whether in the carrier, warehouse, or stacked on the platform. Remember to pre-cool the thermometer in order to obtain true readings. Report all temperatures to the nearest whole degree.

A minimum of three temperatures for each lot must be taken and recorded on the notesheet. More temperatures must be taken if the lot is abnormally cold, heated, or there is a specific request for temperature, and these must be reported in greater detail specifying location in lot or load.

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## SIZE

Size shall be determined and reported on all quality and condition inspections for tomatoes except for exempt type tomatoes. (See Exemptions to Size Markings.)

**Size is not part of the basic grade requirements for tomatoes.** Therefore, a lot of tomatoes could meet the requirements of a specified grade and fail to meet size requirements, or fail to meet the requirements of a specified grade and meet size requirements.

Although many of the following requirements concern container markings, they are found in the "Size" section of the standard, and are considered "Size Requirements."

The following are specific requirements for size in the U.S. standards for tomatoes:

- Four size designations (small, medium, large, and extra large), each with a 1/32-inch overlap;
- Size of the tomatoes in any standard type shipping container shall be specified and marked on the container;
- Only one size (of the four designations) may be included in, and be marked on the container; and,
- Eighty-five percent (85%) of the containers shall be legibly marked with a size designation.
- **For off-size.** Ten percent (10%) for tomatoes in any lot which are smaller than the specified minimum diameter, or larger than the specified maximum diameter.

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### Size Based on U.S. Standard Size Designations

There are four size designations listed in the U.S. standards for tomatoes. When referring to "size designations" based on the standard the words "small," "medium," "large," and "extra large" (or their abbreviations) are the size designations, not the corresponding diameter measurements.

In order to meet size requirements, tomatoes packed in standard shipping containers (any container weighing 30 pounds or less, except consumer packages) shall be marked with one of the following size designations on at least 85% of the containers.

**§51.1859 Size...Table I**

Size Designations	Inches	
	Minimum Diameter <sup>1</sup>	Maximum Diameter <sup>2</sup>
Small	2-4/32	2-9/32
Medium	2-8/32	2-17/32
Large	2-16/32	2-25/32
Extra Large	2-24/32	

<sup>1</sup>Will not pass through a round opening of the designated diameter when tomato is placed with the greatest transverse diameter across the opening.

<sup>2</sup>Will pass through a round opening of the designated diameter in any position.

### **Minimum Diameter**

Means the greatest diameter measured at right angles to a line from stem to blossom end. This means that the tomato must support its own weight in the sizing ring in order to meet the minimum diameter. If the tomato falls through the minimum sizing ring, it is undersize.

### **Maximum Diameter**

Means the smallest dimension by passing the tomato through a round opening in any position. If the tomato will not fall through the maximum sizing ring in any position, it is oversize.

Each office has been issued sizing rings based on the U.S. grade standards size designations of small, medium, large and extra large, with the designation "USDA" followed by the most recent year in which official sizing rings were issued. In addition, separate sizing rings have been issued for inspections based on the Florida Marketing Order (FMO).

Abbreviations for the size designations that will be acceptable and officially recognized as a size marking include, but are not limited to: small ("s" or "sm") medium ("m" or "med") large ("l," "lg," or "lge") and extra large ("e," "x," "ex," or "ext," combined with any of the abbreviations for large).

### **Exemptions to Size Markings**

**Consumer packages** are packages that are available to the consumer without the ability to add or remove tomatoes prior to purchase of the product ("tubes," "plastic hinged trays," "over wrap film trays," etc.). These usually contain from two to eight tomatoes. **Consumer packages and their master containers are exempt from size (marking) requirements.** However, if they are marked (either the master container or consumer package), all of the size (marking) requirements will apply. If consumer packages or their master containers are not marked, then size will not be determined unless specifically requested by the applicant. If they are marked to a diameter (minimum or minimum and maximum) then compliance with the markings will be determined.

**Cherry tomatoes, grape, roma, plum or pear tomatoes, or other similar types are exempted from marking requirements as to size.** However size may be specified in terms of minimum diameter or minimum and maximum diameters expressed in whole inches, and not less than thirty-second inch fractions thereof, in accordance with the facts. If they are marked to a diameter (minimum or minimum and maximum) then compliance with the markings shall be determined.

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### **Fails to Meet Marking Requirements as to Size**

Containers marked to any size designations other than small, medium, large, or extra large, or recognized abbreviations for the sizes as defined in the U.S. standards for tomatoes (other than size based on the Florida Marketing Order), shall fail marking

requirements and must be reported following the grade statement. “Fails to meet marking requirements as to size.”

When containers are marked to more than one size designation, such as “medium-large,” the inspector must show whether the tomatoes in the container meet the markings. Perishable Agricultural Commodity Act (PACA) requires that if any markings are present, they must be correct. Therefore, when requested to determine size, the inspector shall size the tomatoes based on the container markings. Use the smaller of the sizes as the basis for under size, and the larger of the sizes as the basis for over size. Regardless of whether the markings are met, the lot will fail to meet marking requirements as to size.

A final requirement in the size section of the standard is that 85% of the containers must be legibly marked. Ideally, 100% of the containers in a lot should be marked to a size. However, this is not always the case. The standard requires that 85% of the containers must be legibly marked. Markings that are smeared or otherwise unreadable are not considered legible. If less than 85% of the containers are legibly marked, the lot would fail to meet marking requirements as to size.

When containers meet all marking requirements, no markings statement shall be reported on the certificate.

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### **Reporting Size/Offsize**

Inspection certificates must show whether or not the lot meets the size as marked. Each size is considered a separate lot when applying the tolerance for offsize. Tomatoes fail to meet the marked or specified size requirements when the 10% lot tolerance or the container tolerance for size is exceeded.

### ***Shipping Point***

When tomatoes meet the marked size, enter the statement “Meets size as marked” on the certificate.

When the lot tolerance or the container tolerance for size is exceeded, the lot would fail to meet size as marked. The size range, in inches and fractions thereof, should be shown on the certificate. Report the fact that the lot failed to meet size requirements following the actual grade statement, such as; “U.S. No. 1. Fails to meet size as marked.”

### ***En Route or Destination***

Size shall always be determined and reported when performing a quality and condition inspection. Report the size statement, including a mostly range if necessary, in the “Other” section of a paper FV-300 certificate, or the “Lot Description” section of an electronic FV-300 certificate. Do not report the percentages of offsize in the offsize/defects columns on the certificate unless the lot fails to meet size.

All lots marked to a recognized size, (including sizes based on the Florida Marketing Order) which fail to meet size as marked due to excessive offsize, shall be reported to a PACA specialist in Washington, D.C.

### **Containers Marked to a Recognized Size**

Size shall be based on either the U.S. grade standard size designations (small, medium, large, extra large) or a Florida Marketing Order (FMO) size. Tomatoes from non-regulated areas using a "FMO" size must have the "FMO" designation in close proximity to the size marking in order to be considered a recognized size. Include the applicable offsize column(s) on the notesheet. Report the size in the "Other," or Description of Product" section as "Meets size as marked" or "Meets size as marked, offsize within tolerance," as appropriate.

When the lot tolerance for size is exceeded, the lot would fail to meet size as marked. Report the fact that the lot failed to meet size requirements following the actual grade statement, such as; "U.S. No. 1. Fails to meet size as marked." For en route or destination inspections, the percentage of offsize shall be reported in the Offsize/Defects column of the certificate only when the lot fails to meet size.

### **Containers Not Marked or Not Marked to a Recognized Size**

Containers are often not marked to size, or are marked with numerical designations such as 4x5, 6x6, and 5x6 etc. which are not referenced in the standards. These markings have no meaning to the inspector, other than possible lot identification. **Lots with no markings, or marked in this manner would not meet size (marking) requirements** (marked according to one of the four size designations in Table I of the standard). Report in the grade statement "Fails to meet marking requirements as to size."

Determine and report a size range. Show the size range, including a mostly, if applicable, in the "other" section on the certificate. Report "Fails to meet marking requirements as to size" in the grade section of the certificate.

If the applicant specifies a recognized size (S, M, L, XL or FMO 5x6 etc.) then that size will be used. To report the size on the certificate, state "Meets size as specified" or "Meets size as specified, offsize within tolerance." In the Remarks section state "size determined and reported based on XXX (denote size) at applicants request."

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### ***Shipping Point***

If requested, lots marked with only numerical designations may be specified on the basis of one of the size designations in the standard. If the applicant does not specify, then the inspector shall determine and report size by giving a general range in diameter (in inches and fractions thereof) and a mostly statement as needed. The 10% tolerance for offsize shall be applied.

## **Size Based on Florida Marketing Order**

The Florida Marketing Order No. 966 defines size requirements based on numerical designations (6x7, 6x6, and 5x6).

<b>Size classification</b>	<b>Minimum Diameter in inches</b>	<b>Maximum Diameter in inches</b>
6x7	2-9/32	2-19/32
6x6	2-17/32	2-29/32
5x6	2-25/32	No maximum

To allow for variations incident to proper sizing, not more than a total of 10% by count, of the tomatoes in any lot may be smaller than the specified minimum diameter or larger than the maximum diameter.

Size shall be based on designations as defined in the FMO. For lots of tomatoes from regulated areas, the sizes as defined in the FMO shall apply throughout the year. For all lots packed outside the regulated area, containers must also be marked with "FMO" in close proximity to the size designation to be considered a recognized size. If no "FMO" is marked on the container, and they are not packed in the regulated area, the lot will be considered as not marked to size and would fail marking requirements. The inspector shall also report on the notesheet and certificate "Size based on FMO requirements" for lots packed outside the regulated time and/or regulated area.

Additionally, lots of tomatoes packed in the regulated area must meet all applicable marketing order requirements. For additional information regarding the inspection of tomatoes based on the Florida Marketing Order refer to Appendix II.

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## **Size Based on Import Requirements**

When inspections are based on 8e import requirements, the inspector must note all tomatoes under the minimum diameter allowed (2-9/32). The 10% tolerance for offsize would apply to tomatoes failing to meet the minimum requirement.

For containers marked to size based on Table I in the standard, compliance with the markings shall be determined in addition to minimum import requirements.

For containers with no markings, or marked to numerical designations not based on the Florida Marketing Order, the inspector must also determine the minimum and maximum diameter and use a mostly statement as necessary.

**SIZE SUMMARY - EN ROUTE OR DESTINATION (TERMINAL MARKETS)**

	Origin	Time period	Markings	Request by applicant	Sizer <sup>1,2</sup>	Statement(s) <sup>3</sup> (according to the facts)
1	Regulated area <sup>4</sup>	Regulated time <sup>5</sup>	5x6, 6x6 or 6x7 (Size based on FMO <sup>6</sup> )	Size not specified	FL TOM <sup>1</sup>	Meets or fails to meet marked size.
2	Regulated area <sup>4</sup>	Regulated time <sup>5</sup>	5x6, 6x6 or 6x7 (Size based on FMO <sup>6</sup> )	Extra large, large, or medium	Both sizers	Meets or fails to meet marked size. Meets or fails to meet specified size. Size based on U.S. grade standards at applicant's request.
3	Regulated area <sup>4</sup>	Non-regulated time	5x6, 6x6 or 6x7 (Size based on FMO <sup>6</sup> )	Size not specified	FL TOM <sup>1</sup>	Meets or fails to meet size as marked. Size based on FMO requirements.
4	Non-regulated area	Any time	Size based on U.S. Grade Standards Table 1 (extra large, large, medium or small)	Size not specified	USDA <sup>2</sup>	Meets or fails to meet size as marked.
5	Non-regulated area	Any time	No markings, <sup>7</sup>	Size not specified	Report range (min, max diameter)	Fails to meet marking requirements as to size.
6	Non-regulated area	Any time	No markings <sup>7</sup>	FMO or Table 1 in U.S. Standards	FL TOM <sup>1</sup> or USDA <sup>2</sup> per request	Meets or fails to meet size as specified. Size based on (FMO/US grade standard) requirements at applicant's request. Fails to meet marking requirements as to size.
7	Non-regulated area	Any time	Marked with both (Sizes from U.S grade standards and non-recognized numerical designations)	Size not specified	USDA <sup>2</sup>	Meets or fails to meet size as marked. Size based on U.S. grade standards. <sup>8</sup>
8	Non-regulated area	Any time	5x6, 6x6, or 6x7, <u>with</u> some form of "FMO <sup>6</sup> " indicated on container	Size not specified	FL TOM <sup>1</sup>	Meets or fails to meet size as marked.

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<sup>1</sup> A three-blade set for sizing tomatoes according to the Florida Marketing Order size designations of 5x6, 6x6, and 6x7.

<sup>2</sup> A four-blade set for sizing tomatoes according to the U.S. Grade standards size designations as listed in Table 1 (extra large, large, medium and small).

<sup>3</sup> "Meets/Fails" statement reported in the "Other/Lot description" section regardless of whether the lot passed or failed for quality or condition. "Fails" statements reported in the "Grade" section. Percentage of offsize shall only be reported in the Average Defects column if the lot fails size, or reporting a percentage of U.S. No. 1 quality or other grade as applicable. Lots which fail to meet size as marked will be misbranded as to size.

<sup>4</sup> Regulated area (that portion of the State of Florida bounded by the Suwannee River, the Georgia Border, the Atlantic Ocean and the Gulf of Mexico).

<sup>5</sup> Regulated Time (October 10 through June 15 of each season).

<sup>6</sup> FMO indicates size is based on the Florida Marketing Order requirements for size.

<sup>7</sup> "No markings" means containers are not marked to a recognized size according to the U.S. Grade Standards or Florida Marketing Order, or no actual markings on the container.

<sup>8</sup> Determine and report compliance with FMO (in addition to U.S. grade standards sizes) only at specific request of applicant.

### **Size Examples Based on Summary Chart:**

- 1) Tomatoes from South Carolina (or any non-regulated area) any time of year in 25# cartons stamped 6x6. The inspector shall use Scenario #5 from the chart and report the range (minimum to maximum diameter). The lot will also fail to meet marking requirements as to size. Keep in mind, any time the size terms 6x7, 6x6 and 5x6 are used without FMO marked on the container for lots packed outside the regulated area, the lot is not considered to be marked to size. Upon applicant's request, the inspector may determine size based on the U.S. standards or the Florida Marketing Order, in which case the inspector would apply Scenario #6.
- 2) Tomatoes from South Carolina (or any non-regulated area) any time of year stamped 6x6 with FMO marked on the container. The inspector shall use Scenario #8.
- 3) Tomatoes placed packed in two and/or three layer cartons marked to a numerical designation without FMO (from a non-regulated area, any time of the year). This is typical of vine-ripe packs from California and imports from Mexico. In this case, the numerical designations are simply a pack arrangement and have no relation to the numerical designations in the Florida Marketing Order. The inspector shall use Scenario #5. Report the range (minimum to maximum diameter). The lot will also fail to meet marking requirements as to size. If applying import requirements, the inspector must also determine compliance with the minimum diameter (2-9/32 inches).
- 4) Tomatoes from Florida in a regulated area between October 10 through June 15<sup>th</sup> stamped 5x6. The inspector shall use Scenario #1. Tomatoes packed from the regulated area under the Florida Marketing Order any time of year, are not required to include "FMO" in the size marking on the container.

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### **Size on Cherry Tomatoes, Plum or Pear Type Tomatoes, and Other Similar Types**

Unless specifically requested by the applicant, size on these types of tomatoes shall not be determined or reported. However, if a minimum or minimum and maximum diameter is marked on the container, size must be determined and reported. The 10% tolerance for offsize applies when lots are marked to a diameter, or the applicant has requested a specific size. (See Exemptions to Size Markings.)

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## **STANDARD WEIGHT**

Certification of standard weight is an optional section of the standards and was included at the request of industry. Standard weight may be specified in connection with the grade at the request of the applicant and so noted under the "Remarks"

section; for example: "Standard weight determination made at applicants request." However, standard weight is a **mandatory** requirement in the Federal Marketing Order for Florida tomatoes.

**§51.1863 Standard weight.**

**(a) When packages are marked to a net weight of 15 pounds (6.80 kg) or more, the net weight of the contents shall not be less than the designated net weight and shall not exceed the designated weight by more than 2 pounds (0.91 kg).**

**(b) In order to allow for variations incident to proper sizing, not more than 15 percent, by count, of the packages in any lot may fail to meet the requirements for standard weight.**

A standard tomato shipping container is typically marked to a net weight of 25 pounds. When this is the case, to meet the requirements of standard weight the container can not weigh less than 25 pounds net, or weigh more than 27 pounds net. Standard weight requirements would not apply if packages are marked to a net weight of less than 15 pounds, or if the packages are not marked to a net weight.

Standard weight is not to be confused with certification of net weight. Be sure the applicant understands the difference if requesting a standard weight inspection.

While determining compliance or non-compliance of Standard weight, a non-compliance of net weight may exist. It is important to be aware of this because of the tolerances for standard weight. Failure to meet net weight requirements as explained in the general inspection instructions are violations of PACA. For this reason, when requested to perform an inspection for Standard weight, **weigh at least thirty-six (36) containers.** This will avoid having to weigh additional containers if net weight is also in question.

**Use the following example as a guide for certification of "Standard Weight."**

Cartons marked or designated 25 pounds net weight.

Pack: Net weight per carton 24.50 to 27.50, average 25.50 pounds including 10% weighing less than 25 pounds and 5% more than 27 pounds. (See remarks.)

Grade: U.S.- - -. Meets Standard Weight.

Remarks: Standard weight determination made at applicants request.

If the lot fails to meet standard weight requirements, the grade statement is: "Fails to meet requirements of standard weight due to --% of cartons below marked weight and --% of cartons more than 2 pounds over marked weight."

**Note, a 15% tolerance by count, of the packages in any lot may fail to meet the requirements for standard weight.**

Refer to the General Inspection Instructions for information and instructions on net weight certification. **Results of net weight determination on Florida tomatoes**

could result in a conflict with standard weight certification at Shipping Point. When in doubt, contact the Field Operations Section.

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## DEFECTS (QUALITY AND CONDITION)

Statements pertaining to freshness, maturity, shape, color, the amount and type of defects, and the amount of decay are shown under the appropriate headings.

Factors noted with **(Q)** are considered as **QUALITY** only. **Quality**, sometimes referred to as "**permanent**" defects, means defects which do not change during storage or shipment (shape, scars, etc.).

Factors noted with **(C)** shall be reported as **CONDITION** on market certificates. **Condition defects** are defects which are subject to change during shipment or storage, including but not limited to bruising, discoloration, shriveling and decay.

Those factors noted with **(Q or C)** may be considered as **QUALITY or CONDITION**, depending on the circumstances.

References to Area, Aggregate Area, Length or Aggregate Length are based on a tomato having a diameter of 2-1/2 inches. For tomatoes larger or smaller than 2-1/2 inches in diameter, greater or lesser areas may be allowed.

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### Abnormal Coloring (C)

Tomatoes may show striped, blotchy or other color patterns that are not characteristic of normal coloring/ripening. The term "abnormal coloring" will be used to report a number of similarly appearing defects formerly identified as "virus mottling," "mottling," "irregular ripening," "blotchy ripening," among others, which often cannot be distinguished from each other with certainty. Although these defects exhibit somewhat different patterns (circular type blotches, striped or streaked areas or sections, variegated or mottled patterns from the blossom or stem end) they all affect the appearance, and therefore **will be reported as one defect, abnormal coloring**. No other terms can be used to describe such defects. Tomatoes affected by abnormal coloring will rarely be evident at shipping point. This defect is scored based on the area affected and the contrast in color (greens and reds).

It is important not to confuse abnormal coloring with the normal process of ripening. Tomatoes will typically begin to ripen from the blossom end first, and progress to the walls and shoulders. During the ripening process, some striped or blotchy areas are normal as the tomato moves from green to red. Listed below are some guidelines to consider when determining abnormal coloring.

<b>Characteristics</b>	
<b>Normal ripening process</b>	<b>Abnormal coloring</b>
Blending of colors from green to red.	Distinct color change from green to red. May skip several color categories.
Striped or streaked areas will blend into adjacent colors.	Striped or streaked areas do not blend into adjacent colors, distinct color changes, skipping several color categories.
Blossom area will typically ripen first, followed by walls, and shoulders.	Shoulders are red, while blossom end remains distinct green color.
Tan to yellow break in color typically occurring on blossom end.	Yellow circular rings or blotchy areas, often associated with raised areas.

**Do not cut tomatoes in order to determine abnormal coloring. Abnormal coloring is based on the external appearance only.** Tomatoes in the turning stage are often difficult to distinguish from abnormal coloring, when scoring abnormal coloring, it should be obvious that the tomato is affected.

As a guide, tomatoes that display symptoms characterized as abnormal coloring will be scored and reported as “abnormal coloring,” if the tomatoes are affected to the extent as shown in the official visual aids TM-CP-3 and TM-CP-4. Copies of the Official Visual Aids are available in each inspection office. Each inspector should familiarize themselves with the visual aids. Also see the official visual aids for identification TM-5-IDENT and TM-6-IDENT.

Tomatoes that are scored and reported as “abnormal coloring” will not be categorized to a color classification (green, breakers, turning, pink, light red and red). See section “Report color as a condition factor” for further clarification. Therefore, the total percentage of tomatoes affected by abnormal coloring + soft + decay + color classifications must add up to not less than 98 percent, or not more than 102 percent.

Abnormal coloring does not include the following specifically named defects and/or conditions: cloudy spot, ghost spot, sunscald, spray burn, dust burn, sunburn or yellow color due to high temperatures and/or lack of ventilation. For the purpose of classifying as to a color, tomatoes affected by the above specifically named defects will be included in the percentages of color classifications. For instructions on scoring and reporting these specific defects or conditions, see the specific sections for each defect.

### **Reporting Abnormal Coloring on FV-300 Certificate**

Report and score “abnormal coloring” and “white core” against the total tolerance for “otherwise defective” against the grade being applied. This means that when an inspection is based on the U.S. No. 1, U.S. No. 2, or U.S. No. 3 grade, report the percentage of abnormal coloring in the first column only on the FV-300 certificate, but when the inspection is based on the U.S. Combination grade, report the percentage of

abnormal coloring in the first and second columns on the FV-300 certificate. Abnormal coloring is scored against the total tolerance for “otherwise defective,” and not against any restrictive tolerance. However, in the U.S. Combination grade, defects scored against both the No. 1 and No. 2 grades must be shown on the certificate. White core will be reported in the same way. For certificate examples see the FV-300 handbook (Example No. 34).

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### **Abnormally Soft and Watery Fruit (C)**

Occasionally, tomatoes will show abnormal softness which is accompanied by an unusual watery appearance. Various causes are given for this condition, such as excessive amounts of nitrogen fertilizers, or excessive amounts of rainfall on rich soils. The appearance, edible and marketing quality is materially affected. Abnormally soft and watery fruit are considered very undesirable by re-packers since they will not withstand normal handling.

When abnormally soft and watery fruit are cut, the walls have a translucent or watery appearance, and the flesh is abnormally watery. Suspicious fruit should be cut crosswise with a sharp knife. Cutting with a dull knife may cause the fruit to appear bruised, soft, or watery, when in fact it is not.

The appearance and condition of abnormally soft and watery fruit is different than fruit that can be called “soft,” (yields readily to slight pressure) and should be reported separately.

### **Scoring Guide**

Score as **damage** by abnormally soft and watery when any fruit lacks firmness (but not soft), and is objectionably watery when cut.

Score as **serious damage** if this condition seriously affects the edible or marketing quality of the fruit.

It will rarely, if ever be scored as very serious damage. However, any tomato, which yields readily to slight pressure, should be scored as soft against all grades, regardless of color.

**Abnormally soft and watery fruit should be classified as to a color.** Fruit affected by this defect do not take away from the 98 to 102% of color classifications, abnormal coloring, soft and decay. If this defect is present, it should be reported before the soft and decay statements on the certificate.

**Cherry tomatoes** typically show translucent walls. Because of their size, the walls of cherry tomatoes are characteristically thinner than other tomatoes. This is not a defect and should not be scored as abnormally soft and watery. However, if cherry tomatoes with translucent walls are also soft, they should be scored as “soft.”

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## Bacterial Speck (Q)

Bacterial speck appears as very small, smooth, slightly raised black spots. Specks are typically between 1/32 to 1/16 inch in diameter. The early stages are barely visible and the oldest lesions are usually no more than 1/32 inch in diameter. Affected tomatoes often show large numbers of the small black spots which may also coalesce. There is no decay associated with these blemishes and they do not develop or spread during transit. Bacterial speck may be distinguished from bacterial spot by the very small size of the spots, and are always smooth, with readily apparent margins. They do not have a light or water-soaked halo about them and do not have the checks and cracks which cause the scab-like appearance of bacterial spot lesions.

### Scoring Guide

Due to the small size of bacterial speck, numerous specks which do not exceed the allowable area may be equally objectionable depending on the color, size, depth and concentration.

Score as **damage** when more than a circle 3/8 inch aggregate in diameter or more than 5 large (1/16 inch) specks are present.

Score as **serious damage** when more than a circle 5/8 inch aggregate in diameter or more than 25 obvious specks are present.

Score as **very serious damage** when more than a circle 1 inch aggregate in diameter or heavily concentrated and very seriously detracts from the appearance.

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## Bacterial Spot (Q)

Bacterial spot appears as a dark raised spot, sometimes with a narrow water soaked border. Enlarged spots form black, elevated scab-like areas, with irregularly lobed or feathered margins. The center is slightly sunken, brown, corky, and lesions reach a diameter of 1/8 to 1/4 inch. Lesions do not penetrate into the pulp. The infection of bacterial spot is of field origin. There is very little, if any, increase in the size of the spots during the normal transit period.

### Scoring Guide

Score as **damage** when more than a circle 3/8 inch aggregate in diameter, or is cracked.

Score as **serious damage** when more than a circle 5/8 inch aggregate in diameter.

Score as **very serious damage** when more than a circle 1 inch aggregate in diameter.

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## Blossom End Discoloration (C)

Blossom end rot is a physiological disorder of tomatoes which is associated with a calcium deficiency in the fruit. The first symptoms of blossom end rot is usually the appearance of small, brown or water soaked discoloration which may be slightly raised or sunken near the blossom end (bottom) of the fruit. As the spot enlarges the affected tissues dry out and become light to dark brown. The lesion develops into a well-defined, sunken spot with the affected tissue collapsed and leathery. Blossom end rot is not a type of decay; however, the dead tissue may be invaded by alternaria rot, bacterial soft rot or other secondary fungi or bacteria. Secondary invasion often results in a black or watery appearance. When the affected area is decayed, report as decay.

When blossom end rot is encountered, the tomato should be cut to determine to what extent the tomato is affected. **The term “blossom end discoloration” shall be used to describe this defect.** Do not use the term “blossom end rot.”

If the discoloration only affects the skin of the tomato, use the following guidelines.

### Scoring Guide

Score as **damage** when the affected area exceeds 3/8 inch in diameter.

Score as **serious damage** when exceeding 5/8 inch in diameter.

Score as **very serious damage** when exceeding 1 inch in diameter.

These guidelines refer to discoloration affecting the skin only. When blossom end discoloration is sunken and/or the underlying tissues are affected, lesser amounts will be allowed.

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## Bruises (C)

Bruised tomatoes will usually appear as soft **areas**, slight or deep indentations, split walls or crushed fruit. Bruising can result from a tight pack, or by rough handling or transportation. Fruit with some percentage of color will bruise more readily than mature green fruit. Mature green tomatoes showing indentations usually fill out and ripen satisfactorily. However, mature green fruit can be bruised severely enough to score as a defect. When soft areas are encountered (resulting from bruising), they should be described and reported as bruises, not as soft. Flattened areas without underlying damage to the flesh shall be ignored.

### Scoring Guide

Score as **damage** when more than 3/8 inch aggregate area is affected.

Score as **serious damage** when more than 5/8 inch aggregate area is affected.

Score as **very serious damage** when more than 3/4 inch is very seriously affected. Tomatoes that are cracked or split open will be scored as very serious damage.

For en route or destination inspections, bruising affecting the shoulders shall be reported separately from other bruises. Shoulder bruises shall be scored against the 10 percent tolerance for “tomatoes damaged by shoulder bruises, or by discolored or sunken scars.”

Keep in mind, these guidelines are based on a tomato 2-1/2 inches in diameter. Larger or smaller areas may be scored based on the size of the tomato as well as the type. The thickness of walls and depth of the bruised area shall also be considered when determining damage, serious damage and very serious damage.

Any time bruising is unique or occurs in excessive amounts, the location should be described in the “Remarks/Other” section on the certificate, showing the location in the container, load and or pallet.

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## **Catfaces (Q)**

Catfaces are characterized by misshapen or puckered blossom ends. The condition apparently involves imperfect development of certain areas which, at maturity, are represented by an irregular, leathery scar. Small channels may penetrate almost into the locules. When tomatoes advance in color or are subjected to pressure, these channels may leak and provide an entrance for decay. The weakness of the tissue can usually be determined by applying moderate pressure with the fingers next to the channel which may cause it to leak.

### **§51.1877 Classification of Defects. Table II...Catfaces**

**Damage. Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 1/2 inch...in diameter.**

**Serious damage. Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 3/4 inch...in diameter.**

**Very serious damage. Channels extend into the locule, wall has been weakened to the extent that slight pressure will cause a tomato to leak, or a fairly smooth catface aggregating more than a circle 1 inch...in diameter.**

The interpretation of the definitions can be confusing. The definitions of damage, serious damage, and very serious damage allow a progressively greater area affected by a "fairly smooth" catface. However, each definition also states that when a "channel extends into a locule," it is scorable as damage, serious damage and very serious damage. Since this is stated in all three definitions, if a channel extends into a locule it shall be scored as very serious damage. Scars that are rough or deep are defined both as damage and serious damage. Therefore, if scars are rough or deep score as serious damage. Likewise if channels are very deep or wide, score as serious damage.

## Scoring Guide

The standards do not define wide, deep, very deep or rough, therefore it may be difficult to apply these definitions to the various characteristics of catfaces. It is often difficult to distinguish between a deep scar and the beginning of a channel. In order to avoid confusion, the following guidelines shall be followed. Wide, rough, deep and very deep shall all be considered more than 1/4 inch in depth or width. Greater or smaller areas may be allowed depending on the size of the tomato. Additionally, pinhole-type catfaces (very narrow channel on the blossom end of tomato which extends into the tomato), may extend more than 1/4 inch in depth into the tomato and typically do not leak or extend into a locule. This type of catface typically does not affect the marketability to the same degree as very deep or wide channels. Care should be used in determining the severity of pinhole type catfaces. The inspector may need to cut the tomato to accurately determine the amount of damage, serious damage and very serious damage. Do not score pinhole-type catfaces unless the channel extends into a locule or causes the tomato to leak.

See official visual aid TM-2-IDENT for identification photographs.

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## Chilling Injury (C)

Chilling injury is caused by exposure to low temperatures, usually below 50° F. for an extended period of time. Mature green tomatoes are more susceptible to chilling injury than tomatoes with some break in color. Chilling injury can occur in the field, during transit, or after they reach the market if held at low temperatures. The symptoms or affects of chilling injury usually will not become apparent until a few days after the injury occurs. In general, chilling injury will appear as some other defect. For this reason, **do not use the phrase “chilling injury” on the certificate**. Describe affected tomatoes using either other defect names or descriptions (such as sunken discolored areas, discolored areas around stem scar, etc.), according to the facts. Additionally, it is distinct in appearance from freezing injury. (See section on freezing injury.)

The symptoms and indications of chilling injury vary depending on the severity. It may be severe enough to kill cells in the fruit, leading to slow or abnormal ripening. Indications of chilling injury may include:

- Dullness or lack of sheen to the surface of the fruit.
- Slightly rough or coarse feel to the surface.
- Possible pattern of occurrence in containers or load (similar to freezing injury pattern).
- Alternaria Rot around the stem scar or numerous lesions elsewhere on the fruit.
- Abnormal coloring.

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## Cleanness (Q)

All grades require tomatoes to be clean.

**§51.1867 Clean. “Clean” means that the tomato is practically free from dirt or other foreign material.**

Occasionally, tomatoes will show dirty streaks or dried water droplets. Tomatoes may appear dirty if they are not washed or washed in dirty water. Tomatoes with adhering leaves which are not attached by leaf stems and adhering glue caused during the lidding process are examples of foreign material which may cause the tomato to be considered damaged by foreign material and would not meet the basic requirement of “clean.” If the tomato cannot be described as being “practically free from dirt or other foreign material,” it should be reported as “not clean.”

### Scoring Guide

Tomatoes affected by dirt, glue, spray residue or other foreign material, when thickly smeared and greater than 3/8 inch diameter in aggregate or lightly smeared more than 5/8 inch in diameter in aggregate shall be scored as “not clean.” Score against the total tolerance for the grade.

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## Cloudy Spot (Q)

Cloudy spot is believed to be caused by stinkbugs and related insects during feeding by sucking fluids from the tomato cells and injecting enzymes. The affected area appears as light colored, silvery white to yellow areas with indistinct borders, occurring in the fleshy tissue under the epidermis. As the tomatoes ripen, the spots do not turn red, but are usually a light tan to yellow color. White to yellow spongy tissues or cavities are found below the feeding scar when the skin is cut back. The resulting contrast in color affects the appearance.

### Scoring Guide

Score as **damage** when the spots aggregate more than the area of a circle 3/8 inch in diameter.

Score as **serious damage** when the spots aggregate more than an area 5/8 inch in diameter.

Score as **very serious damage** when the spots aggregate more than an area 1 inch in diameter.

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## **Color, Ripeness and Firmness**

Color, ripeness and firmness are important factors in determining the marketability of tomatoes. Mature tomatoes pass through several stages of ripeness, which are characterized by changes in color and firmness.

### **Color Classifications**

The standards define the terms, which may be used in connection with the grade statement. The color classifications “green,” “breakers,” “turning,” “pink,” “light red,” and “red” may be reported in connection with the grade; provided, they are mature and not more than 10 percent in the lot fail to meet the color specified including not more than 5 percent for tomatoes which are green, when any term other than “green” is specified. If a lot is irregular in color but does not contain more than 5 percent green it may be certified as meeting the designated color classification. Any lot not meeting the requirements of any color classification may be designated as “Mixed Color.” Additionally, two classes of color may be reported together, for example, “light red and red” or “turning and pink,” provided those failing to meet these colors are within the permitted tolerances. When applicable, these terms shall be used to report color under “Condition” and “Grade” headings.

**§51.1860 Color classification. (a) The following terms may be used, when specified in connection with the grade statement, in describing the color as an indication of the stage of ripeness of any lot of mature tomatoes of a red fleshed variety:**

- (1) Green. “Green” means that the surface of the tomato is completely green in color. The shade of green color may vary from light to dark;**
- (2) Breakers. “Breakers” means that there is a definite break in color from green to tannish-yellow, pink or red on not more than 10 percent of the surface;**
- (3) Turning. “Turning” means that more than 10 percent but not more than 30 percent of the surface, in the aggregate, shows a definite change in color from green to tannish-yellow, pink, red, or a combination thereof;**
- (4) Pink. “Pink” means that more than 30 percent but not more than 60 percent of the surface, in the aggregate, shows pink or red color;**
- (5) Light red. “Light red” means that more than 60 percent of the surface, in the aggregate, shows pinkish-red or red: Provided, that not more than 90 percent of the surface is red color; and,**

**(6) Red. “Red” means that more than 90 percent of the surface, in the aggregate, shows red color.**

**(b) Any lot of tomatoes which does not meet the requirements of any of the above color designations may be designated as “Mixed Color.”**

**(c) For tolerances see §51.1861.**

### **Reporting Color**

Color will be reported according to the color classifications listed in the standards, that is, “green,” “breakers,” “turning,” “pink,” “light red,” and “red,” or by the groupings, “green and breakers,” “turning and pink,” “light red and red.” No other color combinations other than those noted are permitted for red varieties. Color shall be reported in groupings on the notesheet and certificate unless specifically requested by the applicant to report colors individually prior to the start of the inspection.

At shipping point, practically all tomatoes are green. When there is 3 percent or more advanced to breakers, the percentage of color should be shown to the nearest multiple of 5, (i.e. “Generally green, average approximately 5 percent breakers.” Or “Average approximately 75 percent green, 20 percent breakers and 5 percent turning.”) When inspecting tomatoes with color, report the same way, i.e. “Average approximately 40 percent breakers, 40 percent turning and pink, 20 percent light red.” Report only the percentages of colors found in the lot, for example, if the lot shows only green, breakers, and turning fruit, report as “average approximately 35% green and breakers, 65% turning.” Always report color classifications in multiples of 5 percent. For example, report 72 percent as “Average approximately 70 percent.”

Tomatoes that are affected by “abnormal coloring” shall not be categorized according to the color classifications noted above. Abnormal coloring affects the inherent color that the tomatoes would show if they were not affected by this defect. Because of the nature of the defect it is difficult to accurately determine the normal color of tomatoes. Therefore, the total percentage of color classifications + soft + decay + abnormal coloring must total at least 98, but not more than 102 percent. If, after re-checking the figures, the total is not between 98 and 102 percent, adjust the color classification with the highest percentage. For example; with 20% green and breakers, 45% turning and pink, and 40% light red and red, adjust the turning and pink percentage to 40% to obtain a total percentage between 98 and 102.

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\*\*\*\*

### **Important points to remember when reporting color.**

- Use color groupings (green and breakers, turning and pink, light red and red).
- Report in multiples of 5. (7 is reported as 5%, 8 is reported as 10%.)
- Report color as “Average approximately” when there is 3% or more advanced to breakers.

- Soft, decay and abnormal coloring are not included in color categories.
- \*\*\*\*
- Add all color categories + soft + decay + abnormal coloring to total 98 to 102 percent.
- To obtain a total of 98 to 102 percent, adjust the color category with the highest percent as necessary.

\*\*\*\*

### **Yellow (or Orange) Flesh Tomatoes**

There may be occasions when inspections involve yellow or orange flesh tomatoes. In these cases, it is permissible to report the color using the following terms: green, breakers, turning, yellowish (orangish) green, light yellow (light orange) and yellow (orange). They can be grouped in the same manner as with red-fleshed varieties, and will be reported individually only if requested by the applicant. The comparable color (percentage of surface with the color) in the standards for yellowish (orangish) green is pink, light yellow (light orange) is light red, and yellow (orange) is red. The green, breakers, and turning are the same as for red-fleshed varieties.

### **Heirloom Tomatoes**

Heirloom varieties come in a variety of colors and color patterns in addition to the usual red and yellow-fleshed varieties. The color statement is designed to report the stage of maturity of the tomato; however, this may be difficult to determine in many varieties of heirlooms. For example, the Green Zebra variety stays green when ripe, while other varieties will be yellow, orange, pink, purple, purplish black and varying combinations of each. In the case of heirloom tomatoes, inspectors may use additional color terms which best describe the color of the tomatoes. If the inspector is unable to determine the appropriate stages of color, it will not be necessary to report color as outlined above. However, a color statement using general terms to best describe the color shall be reported on the notesheet and certificate. (For example: "Mostly purplish red, some purple to dark purple," or "Mostly yellowish green, some green, few green with yellow stripes.")

### **Mixed Varieties**

When dissimilar varieties are packed in the same carton (red flesh mixed in with yellow flesh tomatoes), and not packed or designated as a mixed pack (i.e. mixed varieties of heirloom tomatoes, or mixed colors of cherry tomatoes) additional color columns must be kept on the notesheet. The dissimilar variety would be scored as a quality factor, and also included in separate color categories. (i.e. "Approximately 40% turning and pink, 25% turning and yellowish green, 10% light yellow and yellow, and 25% light red and red.")

If the tomatoes are intentionally packed as a mixed pack, separate color categories will be required as noted above; however, the inspection shall be done on a condition only basis. If grade is requested, all tomatoes of dissimilar varieties will be

scored against the grade you are applying. (See section on Similar Varietal Characteristics.)

### **Yellow Color Resulting From High Temperatures and/or Lack Of Ventilation**

High temperatures and/or a lack of ventilation may cause a yellow to reddish-tan color over the entire surface of the tomato. Normal color usually returns within a day or two after yellow colored tomatoes are provided with adequate ventilation and appropriate temperature. The yellow to reddish-tan color does not damage the appearance or affect the grade.

When the color is present to a marked extent or the tomatoes are entirely yellow in color they should be described as to color. Fruit soft and yellow in color should be scored against the destination tolerance for soft, but would not be scored because of yellow.

#### **Examples:**

1. Pink and light red have 25 to 50% of surface tannish-yellow to yellow color affecting tomatoes scattered throughout container and lot.
2. Average approximately 40% pink, 30% light red and red, 30% full yellow color. 1/2 to 3/4 of surface of light red and red tomatoes have tannish yellow to yellow color scattered throughout container and lot.

### **Firmness**

Color alone is not a reliable indicator of ripeness. However, “green,” “breakers,” and “turning” are normally hard, while “pink,” “light red,” and “red” may be hard or firm. Firmness depends upon thickness of walls and partitions and the amount of juice. Green tomatoes, which lack firmness, should be scored more severely than those further advanced in color having the same degree of firmness. Under normal circumstances the color classification terms will be sufficient to describe the product. Upon specific request or in unusual circumstances amounts of hard and firm may be reported. It is always necessary to report soft when present, since soft is a defect of all grades. See section entitled Soft and Decay.

#### Firmness Terms

Hard yields only slightly, if at all, to considerable pressure and even in those which are fully red, there will be no loss of juice or pulp when sliced.

Firm yields slightly to moderate pressure and a few drops of juice, pulp, or seeds may be lost when sliced.

Soft yields readily to slight pressure. Tomatoes of any color classification may occasionally be soft. Thickness of the walls and amount of juice present should

be considered when judging softness. Most “soft” will lose some juice, pulp, or seeds when sliced.

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### Cuts and Broken Skins (Q or C)

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Tomatoes may have cuts or skin breaks from various causes including growing conditions, mechanical damage, and rough handling. Tomatoes that are firmly attached to the stem are susceptible to the skin tearing around the stem end at the time of harvesting. Identify this defect as pulled stems.

#### §51.1877 Classification of Defects. Table II...Cuts and broken skins

**Damage. Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch...in length, or other shallow, well healed skin breaks aggregating more than a circle 3/8 inch...in diameter.**

**Serious damage. Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch...in length, or other shallow, well healed skin breaks aggregating more than a circle 1/2 inch...in diameter.**

**Very serious damage. Fresh or healed and extending through the tomato wall.**

#### Scoring Guide

Score cuts, skin breaks, or pulled stems when tomatoes are affected more than the lengths or areas on the chart below:

	Damage	Serious Damage	Very Serious Damage
<b>Unhealed</b> (fresh) cuts or skin breaks:	Score any amount		
Shallow, <b>well healed</b> cut, (maximum <i>length</i> ):	1/2"	1/2"	No limit if well healed unless cut extends through wall
Shallow <b>well healed</b> skin breaks and pulled stems (maximum <i>area</i> ):	3/8"	1/2"	3/4"

For abrasions or rubs with the skin not visibly broken, refer to the “Sunken Discolored Areas” section.

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## Development (Q)

**“Well developed” is a basic requirement in all grades.** Tomatoes will be either "well developed" or "not well developed." Tomatoes that are peaked and ridged at the stem end and have dry tissue and usually contain open spaces below the levels of the stem scar are not well developed. Tomatoes which are not well developed shall be scored against the general tolerance for the grade being applied.

**§51.1868 Well developed. “Well developed” means that the tomato shows normal growth. Tomatoes which are ridged and peaked at the stem end, contain dry tissue, and usually contain open spaces below the level of the stem scar, are not considered well developed.**

### Scoring Guide

Suspicious specimens should be cut crosswise just below the stem scar. If there is an appreciable amount of tissue that is dry and one or more large open spaces **below** the level of the cut, the tomato is not well developed. Open spaces above the level of the stem scar should be disregarded. Open spaces below the cut should not be confused with open spaces in the stem end of normally developed mature green tomatoes.

Tomatoes which are peaked and ridged at the stem end but **do not** have dry tissue, or large open spaces below the level of the cut, may be scorable for shape or smoothness, but should not be scored as being "not well developed." (See the sections on shape and smoothness for further explanations.)

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## Discoloration (Silvery-White and Gold Fleck) (C)

The surface of the tomato can be affected by small irregular silvery white to gold flecked discolored areas. Similar in appearance to cloudy spots; however, there is no underlying spongy tissue or cavities beneath the skin. The cause of this condition is unknown.

This type of discoloration is difficult to detect while tomatoes are green. The discoloration typically occurs on the shoulders and around the stem scar; however, it may occur anywhere on the tomato surface. As the tomato ripens the spots do not turn red, and the contrast in color affects the appearance. Report as “silvery-white” or “gold fleck” discoloration according to the facts.

\*\*\*\*

### Scoring Guide

Score as **damage** when aggregating more than 3/4 inch in diameter.

Score as **serious damage** when aggregating more than 1-1/4 inches in diameter.

Score as **very serious damage** when very seriously detracting from the appearance.

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### Discolored Areas Around and/or Beneath Stem Scar (Q)

Some tomatoes will show dark brown or black areas around the stem scar margins and/or in the pithy tissue immediately beneath it. Usually there is no external evidence of this condition. However, if it is apparent, it will appear as a narrow band of brown or black around the margin of the stem scar. This band may be slightly sunken. The brown or black color may extend into the tissue of the tomato 1/16 to 1/4 inch in depth. The cause of the defect is unknown, but may be caused by disease. Although *Alternaria* can often be found in isolation from such spots, they should not be classed as decay unless the tissue is in a disintegrating state (flesh is softer, spongy and noticeably discolored). The inspector should make a thin slice just under the stem scar to determine if it is scorable. It will rarely be scored as serious damage.

#### Scoring Guide

Score as **damage** when the discoloration materially affects the appearance or is still apparent after a 1/4-inch slice has been removed.

For **serious damage**, allow an additional 1/8 inch cut for a total of 3/8 inch depth below the stem scar.

This defect would rarely be scored as serious or very serious damage.

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### Discolored Seed Areas (C)

At times the jelly surrounding the seeds in one or more locules of turning to red fruit is discolored and dried out. The color is usually dark green to black, and the flavor of such portions is not normal. At times the discoloration will be indicated externally by a translucent appearance of the walls of the tomato. The defect will be described as "discolored seed areas."

#### Scoring Guide

Score as **damage** when the appearance of one or more locules is objectionable. Generally any discoloration that is apparent will be considered objectionable. This defect will rarely be scored as serious damage or very serious damage.

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### Enlarged Stem Scars

Occasionally, lots of tomatoes are seen with enlarged stem scars. The stem scar will be larger than usual, although it has the same general color and appearance. **This is not a defect.** If requested, the range of stem scar diameter and percentage of fruit affected can be reported on the certificate, not affecting grade.

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## Surface Discoloration (C)

Surface discoloration refers to discolored areas which may be caused by various factors, including scuffing of the surface of the tomato, usually over a large area and is often a result of the tomato being rolled excessively on the packing lines or in the boxes during transit. The discoloration may change over time. It does not refer to sunken discolored areas or spots, for which there are separate scoring guidelines. Discoloration affecting the surface only shall be reported as "Surface discoloration" and include a description of color and location as needed. (Tan to brown surface discoloration affecting shoulders.) See official visual aid TM-3-IDENT for identification photographs of external discoloration.

### Scoring Guide

Score as **damage** when aggregates more than 3/8 inch in diameter.

Score as **serious damage** when aggregates more than 5/8 inch in diameter.

Score as **very serious damage** when aggregates more than 1 inch in diameter.

These guidelines only refer to area affected. It is also important to consider the color of the discoloration when determining the severity. Dark or black discoloration is more detracting than a tan or light brown discoloration.

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## Freezing and Freezing Injury (C)

"Freezing injury" is the term used when it is evident that the tomatoes have been frozen but are not in a frozen condition at the time of inspection. Tomatoes affected by freezing injury appear water soaked, with the walls and other tissue collapsed.

The term "frozen" shall only be used when ice crystals are present. Tomatoes that have been completely frozen will usually collapse when thawed. When cut the jelly and seeds of affected fruit usually pour out of the locules. The average freezing temperature for a mature tomato is approximately 30.5 degrees Fahrenheit.

When reporting freezing or freezing injury it is important to give the following information:

Pulp temperatures taken at various locations.

\*\*\*\* Extent of injury in the lot or load.

\*\*\*\*

Extent of injury in the containers.

Degree to which individual specimens are affected.

The pattern of freezing or freezing injury in clear, concise terms.

When the location of the injury indicates where or when the freezing occurred this is to be stated. For example: "Freezing injury is so located as to indicate freezing occurred after packing but not in present location," or "Freezing injury is so located as to indicate freezing occurred in the trailer."

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## Ghost Spot (Q)

Ghost spot is a superficial defect characterized by a silvery white to yellowish white circle or ring occurring in the skin. These circles are usually 1/8 to 3/16 inch in diameter. The inner part of the circle is normal in color on green tomatoes. During the ripening process the inner circle area may develop a yellow color. The very center will have a very small brown speck. The white circle remains throughout the stages of ripening but may become less evident as red color develops.

Ghost spot is caused by *Botrytis cinerea*. The pathogen attacks a young tomato but fails to establish itself. Ghost spot is superficial and confined to the skin which can be distinguished from cloudy spot, which affects the underlying tissue.

### Scoring Guide

Score as **damage** when spots are scattered and exceed an aggregate area more than 3/4 inch in diameter.

Score as **serious damage** when spots are scattered and exceed an aggregate area of 1-1/4 inches in diameter.

Score as **very serious damage** when very seriously detracting from the appearance.

If the spots are concentrated in a small area, the appearance will be affected to a greater extent than if the spots are scattered over the surface.

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## Growth Cracks (Q)

Growth cracks are cracks in the skin and flesh of the tomato. They occur in the field while the tomatoes are growing on the plants and usually heal over prior to harvesting. They generally appear as concentric or radial cracks around the stem scar and over the shoulders. They do not form during transit, but may increase in length, width or depth due to pressure exerted on individual fruit during packing and loading operations.

### §51.1877 Classification of Defects. Table II...Growth cracks

**Damage. Not well healed, more than 1/8 inch...in depth, individual radial cracks more than 1/2 inch...in length, aggregate length of all radial cracks more than 1 inch...measured from edge of stem scar.**

**Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.**

**Serious damage. Not well healed, more than 1/8 inch...in depth, individual radial cracks more than 3/4 inch...in length, aggregate length of all radial cracks more than 1-3/4 inch...measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.**

**Very serious damage. Not well healed, more than 1/4 inch...in depth, individual radial cracks more than 1 inch...in length, aggregate length of all radial cracks more than 2-7/8 inches...measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking, not more than 1/8 inch...in depth, individual radial cracks are not more than 3/4 inch...in length.**

The scoring guides for damage, serious damage and very serious damage each state, "Any tomato that is at least turning may have cracks, which are not well healed, provided they are not leaking." However, the same depth and length requirements for each grade still apply. In cases where a crack is healed for part of its length and the remainder is not healed, consider it as unhealed. As a guide in scoring not well healed growth cracks or broken skins, not well healed means the surface of the crack is moist or has a fresh appearance. When the surface is dried out and/or corked over, it is healed.

See official visual aid TM-1-IDENT and the standard for identification photographs.

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## **Hail Injury (Q)**

Hail injury is caused by hail hitting the fruit when it is on the plant. The severity of injury depends on the size of the hail and the force of the hailstorm. Hail causes indentations in the fruit, sometimes breaking the skin. The hail marks generally occur over the shoulders and stem end, and are usually sunken but firm, white or yellow spots.

### **§51.1877 Classification of Defects. Table II...Hail**

**Damage. Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 3/8 inch...in diameter.**

**Serious damage. Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 5/8 inch...in diameter.**

**Very serious damage. Fresh, very deep or fairly smooth, shallow hail marks aggregating more than a circle 1 inch...in diameter.**

See official visual aid TM-1-IDENT for identification photographs.

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## **Insect/Worm Injury (Q or C)**

Tomatoes are affected by various types of worms and other insects. Injury can occur as stings, feeding injury and/or the presence of live or dead worms and insects.

## §51.1877 Classification of Defects. Table II...Insect Injury

**Damage.** Materially detracts from the appearance or any insect is present in the fruit.

**Serious damage.** Seriously detracts from the appearance or any insect is present in the fruit.

**Very serious damage.** Very seriously detracts from the appearance or any insect is present in the fruit.

Inspectors should look closely around the stem scar and under the calyx, if present, for the evidence of insects. Worm injury may be caused by several types of worms. The eggs are laid by a moth on the stem end portion of the fruit, usually under the calyx lobes or sepals. Worm injury appears as chewed out areas or holes in the fruit. Because the worms are tiny, and holes are minute, they may be overlooked at shipping point. The worms grow and develop in transit, especially in warm weather.

### Scoring Guide

Score as **damage** when stings aggregate more than 3/8 inch in diameter, or feeding injury materially detracts from the appearance.

Score as **serious damage** when stings aggregate more than 5/8 inch in diameter, or feeding injury seriously detracts from the appearance.

Score as **very serious damage** when stings aggregate more than 1 inch in diameter, or feeding injury, or feeding injury very seriously detracts from the appearance. **Any insect in the fruit, or feeding injury which extends through the wall or into the interior of the tomato, shall be scored as very serious damage.**

*In transit or at destination, if damage is fresh, or if live insect(s) are present or a combination of live and dead, report as a condition factor. Report as a quality factor when the damage is old or if the insect(s) are dead.*

See official visual aid TM-2-IDENT-A for identification photographs.

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### Internal Discoloration (C)

Green tomatoes affected by internal discoloration appear to have a grayish-brown discoloration within the walls. On the surface, discolored areas may appear as longitudinal sunken streaks, faint circular areas, or as irregular sunken areas. This is caused by the discolored flesh being visible through the healthy green flesh and skin. When more of the flesh is affected, and the discoloration extends to the surface, the external appearance tends to be more brown than gray. The margins of affected areas are indistinct. In mild cases the surface is slightly sunken. However, in severe case the surface is sharply sunken, producing a lumpy or corrugated appearance. On ripened tomatoes the affected area may fail to develop a good red color. Such areas will usually remain greenish or yellow in color. If the tomatoes are cut, the inner surface of the walls

appear somewhat bleached or whitish, especially when the tomatoes are ripe. If the seeds and pulp are removed, it becomes evident that the vascular bundles and inner surface of the walls are affected first. In severely affected tomatoes definite ring patterns, irregular blotches and streaks with diffused margins are apparent on the inner surface of the walls.

Usually, the tomatoes are affected more on the sides, however, internal discoloration can occur anywhere in the fruit. Generally, only the outer wall is affected, but in severe cases the inner walls and even the basal portion of the seed bearing tissue is affected. Internal discoloration occurs while the tomatoes are still on the plant. The affected area does not increase over time, however, the outer surface may become more sunken and discolored after harvest. It appears first in the vascular bundles and on the inner surface of the walls. Tomatoes of any stage of development may be affected. Generally, the second and third pickings of a field show the disorder.

The term "internal discoloration" will be used to report these similarly appearing defects. They were formerly identified singularly as "vascular browning," "internal browning," and "gray wall." Internal discoloration is caused by a wide variety of factors. However, from the Inspection Service standpoint, they often cannot be distinguished from each other with certainty. Although these defects exhibit somewhat different patterns they all affect the appearance, and therefore will be reported as one defect; "internal discoloration." No other terms can be used to describe such defects.

### Scoring Guide

Score as **damage** when an aggregate area of more than 1/2 inch in diameter is affected.

Score as **serious damage** when an aggregate area of more than 1 inch is affected.

Score as **very serious damage** when an aggregate area of more than 1-1/4 inches is affected.

Suspicious specimens should be cut to determine the degree to which tomatoes are affected. Percentages should be calculated based on the entire sample, not just the cut specimens.

See official visual aid TM-2-IDENT-A for identification photographs for internal discoloration (external and internal view).

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### Moldy and/or Decayed Stems (C)

Both of these defects are objectionable on all types of tomatoes (including cherry and plum tomatoes) and affect the appearance, edible and marketing quality of the tomatoes. Stems and calyxes of tomatoes are usually removed in the harvesting and packing operations; however, they can be present, especially on cherry tomatoes.

### **Moldy Stems**

Tomatoes having moldy stems and/or calyxes are considered objectionable when materially detracting from the appearance and shall be scored as **damage only**. Slight amounts of mold affecting the tips of the stem or edges of the calyx shall be disregarded. The inspector should rub their fingers across the stems and calyxes of tomatoes with moderate to heavy concentrations of mold to check for the presence of decay.

### **Decayed Stems**

Tomatoes having **decayed** stems and/or calyxes shall be scored as **serious damage** against the 10 percent lot tolerance for tomatoes which are otherwise defective, not the decay tolerance. Do not subtract stem decay against the color classifications.

In the "Tomatoes on the Vine" standards, moldy stems/vines shall be scored against the 10% tolerance for defects affecting the vines, but not more than 5% shall be allowed for decayed stems/vines. Decayed stems/vines shall be scored as serious damage.

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### **Maturity (Q)**

All grades require tomatoes to be mature. Tomatoes which do not meet the following requirements of mature shall be reported as "immature" and scored as very serious damage against all grades.

\*\*\*\*

**§51.1865 Mature. "Mature" means that the tomato has reached the stage of development which will insure a proper completion of the ripening process, and that the contents of two or more seed cavities have developed a jelly-like consistency and the seeds are well developed.**

\*\*\*\*

### **Immature**

Immature tomatoes are those fruit that have been harvested **prior** to reaching the stage of development that will ensure a proper completion of the ripening process.

#### **Cutting for Immaturity**

Cut 1/4 inch below the stem scar at a right angle to a line from stem to blossom end. Immature tomatoes will cut "dry," meaning, when cut open they will not show jelly surrounding the seeds. The seeds will not be well developed (white instead of tan). Fruit will not have the contents of two or more seed cavities containing a jelly-like consistency.

The preceding factors are the only reliable indications of immaturity. Other, less reliable indications of immaturity include:

- Immature tomatoes will have an epidermis that feels hard and dry, with a dull green color, in contrast with the smooth, slick feel and glossy green color of a mature tomato.
- Some varieties will show a whitish-green color to the stem "eye," in contrast to the wide brown ring of a mature tomato.
- Seeds may cut instead of being pushed aside. (However, in some meaty varieties the seeds will cut instead of being pushed aside, even when mature.)
- Immature tomatoes may have a white or gray color over the shoulders in contrast to the glossy green color of mature fruit.

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### Nailhead Spot (C)

Nailhead Spot is a fungal disease appearing as small, circular, slightly sunken, grayish-brown superficial spots. In early stages the spots are smooth and tan in color. As they enlarge, the margins become more defined and dark brown to black in color. The centers change to grayish-brown and become sunken. The spots range in size from 1/16 to 3/8 inch in diameter. In certain conditions, the disease can develop rapidly while tomatoes are in transit.

#### Scoring Guide

Score as **damage** when aggregate more than the area of a circle 3/8 inch in diameter.

Score as **serious damage** when the spots aggregate more than the area of a circle 5/8 inch in diameter.

Score as **very serious damage** when the spots aggregate more than the area of a circle 1 inch in diameter.

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### Puffiness (Q)

Puffiness is a physiological defect resulting in the fruit having a puffy appearance. Affected fruit may have flattened sides, ridged shoulders, spongy texture and less than normal weight for the size. It may be difficult to determine puffiness from external indications on thick-walled tomatoes that are of normal weight. When puffy tomatoes are cut, open spaces are found in the cavities that would normally contain seeds and a jelly-like substance.

#### §51.1877 Classification of Defects. Table II...Puffiness

**Damage. Open space in 1 or more locules materially detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.**

**Serious damage. Open space in 1 or more locules seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.**

**Very serious damage. Open space in 2 or more locules very seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.**

Inspectors should cut those tomatoes having external indications and avoid excessive cutting if no puffiness is present. If the lot contains a substantial amount of puffiness not apparent by external indications, the inspector should cut a sufficient amount of tomatoes to accurately determine the severity and percentage of puffiness present. Percentages should be based on the entire sample. Cut the entire contents of *at least one* container before putting the lot out of grade due to puffiness.

The cut to determine puffiness should be made mid-way between the blossom end and stem end at a right angle to the longitudinal axis. The cross section cut on both halves of the fruit should be used in making the determination. Inspectors should use caution when cutting fruit past the turning stage, or tomatoes which tend to be watery, to avoid confusing the loss of locule contents (seeds and jelly) with puffiness.

Flattened sides may also be a result of pressure from a tight pack. In some cases walls may be indented from pressure. If the contents of the seed cavities have been pushed aside from pressure it may be difficult to detect if such fruit are puffy. If there is any doubt as to the original position of the walls or pulp, the fruit should **not** be scored as puffy. If severe enough, the fruit may be scorable as damage (or serious damage or very serious damage) by bruising.

Illustrations in the standard represent the "lower limits" of puffiness allowed in the grades. Both thin-walled and thick-walled tomatoes are illustrated. Remember that a larger open space is permitted in thick-walled tomatoes than in thin-walled tomatoes.

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## **Scars (Other Than Catfaces) (Q)**

Scars are usually caused by whipping or rubbing against a stake, twine or vine. They can appear as smooth scars with no depth to coarse, irregular bark-like scars. Scars may appear on any part of the tomato.

**§51.1877 Classification of Defects. Table II...Scars (other than catfaces).**

**Damage. No depth and aggregating more than a circle 3/8 inch...in diameter.**

**Serious damage. No depth and aggregating more than a circle 5/8 inch...in diameter.**

**Very serious damage. No depth and aggregating more than a circle 1 inch...in diameter.**

Score smooth radial type scars adjacent to the stem scar using the general definitions of damage, serious damage and very serious damage.

Smaller areas of deep scars are permitted compared to scars with no depth, and smaller areas of dark or rough scars are permitted compared to light colored smooth scars. In each case the appearance of the tomato cannot be affected more than it would be by a scar of no depth with the areas allowed for the respective grades. For example, a scar 1/4 inch diameter with depth may be scorable as damage, a 1/2 inch diameter dark or rough scar may be scorable as serious damage.

### **Zipper Scars**

A “zipper” like scar develops on fruit from the stem down to the blossom end. Zipper scars shall be scored on the basis of appearance under the **general definitions** of damage, serious damage and very serious damage. Zipper scars may be thin and smooth or wide and rough with a “stitching” appearance. The exact cause is unclear, but they are believed to be caused by poor pollination.

### **Scoring Guide**

Score as **damage** when the aggregate length exceeds the length from the outer edge of the stem scar to the blossom end of the tomato.

Score as **serious damage** when the aggregate length exceeds more than 2 times the length from the outer edge of the stem scar to the blossom end of the tomato.

Score as **very serious damage** when holes or channels occur along the scar to a greater extent than allowed for other scars and or catfaces.

**When judging the severity, it is important to consider the width and smoothness as well as the length of the zipper scar. A zipper scar that is thin and fairly smooth may be less detracting than one which is rough and or wide, therefore, greater or lesser areas may be allowed depending on thickness and roughness.**

See official visual aids TM-CP-1 and TM-CP-1-A for scoring guides of Zipper scars.

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### **Shape (Q)**

The U.S. standards for tomatoes specify the following minimum requirements for shape:

U.S. No. 1: Fairly well formed.

U.S. No. 2: Reasonably well formed.

U.S. No. 3: Allows misshapen tomatoes provided they do not very seriously affect the appearance.

The following terms shall be used to describe shape:

**Well formed.** Means normal shape for the variety.

**§51.1869 Fairly well formed.** “Fairly well formed” means that the tomato is not more than moderately kidney-shaped, lop-sided, elongated, angular, or otherwise moderately deformed.

**§51.1872 Reasonably well formed.** “Reasonably well formed” means that the tomato is not decidedly kidney-shaped, lop-sided, elongated, angular, or otherwise decidedly deformed.

**§51.1875 Misshapen.** “Misshapen” means that the tomato is decidedly kidney-shaped, lop-sided, elongated, angular or otherwise decidedly deformed: Provided, That the shape is not affected to an extent that the appearance or the edible quality of the tomato is very seriously affected.

**Badly misshapen.** Means misshapen to the extent that the appearance or edible quality is very seriously affected (score against all grades).

### **Scoring Guide**

Score as **damage** when not fairly well formed.

Score as **serious damage** when not reasonably well formed.

Score as **very serious damage** when badly misshapen.

See official models for Shape and Smoothness. Although not specifically mentioned in the standard, tomatoes with decidedly pointed tips on the blossom end would be considered “otherwise decidedly deformed,” and shall be scored against the shape requirement when affecting the appearance to a greater extent than allowed under the grade being applied.

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### **Similar Varietal Characteristics (Q)**

All grades require that the tomatoes be of "similar varietal characteristics."

**§51.1864 Similar varietal characteristics.** “Similar varietal characteristics” means that the tomatoes are alike as to firmness of flesh and shade of color (for example, soft-fleshed, early maturing varieties are not mixed with firm-fleshed, mid-season or late varieties, or bright red varieties mixed with varieties having a purplish tinge).

Inspectors should not certify variety. However, if the similarity of individual tomatoes varies significantly in the lot, the inspector should describe the shape, firmness of flesh, shade of color and general appearance. A sufficiently detailed description should be included on the notesheet to justify reporting a lot out of grade account of "dissimilar varietal characteristics."

For specialty packs which are clearly distinguishable and are intentionally packed and/or designated (by the applicant, markings, or dividers within the package) as a mixed pack (i.e. mixed heirlooms or mixed cherry tomatoes), the inspection may be performed as one lot on a "condition only" basis.

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### **Skin Checks (C)**

These occur as numerous small, slit-like cracks in the waxy coating (cuticle) over the skin. They generally occur over the shoulders appearing as short concentric circles near the stem scar; however, they may occur anywhere on the surface of the fruit. At shipping point, the slits are almost undetectable, however, as the fruit ripens they become more apparent. Skin checks may become discolored and the surrounding surface slightly sunken during the transit and ripening period. For this reason the scoring guide for damage is different depending on the color of the fruit.

Skin checks, (also called cuticle cracking, russeting, shrink cracking, rain checks and crazing by the industry,) is caused by conditions which affect the water balance of the fruit. Temperature, humidity, condensation, and high fruit load per plant are a few factors which can influence the presence of skin checks. As the internal water pressure of the skin cells increases, they rapidly expand, and the cuticle cracks. It is important to note that healed concentric growth cracks may appear similar to skin checks, however they will have a raised scar-like tissue occurring over the shoulders and shall be scored under the guidelines for growth cracks as a quality factor.

All areas affected by skin checks should be considered regardless of the concentration. However, keep in mind that these areas listed below are a guide, and lesser areas of heavily concentrated skin checks that appear worse than the guide or skin checks thinly scattered over a greater area that appear worse than the guide can be scored using the general definitions of damage, serious damage, or very serious damage.

Based on a tomato 2-1/2 inches in diameter, skin checks may not aggregate more than the area of a circle with the following diameter:

## Scoring Guide

<u>Tomato Color</u>	<u>Damage</u>	<u>Serious Damage</u>	<u>Very Serious Damage</u>
"Green or Breaker"	Any amount readily apparent	5/8"	1"
"Turning to Red"	3/8"	5/8"	1"

Any skin checks that are sunken and discolored shall be scored as sunken discolored areas.

**Keep in mind that the "ten percent for tomatoes damaged by shoulder bruises, or by discolored or sunken scars..." applies to skin checks and sunken discolored areas when applying en route or destination tolerances.**

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## Smoothness (Q)

Smoothness refers to the curves or ridges over the shoulders of the tomatoes, not the texture of the skin. The U.S. standards for tomatoes specify the following minimum requirements for smoothness:

U.S. No. 1: Fairly smooth.

U.S. No. 2: Slightly rough.

U.S. No. 3: There are no smoothness requirements for the U.S. No. 3 grade. Rough tomatoes are permitted, provided that the appearance or edible quality is not very seriously affected.

Use the following terms to describe smoothness:

**Smooth.** The tomato has a smooth surface with only slight superficial grooves over shoulders next to the stem scar.

**§51.1870 Fairly smooth.** "Fairly smooth" means that the tomato is not conspicuously ridged or rough.

**§51.1873 Slightly rough.** "Slightly rough" means that the tomato is not decidedly ridged or grooved.

**Rough.** Decidedly ridged or has conspicuous deep grooves.

## Scoring Guide

Score as **damage** when not fairly smooth.

Score as **serious damage** when more than slightly rough.

Score as **very serious damage** when tomatoes are rough and the appearance or edible quality is very seriously affected.

See official models for Shape and Smoothness.

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## Soil Spot (C)

Soil spot is a disorder that frequently affects tomatoes following periods of rainy weather and can vary greatly in appearance and severity. In early stages it usually appears as dark brown to black discolored areas which generally occur over the blossom end half of the tomato. It may appear as raised superficial discolored areas, and remain this way throughout the ripening process. It may also appear as discolored areas that become sunken, enlarged and darker in color. This defect is scored differently depending upon whether the area is sunken or not.

## Scoring Guide

### Soil Spots:

**Damage** when Soil Spots aggregate more than the area of a circle 3/8 inch in diameter.

**Serious damage** when the spots aggregate more than the area of a circle 1/2 inch in diameter.

**Very serious damage** when the spots aggregate more than an area 3/4 inch in diameter.

### Sunken Soil Spots:

**Damage** when soil spots aggregate more than the area of a circle 1/4 inch in diameter.

**Serious damage** when the spots aggregate more than the area of a circle 3/8 inch in diameter.

**Very serious damage** when the spots aggregate more than an area 5/8 inch in diameter.

See official visual aids TM-CP-2 and TM-CP-2-A for identification photographs and scoring guides.

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## Spray Burn or Dust Burn Spots (Q)

Spray burn or dust burn spots are caused by spray or dust residue remaining on the surface of the fruit and appear as small brownish spots usually with light brown

centers which resemble nailhead spot in appearance, but do not develop or become larger.

### Scoring Guide

Score as **damage** when spray burn and/or dust burn spots exceed three in number, or when the aggregate area exceeds 3/8 inch, or when the appearance is materially affected.

Score as **serious damage** when exceeds an aggregate area of 5/8 inch in diameter, or the appearance is seriously affected.

Score as **very serious damage** when the appearance is very seriously affected.

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### Sunburn (C)

Sunburn is characterized by discoloration of tissue, usually over the shoulders or upper half of the tomato. Sunburn on green tomatoes appears as dark-green, yellow or tan areas on the shoulders and/or sides of the tomatoes which have been exposed to the sun. As the tomato ripens and turns from green to red the affected tissue turns yellow. The affected areas may be confined to the skin which may become thickened or leathery. In more severe cases the flesh is also discolored and sunken. If sunburn does affect the flesh of tomatoes, it will appear as a yellow ring over the shoulders contrasting sharply with the lower part of the tomato.

**Sunburn is reported as a condition factor** because the appearance changes as the tomato ripens. If the affected area contrasts with the remainder of the surface, score on an appearance basis using the general definitions of damage, serious damage and very serious damage.

### Scoring Guide

Score as **damage** when more than 20 percent of the surface has a yellow color that contrasts with the remainder of the surface color.

Score as **serious damage** when more than 30 percent of the surface has a yellow color that contrasts with the remainder of the surface color.

Score as **very serious damage** when more than 50 percent of the surface has a yellow color that contrasts with the remainder of the surface color.

Keep in mind that these areas listed above are a guide. **Areas of sunburn that appear worse than the guide due to underlying discolored flesh and or sunken areas occurring over the shoulders creating a distinct line of demarcation between sunburned and unaffected flesh shall be scored using the general definitions of damage, serious damage or very serious damage.**

See official visual aid TM-3-IDENT for identification photographs on sunburn.

## **Green Shoulder Disorder**

Green shoulder disorder can be caused by high temperatures as well as direct sunlight. Excessive temperatures during the growing process may inhibit the tomato from properly developing full color on the shoulders. The extent of injury to the shoulder area is also influenced by the genetic background of the tomatoes.

The discoloration of the shoulders is characterized by dark green skin usually over the shoulders of the tomato. As the tomato ripens and turns from green to red, the affected tissue will not turn red. The affected areas may be confined to the skin which may become thickened or leathery similar to sunburn. Green shoulder disorder will appear as a dark green ring over the shoulders contrasting sharply with the lower part of the tomato.

### **Scoring Guide**

The same scoring guides as sunburn will be used when considering the amount of surface area affected. The resulting contrast of green shoulders on tomatoes which would otherwise be light red or red color is objectionable. Due to varietal and ripening characteristics, it may be difficult to distinguish until the fruit has fully ripened.

**Tomatoes shall only be scored when the green color contrasts with the light red or red color of the tomato (or normal ripe color).** Do not score on fruit which is pink or lighter in color.

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## **Sunken Discolored Areas (C)**

Sunken discolored areas can be caused by various growing, packing and handling conditions which result in small skin abrasions. These abrasions may occur anywhere on the surface, however they most frequently occur over the shoulders. They may appear inconsequential at shipping point and are often overlooked unless the tomato is examined closely. These affected areas often become slightly sunken and discolored in transit or within a few days after reaching the market. These defects affect the appearance and should be scored using the general definitions of damage, serious damage and very serious damage.

Report as "Sunken Discolored Areas" on the certificate. A more detailed description of the location on the tomato, and in the containers may be shown in the "Other" section, if necessary.

## Scoring Guide

Score sunken and/or discolored areas when tomatoes are affected more than the lengths or areas on the chart below:

	Damage	Serious Damage	Very Serious Damage
"Green" or "Breaker"	1/4"	3/8"	5/8"
"Turning" to "Red"	3/8"	1/2"	3/4"

**Slightly sunken or pitted areas with skin not visibly broken that do not affect the appearance to the extent described above should be disregarded.**

See official visual aids TM-1-IDENT and TM-3-IDENT for identification photographs of sunken areas and sunken discolored areas.

For en route or destination inspections, sunken discolored areas shall be scored against the 10 percent tolerance for "tomatoes damaged by shoulder bruises, or by discolored or sunken scars."

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## Sunscald (Q)

Sunscald occurs when tomatoes are subjected to direct and intense exposure to the sun. It usually occurs on the sides, shoulders or upper half of the tomato, but may occur wherever the rays of the sun strike most directly.

Sunscald first appears as a whitish, shiny area on the side of the fruit facing the sun. Later there is blistering and finally the killed tissue becomes a flattened, grayish-white to pale yellow spot with a dry paper-like surface. Such spots are frequently invaded by decay-causing organisms.

## Scoring Guide

**U.S. No. 1 and U.S. No. 2 grades require tomatoes to be "free from" sunscald.** This means that any amount of sunscald is scored in both these grades as serious damage.

**U.S. No. 3 grade requires tomatoes to be free from serious damage by sunscald.** Sunscald, which seriously affects appearance, is blistered, shriveled, or shows a sunken whitish, bleached color.

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## Waxy Blister (C)

Waxy blisters, also known as "fruit tumors," appear as wax-like blisters on the surface of mature green fruit. The blisters are white to cream colored, irregular in shape, and can range from 1/8 to 1/4 inch in diameter and usually more than 1/8 inch high. On green tomatoes the blisters remain raised and swollen. As the fruit ripens the

blisters change to a light to dark brown color and eventually become sunken and crack. The blisters usually develop after packing or in transit.

Score using the **general definitions** of damage, serious damage and very serious damage.

Do not confuse the presence of waxy blisters as an indication of infection associated with abnormal coloring. These areas should be described as "waxy blisters" and reported as a condition defect.

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## **White Core (C)**

On occasion tomatoes may develop a hard, fibrous, white core. Stressful growing conditions, usually aggravated by excessive fertilization may cause the central core to become tough and turn white. This white core will never develop normal internal coloring, and therefore make the tomato undesirable. It may be apparent in tomatoes that appear to have normal external coloring, as well as tomatoes that show abnormal external coloring.

During the course of an inspection several fruit should be cut to determine if the internal quality is acceptable (development, maturity, discolored and dried out jelly in locules, etc.) If tomatoes with a hard, fibrous white core are found, they should be scored as defects, and reported as "White Core."

However, if a tomato shows abnormal coloring based on the external appearance, it should be reported as abnormal coloring, regardless of the internal appearance. The exception is if the tomato is immature, in which case it will be reported as immature and scored as very serious damage. If a tomato shows normal coloring, but upon cutting shows a hard, fibrous white core it should be scored as "white core."

It should be noted that tomatoes ripen from the inside to the outside. The core of a mature green tomato will show a very light green color. This is normal, and will change to pink, and red as the normal ripening process progresses. **The core of tomatoes affected by "white core" will be white. If any shade of color (green to red) is present, the core will be considered normal.**

The cut to determine if white core is present must be made mid-way between the blossom end and stem end at a right angle to the longitudinal axis. In some instances the center cut may not show any white core, whereas a cut made just below the stem scar may show white core. However, in order to ensure uniformity, all determinations are to be made on the basis of the center cut without additional exploratory cuts. The inspector should cut enough fruit to accurately determine the percentage of white core present, while not causing the unnecessary destruction of fruit. The percentage of white core shall be based on the entire sample, not the number of cut tomatoes. Cut the entire contents of *at least one* container before putting the lot out of grade due to white core.

## **Reporting White Core on the Certificate**

White core should be scored against the total tolerance for “otherwise defective” against the grade that is being applied, (U.S. No. 1, U.S. No. 2 or U.S. No. 3). In the U.S. Combination grade, defects scored against both the No. 1 and No. 2 grades must be shown on the FV-300 certificate in the second column.

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## **Soft and Decay (C)**

**The tolerances for *shipping point* include a restrictive 1% tolerance for soft and decayed tomatoes in all grades.** Therefore, the combined total of soft and decayed tomatoes cannot exceed 1%.

**The tolerances for *en route or destination* include a restrictive 5% tolerance for soft and decayed tomatoes.** In the U.S. No. 1, U.S. Combination and U.S. No. 2 grades, the restrictive 5% tolerance for soft and decayed is included in the total tolerance of 15%, and not included in the restrictive tolerances for "otherwise defective," "shoulder bruises or sunken scars," or "very serious damage." In the U.S. No. 3 grade the 5% tolerance for soft and decay is included in the total tolerance, but not in the restrictive tolerance for very serious damage by insects only.

Although soft and decay are scored against the same tolerance, they shall be reported separately on the notesheet and certificate at shipping point and en route or destination inspections.

## **Reporting Soft and Decay**

Tomatoes that are soft, or affected by decay will not be classified as to color. (See section on Reporting Color for further explanation.)

Report the percentage of soft and decay as separate entries on the certificate, regardless of whether the lot is in or out of grade. Report soft and decay after all other quality and condition defects (always report soft, if present, before decay). They should be the last entries, before the "checksum." A statement should always be made about decay, even if none is present (report as 00% decay). If a lot does not show any soft tomatoes, no statement shall be made on the notesheet or certificate. Do not report 00% soft.

## **Soft**

Soft is one of the most objectionable and serious defects of tomatoes and seriously affects the edible and marketing quality.

**§51.1866 Soft. “Soft” means that the tomato yields readily to slight pressure.**

Inspectors should judge soft using the palm and closed fingers of one hand. Apply a slight amount of pressure. If the tomato "gives" uniformly over the surface it is soft. Do not squeeze the tomato with your fingertips. If there is some give in a localized area, the tomato may be affected by a bruise. A ripe tomato with a bruise shall be scored as bruised. See the section on bruises for further explanation and scoring guidelines. If tomatoes are soft in green through pink stages of color, this shall be noted on the notesheet. A ripe tomato is not the same as soft. A soft tomato is scored under the most restrictive tolerance included with decay, and is considered past marketability.

## **Decay**

All grades require that tomatoes be "free from decay." Therefore, any amount of decay is scored.

When decay is in excess of the tolerance, report the degree of advancement as; early, moderate, or advanced in the "Description of Products" section of the shipping point certificates and in the "Other" or "Lot Description" section on the market certificates in general terms.

### **For General Information**

Decays are progressive in nature and seriously affect the market value of tomatoes. Some decays are easy to identify, while others are more difficult. Although we do not identify the type of decay, the inspector must be able to identify the presence of decay (the affected tissue must be in a disintegrating state). Early stages of some decays are difficult to distinguish from discoloration. Cutting into the flesh beneath suspicious areas will often disclose a firm decay which extends toward the center. Decays exhibit various characteristics including the presence of raised, pimple-like fruiting bodies, having distinct margins of affected tissue while others appear as sunken, water soaked spots. Affected tissue may remain firm and leathery or be soft, watery and slimy. Decays can occur anywhere on the fruit - shoulders, walls, or the blossom end. Decays common in tomatoes include: Alternaria Rot, Bacterial Soft Rot, Blossom End Rot, Gray Mold Rot, Phoma Rot, Phytophthora Rot, Pleospora Rot, Rhizopus Rot, and Watery Soft Rot. All decays should be described as to the degree of advancement rather than named on the certificate. For a complete description of market diseases of tomatoes, see USDA Agricultural Handbook "Market Diseases of Tomatoes, Peppers, and Eggplants."

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## **Grade**

State the grade of the lot or report the percentage of the grade quality. When a lot is reported as failing to meet requirements of a grade, the reason must be stated; e.g., "Fails to grade U.S. No. 1, account condition" or "Fails to grade U.S. No. 1, account quality defects."

### **Percentage Lots**

When certifying "percentage lots," progressive defects in excess of the grade tolerance are reported after the percentage of grade quality. When determining the

percentage of U.S. No. 1 quality, the percentage of soft and/or decay must be added to other defects, and the total subtracted from 100 percent. Size is not a part of grade requirements so undersize and oversize are not included in determining percentage of U.S. No. 1 quality.

The FV-300 market certificate lists the percentages of quality defects and individual condition defects. Therefore, percentage grade statements will not be qualified by showing a percentage of defects of a progressive nature for en route or destination inspections.

### ***Combination Grades***

At shipping point, tomatoes are typically certified as “U.S. Combination, with at least 85% (or some other percentage) U.S. No. 1 quality.” This is different from a percentage grade in that the lot must meet both the requirements of a U.S. Combination, and the specified percentage of No. 1 quality.

Destination inspections of lots originally certified at shipping point as U.S. Combination, with at least 85 percent U.S. No. 1 quality, may show the lot to grade U.S. No. 1 due to destination tolerances for condition defects. Report the lot as U.S. No. 1 and not as a percentage of U.S. No. 1 quality.

**En route or Destination inspections shall be based on the U.S. No. 1 grade unless specifically requested by the applicant to certify the lot on the basis of a U.S. Combination (or other grade).**

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# Appendix I -- U.S. Grade Standards

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## United States Standards for Grades of Fresh Tomatoes <sup>1</sup>

October 1, 1991

### Grades

51.1855 U.S. No. 1.

51.1856 U.S. Combination.

51.1857 U.S. No. 2.

51.1858 U.S. No. 3.

### Size

51.1859 Size.

### Color Classification

51.1860 Color classification.

### Tolerances

51.1861 Tolerances.

### Application of Tolerances

51.1862 Application of tolerances.

### Standard Weight

51.1863 Standard weight.

### Definitions

51.1864 Similar varietal characteristics.

51.1865 Mature.

51.1866 Soft.

51.1867 Clean.

51.1868 Well developed.

51.1869 Fairly well formed.

51.1870 Fairly smooth.

51.1871 Damage.

51.1872 Reasonably well formed.

51.1873 Slightly rough.

51.1874 Serious damage.

51.1875 Misshapen.

51.1876 Very serious damage.

51.1877 Classification of defects.

### Grades

#### §51.1855 U.S. No. 1.

"U.S. No. 1" consists of tomatoes which meet the following requirements:

(a) Basic requirements:

(1) Similar varietal characteristics;

(2) Mature;

(3) Not overripe or soft;

(4) Clean;

(5) Well developed;

(6) Fairly well formed; and,

(7) Fairly smooth.

(b) Free from:

(1) Decay;

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<sup>1</sup>Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

- (2) Freezing injury; and
- (3) Sunscald.
- (c) Not damaged by any other cause.
- (d) For tolerances see §51.1861.

**§51.1856 U.S. Combination.**

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: **Provided**, That at least 60 percent, by count, meet the requirements of U.S. No. 1 grade.

- (a) For tolerances see §51.1861.

**§51.1857 U.S. No. 2.**

"U.S. No. 2" consists of tomatoes which meet the following requirements:

- (a) Basic requirements:
  - (1) Similar varietal characteristics;
  - (2) Mature;
  - (3) Not overripe or soft;
  - (4) Clean;
  - (5) Well developed;
  - (6) Reasonably well formed; and,
  - (7) Not more than slightly rough.
- (b) Free from:
  - (1) Decay;
  - (2) Freezing injury; and,
  - (3) Sunscald.
- (c) Not seriously damaged by any other cause.
- (d) For tolerances see §51.1861.

**§51.1858 U.S. No. 3.**

"U.S. No. 3" consists of tomatoes which meet the following requirements:

- (a) Basic requirements:
  - (1) Similar varietal characteristics;
  - (2) Mature;
  - (3) Not overripe or soft;
  - (4) Clean;
  - (5) Well developed; and,
  - (6) May be misshapen.
- (b) Free from:
  - (1) Decay; and,
  - (2) Freezing injury.
- (c) Not seriously damaged by:
  - (1) Sunscald.
- (d) Not very seriously damaged by any other cause.
- (e) For tolerances see §51.1861.

**Size**

**§51.1859 Size.**

- (a) The size of tomatoes packed in any standard type shipping container shall be specified and marked according to one of the size designations set forth in Table I. Individual containers shall not be marked with more than one size designation. Consumer packages and their master container are exempt; however, if they are marked, the same requirements would apply.
  - (1) When containers are marked in accordance with Table I, the markings on at least 85 percent of the containers in a lot must be legible.
  - (2) In determining compliance with the size designations, the measurement for minimum diameter shall be the largest diameter of the tomato measured at right angles to a line from the stem end to the blossom end. The measurement for maximum diameter shall be the smallest dimension of the tomato determined by passing the tomato through a round opening in any position.
- (b) In lieu of marking containers in accordance with (a) above or specifying size in accordance with the dimensions defined in Table I, for Cerasiforme type tomatoes commonly referred to as cherry tomatoes and Pyriforme type tomatoes commonly referred to as pear shaped tomatoes, and other similar types, size may be specified in terms of minimum diameter or minimum and maximum diameter expressed in whole inches, and not less than thirty-second inch fractions thereof, or millimeters in accordance with the facts.

(1) Tomatoes of these types are exempt from marking requirements. However, when marked to a minimum or minimum and maximum diameter, the markings on at least 85 percent of the containers in a lot must be legible.

(c) For tolerances see §51.1861.

Table I

Size Designations	Inches	
	Minimum Diameter <sup>1</sup>	Maximum Diameter <sup>2</sup>
Small	2-4/32	2-9/32
Medium	2-8/32	2-17/32
Large	2-16/32	2-25/32
Extra Large	2-24/32	

<sup>1</sup>Will not pass through a round opening of the designated diameter when tomato is placed with the greatest transverse diameter across the opening.

<sup>2</sup>Will pass through a round opening of the designated diameter in any position.

### Color Classification

#### §51.1860 Color classification.

(a) The following terms may be used, when specified in connection with the grade statement, in describing the color as an indication of the stage of ripeness of any lot of mature tomatoes of a red fleshed variety:

(1) **Green.** "Green" means that the surface of the tomato is completely green in color. The shade of green color may vary from light to dark;

(2) **Breakers.** "Breakers" means that there is a definite break in color from green to tannish-yellow, pink or red on not more than 10 percent of the surface;

(3) **Turning.** "Turning" means that more than 10 percent but not more than 30 percent of the surface, in the aggregate, shows a definite change in color from green to tannish-yellow, pink, red, or a combination thereof;

(4) **Pink.** "Pink" means that more than 30 percent but not more than 60 percent of the surface, in the aggregate, shows pink or red color;

(5) **Light red.** "Light red" means that more than 60 percent of the surface, in the aggregate, shows pinkish-red or red: **Provided**, That not more than 90 percent of the surface is red color; and,

(6) **Red.** "Red" means that more than 90 percent of the surface, in the aggregate, shows red color.

(b) Any lot of tomatoes which does not meet the requirements of any of the above color designations may be designated as "Mixed Color."

(c) For tolerances see §51.1861.

(d) Tomato color standards U.S.D.A. Visual Aid TM-L-1 consists of a chart containing twelve color photographs illustrating the color classification requirements, as set forth in this section. This visual aid may be examined in the Fruit and Vegetable Programs, AMS, U.S. Department of Agriculture, South Building, Washington, D.C. 20250; in any field office of the Fresh Fruit and Vegetable Inspection Service; or upon request of any authorized inspector of such service. Duplicates of this visual aid may be purchased from The John Henry Co., Post Office Box 1410, Lansing, Michigan 48904.

### Tolerances

#### §51.1861 Tolerances.

In order to allow for variations incident to proper grading and handling in each of the foregoing grades, the following tolerances, by count, are provided as specified:

(a) **U.S. No. 1 - (1) For defects at shipping point.**<sup>2</sup> Ten percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided**, That not more than one-half of this tolerance, or 5

<sup>2</sup>Shipping point, as used in these standards, means the point of origin of the shipment in producing area or at port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,

(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: **And provided further**, That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(b) **U.S. Combination - (1) For defects at shipping point.**<sup>3</sup> Ten percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: **Provided**, That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including 1 percent for tomatoes which are soft or affected by decay; and,

(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: **And provided further**, That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(c) **U.S. No. 2 - (1) For defects at shipping point.**<sup>2</sup> Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: **Provided**, That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,

(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: **And provided further**, That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(d) **U.S. No. 3 - (1) For defects at shipping point.**<sup>2</sup> Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: **Provided**, That not more than one-half of this tolerance, or 5 percent, shall be allowed for tomatoes which are very seriously damaged by insects and not more than one-tenth of the tolerance, or 1 percent, for tomatoes which are soft or affected by decay; and,

(2) **For defects en route or at destination.** Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: **Provided**, That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are very seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: **And provided further**, That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by insects.

(e) **For off-size.** Ten percent for tomatoes in any lot which are smaller than the specified minimum diameter, or larger than the specified maximum diameter.

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<sup>3</sup>Shipping point, as used in these standards, means the point of origin of the shipment in producing area or at port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

(f) **For off color.** Ten percent for tomatoes in any lot which fail to meet the color specified, including therein not more than 5 percent for tomatoes which are green in color, when any term other than “Green” is specified.

#### **Application of Tolerances**

##### **§51.1862 Application of tolerances.**

The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations:

(a) For packages which contain more than 5 pounds (2.27 kg), and a tolerance of 10 percent or more is provided, individual packages shall have not more than 1-1/2 times the tolerance specified, and for a tolerance of less than 10 percent individual packages shall have not more than double the tolerance specified, except that at least one defective and one off-size specimen may be allowed in any package:

**Provided,** That the averages for the entire lot are within the tolerances specified for the grade; and,

(b) For packages which contain 5 pounds (2.27 kg) or less individual packages shall have not more than 4 times the tolerance specified, except that at least one tomato which is soft, or affected by decay, and one off-size specimen may be permitted in any package: **Provided,** That the averages for the entire lot are within the tolerances specified for the grade.

#### **Standard Weight**

##### **§51.1863 Standard weight.**

(a) When packages are marked to a net weight of 15 pounds (6.80 kg) or more, the net weight of the contents shall not be less than the designated net weight and shall not exceed the designated weight by more than 2 pounds (0.91 kg).

(b) In order to allow for variations incident to proper sizing, not more than 15 percent, by count, of the packages in any lot may fail to meet the requirements for standard weight.

#### **Definitions**

##### **§51.1864 Similar varietal characteristics.**

“Similar varietal characteristics” means that the tomatoes are alike as to firmness of flesh and shade of color (for example, soft-fleshed, early maturing varieties are not mixed with firm-fleshed, midseason or late varieties, or bright red varieties mixed with varieties having a purplish tinge).

##### **§51.1865 Mature.**

“Mature” means that the tomato has reached the stage of development which will insure a proper completion of the ripening process, and that the contents of two or more seed cavities have developed a jelly-like consistency and the seeds are well developed.

##### **§51.1866 Soft.**

“Soft” means that the tomato yields readily to slight pressure.

##### **§51.1867 Clean.**

“Clean” means that the tomato is practically free from dirt or other foreign material.

##### **§51.1868 Well developed.**

“Well developed” means that the tomato shows normal growth. Tomatoes which are ridged and peaked at the stem end, contain dry tissue, and usually contain open spaces below the level of the stem scar, are not considered well developed.

##### **§51.1869 Fairly well formed.**

“Fairly well formed” means that the tomato is not more than moderately kidney-shaped, lop-sided, elongated, angular, or otherwise moderately deformed.

##### **§51.1870 Fairly smooth.**

“Fairly smooth” means that the tomato is not conspicuously ridged or rough.

##### **§51.1871 Damage.**

“Damage” means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the tomato.

##### **§51.1872 Reasonably well formed.**

“Reasonably well formed” means that the tomato is not decidedly kidney-shaped, lop-sided, elongated, angular, or otherwise decidedly deformed.

##### **§51.1873 Slightly rough.**

“Slightly rough” means that the tomato is not decidedly ridged or grooved.

##### **§51.1874 Serious damage.**

“Serious damage” means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance, or the edible or marketing quality of the tomato.

**§51.1875 Misshapen.**

“Misshapen” means that the tomato is decidedly kidney-shaped, lop-sided, elongated, angular or otherwise decidedly deformed: **Provided**, That the shape is not affected to an extent that the appearance or the edible quality of the tomato is very seriously affected.

**§51.1876 Very serious damage.**

“Very serious damage” means any specific defect described in §51.1877, Table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which very seriously detracts from the appearance, or the edible or marketing quality of the tomato.

**§51.1877 Classification of defects.**

**Table II**

References to Area, Aggregate Area, Length or Aggregate Length are based on a tomato having a diameter of 2-1/2 inches (64 mm)<sup>1</sup>

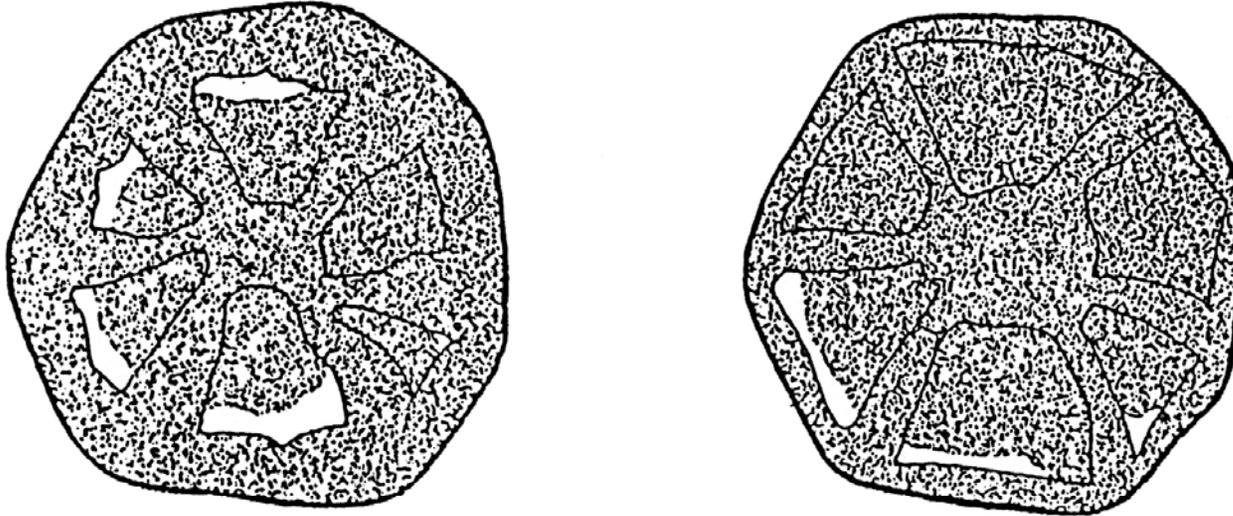
<b>Factor</b>	<b>Damage</b>	<b>Serious Damage</b>	<b>Very serious damage</b>
Cuts and broken skins	Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch (13 mm) in length, or other shallow, well healed skin breaks aggregating more than a circle 3/8 inch (10 mm) in diameter.	Not shallow or not well healed, or shallow, well healed cut more than 1/2 inch (13 mm) in length, or other shallow, well healed skin breaks aggregating more than a circle 1/2 inch (13 mm) in diameter.	Fresh or healed and extending through the tomato wall.
Puffiness	Open space in 1 or more locules materially detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 1 or more locules seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 2 or more locules very seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.
Catfaces	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 1/2 inch (13 mm) in diameter.	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle 3/4 inch (19 mm) in diameter.	Channels extend into the locule, wall has been weakened to the extent that slight pressure will cause a tomato to leak, or a fairly smooth catface aggregating more than a circle 1 inch (25 mm) in diameter.
Scars (other than catfaces)	No depth and aggregating more than a circle 3/8 (10 mm) in diameter.	No depth and aggregating more than a circle 5/8 (16 mm) in diameter.	No depth and aggregating more than a circle 1 inch (25 mm) in diameter.

<sup>1</sup>Conversion to metric equivalent, made to nearest whole millimeter.

Growth cracks (radiating from or concentric to stem scar)	Not well healed, more than 1/8 inch (3 mm) in depth, individual radial cracks more than 1/2 inch (13 mm) in length, aggregate length of all radial cracks more than 1 inch (25 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than 1/8 inch (3 mm) in depth, individual radial cracks more than 3/4 inch (19 mm) in length, aggregate length of all radial cracks more than 1- 3/4 inch (44 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than 1/4 inch (6 mm) in depth, individual radial cracks more than 1 inch (25 mm) in length, aggregate length of all radial cracks more than 2-7/8 inch (73 mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking, not more than 1/8 inch (3 mm) in depth, individual radial cracks are not more than 3/4 inch (19 mm) in length.
Hail	Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 3/8 inch (10 mm) in diameter.	Deep, rough, not well healed and corked over, or fairly smooth, shallow hail marks aggregating more than a circle 5/8 inch (16 mm) in diameter.	Fresh, very deep or fairly smooth, shallow hail marks aggregating more than a circle 1 inch (25 mm) in diameter.
Insect Injury	Materially detracts from the appearance or any insect is present in the fruit.	Seriously detracts from the appearance or any insect is present in the fruit.	Very seriously detracts from the appearance or any insect is present in the fruit.

<sup>1</sup>Conversion to metric equivalent, made to nearest whole millimeter.

**Puffiness**

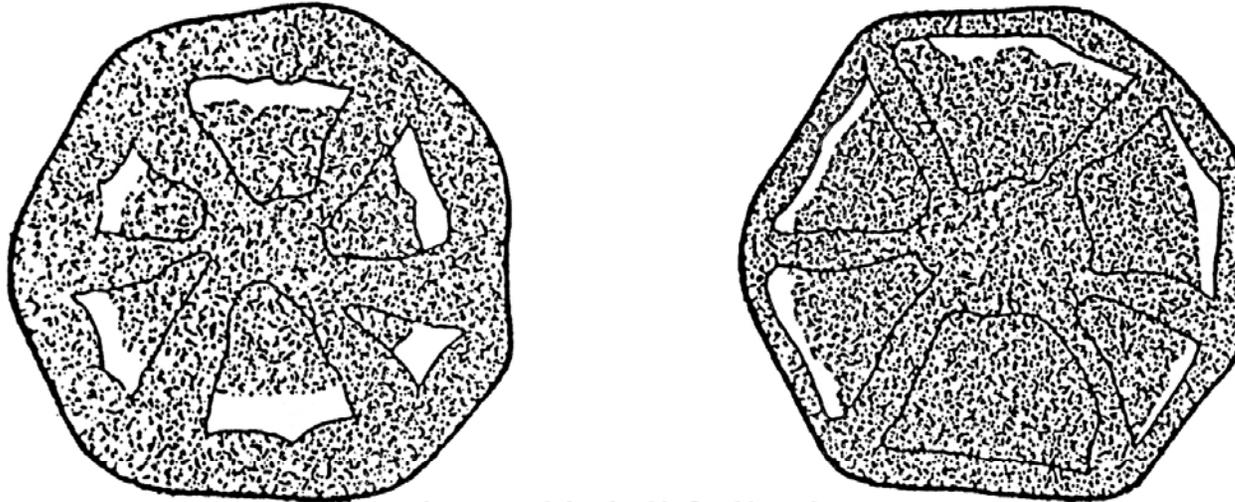


**Lower Limit U.S. No. 1**

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

**Illustration TOMFR 1**

**Puffiness**

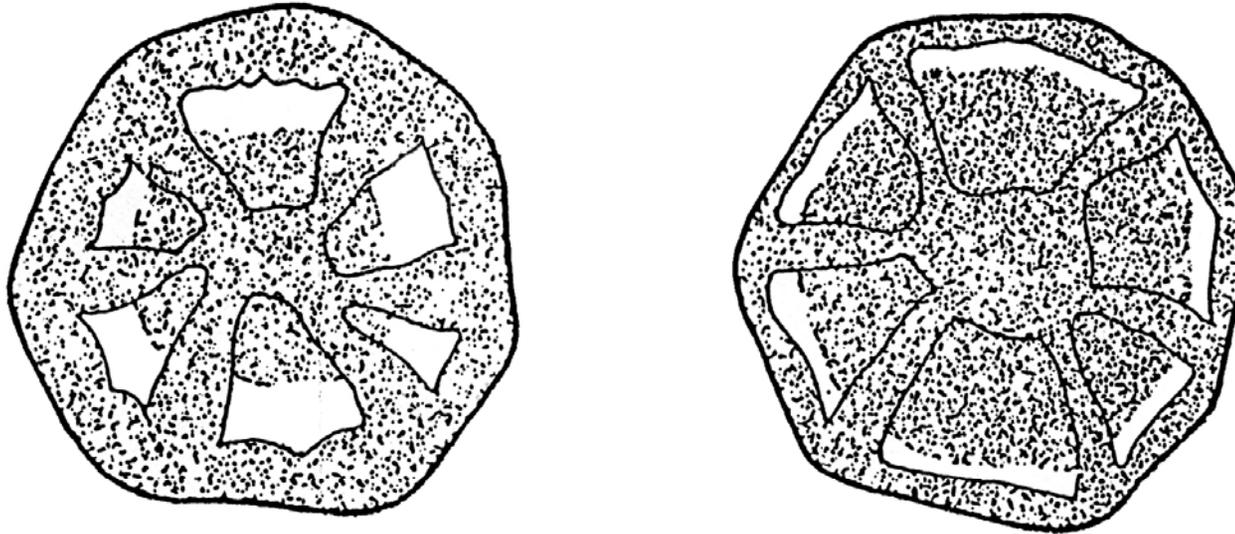


**Lower Limit U.S. No. 2**

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

**Illustration TOMFR 2**

Puffiness

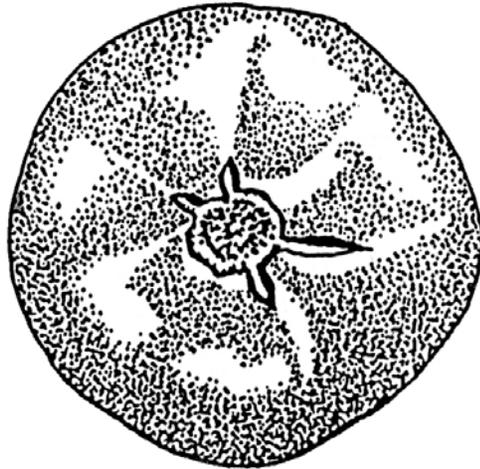


Lower Limit U.S. No. 3

The proportion of open space permitted is dependent upon thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space

Illustration TOMFR 3

## Growth Cracks



Maximum aggregate length of radial growth cracks permitted on 2 1/2 inch tomato in U.S. No. 1 grade



Concentric growth cracks which affect appearance to same extent as maximum aggregate length of radial growth cracks permitted in U.S. No. 1 grade.

The above limitations apply to all stages of maturity

Illustration TOMFR 4

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## Appendix II

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### SUMMARY OF TOMATO IMPORT REQUIREMENTS

Field grown tomatoes are subject to 8e requirements. 8e requirements specify that imported commodities must meet the same or comparable minimum grade, size, quality, and maturity requirements, as those specified under the Marketing Order.

Complete information regarding Tomato Import Requirements may be obtained from the Marketing Order Administration Branch (MOAB) at:

<http://www.ams.usda.gov/fv/8e/tomato.htm> or

Marketing Order Administration Branch, Headquarters  
Chief

1400 Independence Avenue, SW  
Stop Code 0237, Room 2525-S  
Washington, D.C. 20250-0237  
Phone: (202) 720-2491  
Fax: (202) 720-5698

**INSPECTION REQUIRED** - All tomatoes imported into the United States must meet the following minimum grade and size requirements prior to importation, in accordance with §980.212 (7 CFR Part 980). This tomato import regulation is issued under Section 8e (7 U.S.C. 608e-1) of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674). Grade and size requirements are in effect from October 10 through June 15 of each year.

**GRADE REQUIREMENTS** - All tomatoes must grade at least U.S. No. 2.

**SIZE REQUIREMENTS** - All tomatoes must be at least 2-9/32 inches in diameter.

The certificate must also indicate compliance with import requirements. The inspector shall include in the grade statement "Meet/Fails to meet U.S. Import requirements under section 8e of the Agricultural Marketing Agreement Act of 1937, as amended." Additionally, the customs entry number shall be included in the remarks section. Copies of import certificates shall be faxed to MOAB whenever they fail to meet import requirements.

Note: Tomato requirements do not apply to minimum quantities not exceeding 60 pounds per day. Pear shape or paste tomatoes including romas, cherry tomatoes, hydroponic, and greenhouse tomatoes are exempt from import requirements.

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## SUMMARY OF FLORIDA MARKETING ORDER NO. 966

Official Regulatory Bulletins may be obtained from The Florida Tomato Committee, 800 Trafalgar Court, Suite 300, Maitland FL 32751, phone: 407-660-1949 or from their website at: <http://www.floridatomatoes.org>.

Provided below is a brief summary of FMO No. 966. Inspectors shall obtain the current regulatory bulletin when applying FMO requirements.

**HANDLING REGULATIONS:** FMO No. 966 is in effect during the period October 10 through midnight June 15, of each year.

**GRADE:** Tomatoes shall be graded and meet the requirements for U.S. No. 1, U.S. Combination or U.S. No. 2 of the U.S. Standards for Grades of Fresh Tomatoes. When not more than 15 percent of tomatoes in any lot fail to meet the requirements of U.S. No. 1 grade and not more than one-third of this 15 percent (or 5 percent) are comprised of defects causing very serious damage, including not more than one percent of tomatoes which are soft or affected by decay, such tomatoes may be shipped and designated as at least 85% U.S. No. 1 grade.

**SIZE:** (i) All tomatoes packed by a Registered Handler shall be at least 2-9/32 inches in diameter and be sized with proper equipment in one or more of the following ranges of diameters. Measurements of diameters shall be in accordance with the methods prescribed in §51.1859 of the U.S. Standards for Grades of Fresh Tomatoes.

	Inches	
<u>Size Classification</u>	<u>Min. Diameter</u>	<u>Max. Diameter</u>
6x7	2-9/32	2-19/32
6x6	2-17/32	2-29/32
5x6	2-25/32	

(ii) Tomatoes of designated sizes may not be commingled and each container or lid shall be marked to indicate the designated size.

(iii) Only 6x7, 6x6 and 5x6 may be used to indicate the above listed size designations on containers of tomatoes.

(iv) To allow for variations incident to proper sizing, not more than a total of 10 percent, by count, of the tomatoes in any lot may be smaller than the specified minimum diameter or larger than the maximum diameter.

**CONTAINERS:** (i) All tomatoes packed by a Registered Handler shall be in containers of 10, 20, or 25 pounds designated net weights and the designated net weight of the contents shall not be less than the designated net weight and shall not exceed the designated weight by more than two pounds. Section 51.1863 of the U.S. Tomato Standards shall apply to all containers.

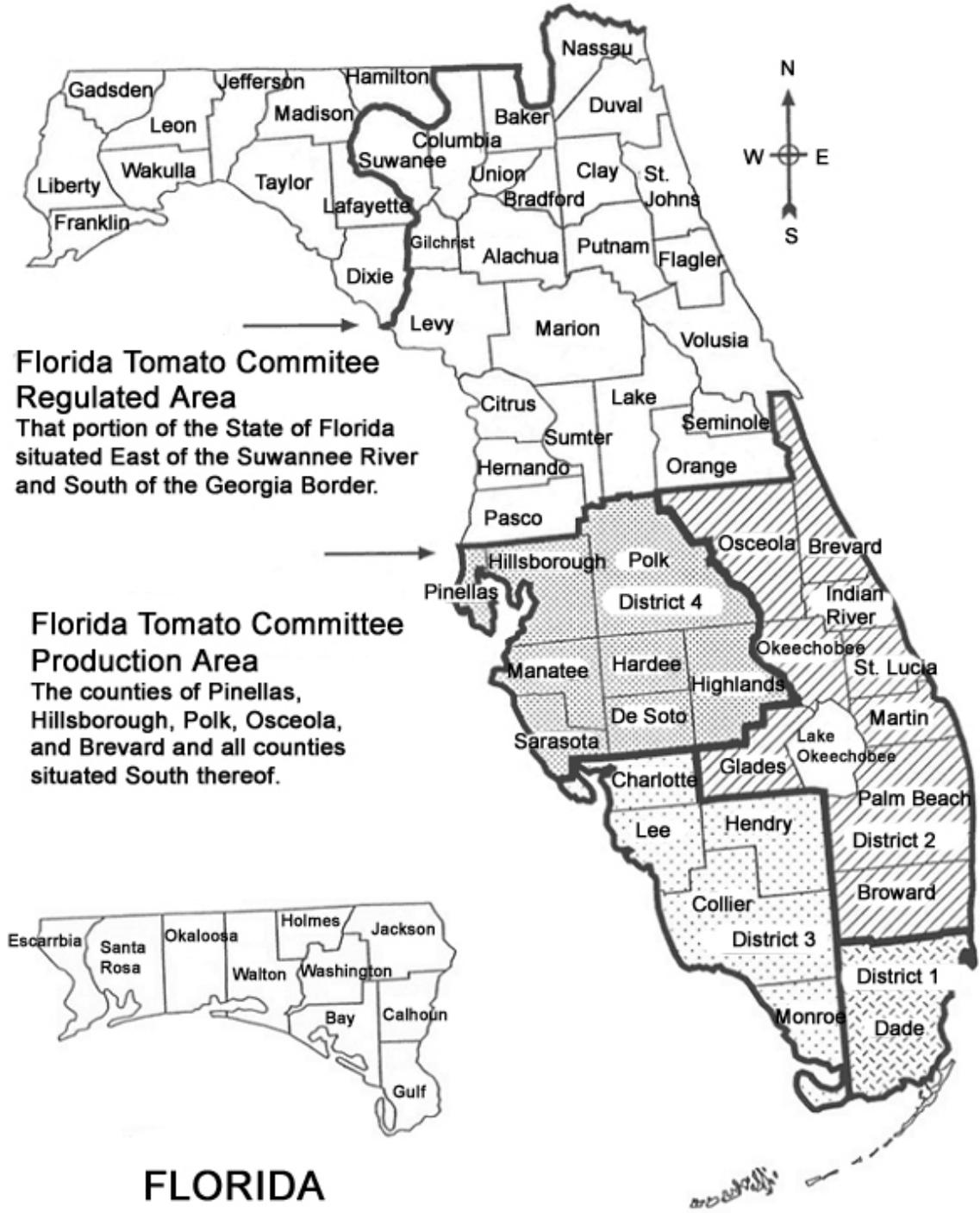
(ii) Each container or lid shall be marked to indicate the designated net weight and must show the name and address of the Registered Handler (as defined in §966.7) in letters

at least one-fourth (1/4) inch high and such containers must be packed at the Registered Handler's facilities and meet the minimum size requirements of 2-9/32 inches in diameter.

(iii) The containers in which tomatoes are packed must be clean and bright in appearance without marks, stains, or other evidence of previous use.

**EXEMPTIONS:** For Types. The following types of tomatoes are exempt from these regulations: Elongated types commonly referred to as pear-shaped or paste tomatoes and including but not limited to San Marzano, Red Top and Roma varieties; cerasiform type tomatoes commonly referred to as cherry tomatoes; hydroponic tomatoes; and greenhouse tomatoes. Specialty packed red ripe tomatoes, yellow-meated tomatoes, and single and two-layer place-packed tomatoes are exempt from the container net weight requirements specified in Paragraph (a)(3)(i) of this section, and the requirement that each container or lid shall be marked to indicate the designated net weight as specified in Paragraph (a)(3)(ii) of this section, but must meet all other requirements. Producer field-packed tomatoes must meet all of the requirements of this section except: The requirement that all containers must be packed at registered handler facilities as specified in Paragraph (a)(3)(ii); the requirement that such tomatoes designated as size 6x6 must meet the maximum diameter requirement specified in Paragraph (a)(2)(i) and the labeling requirement specified in Paragraph (a)(2)(iii): Provided, that "6x6 and larger" is used to indicate the listed size designation on containers.

**Map of Regulated Area**



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## Appendix III

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### Comparison of Areas of Circles

Diameter	1/16"	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
1/16"	1	4	16	36	63	99	143	194	253
1/8"		1	4	9	16	25	36	49	64
1/4"			1	2-1/4	4	6-1/4	9	12-1/4	16
3/8"				1	1-3/4	2-3/4	4	5-1/2	7
1/2"					1	1-2/5	2-1/4	3	4
5/8"						1	1-2/5	2	2-1/2
3/4"							1	1-1/3	1-3/4
7/8"								1	1-2/3
1									1"

To compare the area of a small circle with a larger one, select the diameter of the small circle from the vertical list on the left side. Follow the horizontal row beside this diameter to the right and stop under the diameter of the larger circle to be compared. This will show the area of the number of small circles needed to equal the area of the larger circle.

**Examples:**

It takes nine circles 1/8 inch in diameter to equal the area of a circle 3/8 inch in diameter; or,

It takes 1-2/5 circle 1/2 inch in diameter to equal the area of a circle 5/8 inch in diameter: or,

It takes 4 circles 3/8 inch in diameter to equal the area of a circle 3/4 inch in diameter.

# Appendix III

## Example 1 – Inspection Scoresheet (SPI-CA)

STATE OF CALIFORNIA  
DEPARTMENT OF FOOD AND AGRICULTURE  
FEDERAL - STATE INSPECTION NOTESHEET  
518-200 (4/95)

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
FRUIT AND VEGETABLE DIVISION

INSPECTION STARTED		M. M. D. D. Y. Y	Hour	Min.	A/P												
INSPECTION COMPLETED		M. M. D. D. Y. Y	Hour	Min.	A/P												
Applicant: <u>Valley's Best Tomato Co</u>						City/State: <u>Ripon, Ca</u>						Inspection Point: <u>Ripon</u>					
Shipper:						City/State:						Date Issued: <u>8-1-05</u>					
Conveyance No. or FLI: <u>242-139</u>						Type:						Certificate No.: <u>Example 1</u>					
Product: <u>Tomatoes</u>						Variety:						Fee: Hourly Package \$					
Number & Size of Cartons: <u>262 Cartons</u>						<u>25lbs Net Wt</u>						Overtime: \$					
Brand - Markings Size & ETC. <u>Valley's Best</u>						<u>FMO 6x7</u>						Mileage: \$					
Grade Best: <u>U.S. Combo</u>												Total: \$					
Lot No.	Size	Sample Size	Total Defects	Damage/ Ser Damage	Sev. Damage/ V. Ser. Damage	Decay/Soft/Rot	Description of Defects		Internal Defects		Color	Maturity	Size				
							Mostly	Other	Form	Smooth			Under	Over			
1	34 6x7	25	5	0	0	0	MEC	MIS	WF	FS	M6	DF	1	2			
2	33	25	4	1	1	0	MEC	CAT	WF	FS	/	/	0	1			
3	33	25	4	1	1	0	MEC	MIS	WF	FS	BRU	/	2	0			
4	33	25	5	1	1	0	MEC	MIS	/	/	/	/	0	0			
5	33	25	3	1	0	0	MEC	MIS	/	/	/	/	0	2			
6	34	25	4	1	0	0	MEC	MIS	WF	FS	/	/	1	2			
7	34	25	4	0	0	0	MEC	CAT	WF	FS	/	/	1	1			
8	33	25	3	1	1	0	MEC	MIS	WF	FS	BRU	/	0	1			
9		200	32	6	4	0			WF	FS				59			
10																	
11			(16)							M6			(3)				
12			(3)						WF	FS			(5)				
13			(2)						DF	FS		WF					
14									WF	FS							
15																	
16																	
17																	
18																	
19																	
20																	
Inspector's Signature												Page 1 Of 1					
<input type="checkbox"/> Export Apple & Pear Act				<input type="checkbox"/> Grape & Plum Act				<input type="checkbox"/> M/O # _____				<input type="checkbox"/> Canadian Import					







**Example 3 – Inspection Scoresheet (SPI-FL)**

(Scoresheet represents page one of Harlee brand only.)

FDACS/DIVISION OF FRUIT & VEGETABLES  
INSPECTOR'S NOTES – TOMATOES

**EXAMPLE 3**

Page 1 of 2 P.L.I. USDA/FL 136-MF Certificate No. P-000000

Inspection Started	M M D D Y Y	HOUR	MIN.	AP	M M D D Y Y	HOUR	MIN.	AP
	1 1 1 4 0 5	0 1	3 0	P M	1 1 1 4 0 5	1 1	0 0	P M

Applicant Name & Address: ANY PACKING Inspection Point: Palmetto FL Reg. No.: 136

Cont./Labels: 1. HARLEE 2. \_\_\_\_\_ Grade: U.S. Comb

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Time	21	20	23	26	29	30	2 05	07	10	13	16	4 07	10	13	16	19	54	57	50	03
Label	1																			
Sample	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lot No.	1																			
Size	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Percent Decay or Soft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Very Serious Damage Insectary Only	4	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4	0	0	4	4
Percent Serious Damage Very Serious Damage	4	4	0	0	0	0	0	0	0	0	0	0	8	0	8	8	0	0	8	8
Percent Total Defects Against #1 Grade - Use for US #1 and US Combination	4	8	12	4	4	8	8	4	12	12	4	4	12	4	16	12	4	8	12	12
Type of Defects	CT	SC	SC	SC	SC	SC	SC	CT	SC	SC	SC	SC	SC	SC	CT	CT	SC	SC	CT	CT
% No. 1	96	92	88	96	96	92	92	96	88	88	96	96	88	96	84	88	96	92	88	88
% No. 2																				
% No. 3																				
Percent Off - Size	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Count Color Classification																				
Green Breakers	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Turning/Pink																				
Red/Red																				
Net Wt. Within 2 lb. Range Use (✓) Outside Range Record Actual Net Wt.	25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remarks:	<u>1 = 5X6</u>																			

M.S.O. Yes [✓] No [ ]

DACS 07095 (Formerly VT) 11-03

*I'm inspector*

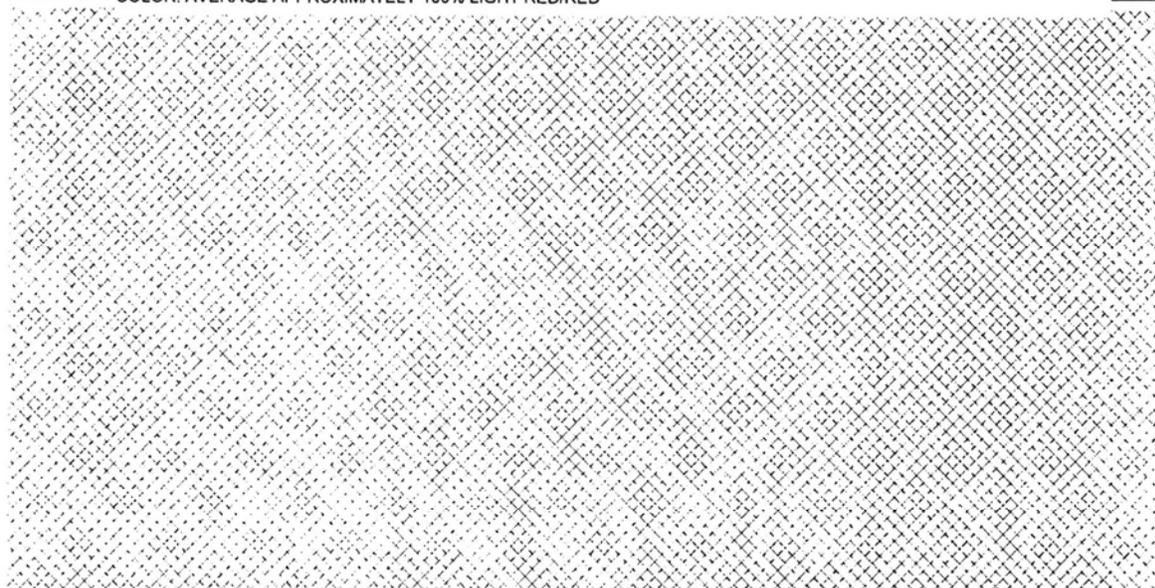




### Example 5 – Inspection Certificate FV E300

<b>USDA</b>		<b>U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE</b> http://FPBInspections.ams.usda.gov		<b>INSPECTION CERTIFICATE T-000-0173-00355</b>	
				<b>PAGE 1 of 1 EXAMPLE 5</b>	
CARRIER or LOT ID: NOID		APPLICANT: (000000000)TEST APPLICANT		REQUESTED: 11/15/2005 3:09 PM	
LOADING STATUS: LOT INSPECTION		WASHINGTON, DC		STARTED: 11/17/2005 10:10 AM	
STATED BY: NA		SHIPPER: TEST APPLICANT		COMPLETED: 11/17/2005 10:28 AM	
ADDITIONAL ID: NA		WASHINGTON, DC		PASSWORD FOR ONLINE ACCESS	
CARRIER TYPE: NA		MARKET OFFICE: HQ		HKW7MKAZU25LDSF5	
REFRIG UNIT: NA	DOORS: NA	INSP SITE: APPLICANT'S WAREHOUSE		ESTIMATED FEE:	
REMARKS:					

<b>LOT A (QAC) - TOMATOES, FRESH (RED TOMATOES)</b>					
TEMP: 52° to 55°F	INSP CT: YES	NUMBER OF CONTAINERS: 480 CARTON(S)			ORIGIN: SC
MARKINGS: BRAND: MR TOMATO MARKINGS: MR TOMATO SALES CORP MT COLUMBIA, SC NET WT 25LBS PRODUCE OF USA					
PLI: NONE			OTHER ID:		
<b>INJURY</b>	<b>DAM</b>	<b>SER DAM</b>	<b>V.S. DAM</b>	<b>OFFSIZE/DEFECTS</b>	
NA	2	0	0	QUALITY DEFECTS (0 to 4%)(DISCOLORED AND SUNKEN SCARS)	
NA	9	5	1	SUNKEN DISCOLORED AREAS (4 to 17%)	
NA	4	1	0	SHOULDER BRUISES (0 to 7%)	
NA	0	0	0	DECAY	
NA	15	6	1	CHECKSUM	
<b>GRADE:</b>	FAILS TO GRADE U.S. NO. 1 ACCOUNT CONDITION. FAILS TO MEET MARKING REQUIREMENTS AS TO SIZE				
<b>LOT DESC:</b>	DIAMETER: 2-16/32 TO 4 INCHES COLOR: AVERAGE APPROXIMATELY 100% LIGHT RED/RED				



I, the undersigned, a duly authorized inspector of the United States Department of Agriculture, do hereby certify that at the request of the applicant and on the date indicated, samples of the herein described product were inspected and the quality and/or condition as shown by said samples were as herein stated.		
Warning: Any person who knowingly shall falsely make, issue, alter, forge, or counterfeit this certificate or participate in any such actions, is subject to a fine of not more than \$1,000 or imprisonment for not more than one year, or both. FORM FV-E300 (1.0.8.1)	Signature: <i>Im Inspector</i>	Date: 11/17/2005

**Example 6 – Inspection Certificate FV E300**

<b>USDA</b>		<b>U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE</b> http://FPBInspections.ams.usda.gov		<b>INSPECTION CERTIFICATE T-000-0173-00357</b>	
				<b>PAGE 1 of 1 EXAMPLE 6</b>	
CARRIER or LOT ID: NOID		APPLICANT: (000000000)TEST APPLICANT		REQUESTED: 11/16/2005 10:30 AM	
LOADING STATUS: LOT INSPECTION		WASHINGTON, DC		STARTED: 11/16/2005 4:19 PM	
STATED BY: NA		SHIPPER: TEST APPLICANT		COMPLETED: 11/17/2005 10:38 AM	
ADDITIONAL ID: NA		WASHINGTON, DC		PASSWORD FOR ONLINE ACCESS	
CARRIER TYPE:NA		MARKET OFFICE: HQ		BMGPFNMVA96PVJZB	
REFRIG UNIT: NA		DOORS: NA		INSP SITE: APPLICANT'S WAREHOUSE	
				ESTIMATED FEE:	
REMARKS:					

<b>LOT A (QAC) - TOMATOES, FRESH (RED TOMATOES)</b>			
TEMP: 53° to 56°F	INSP CT: YES	NUMBER OF CONTAINERS: 560 CARTON(S)	ORIGIN: FL

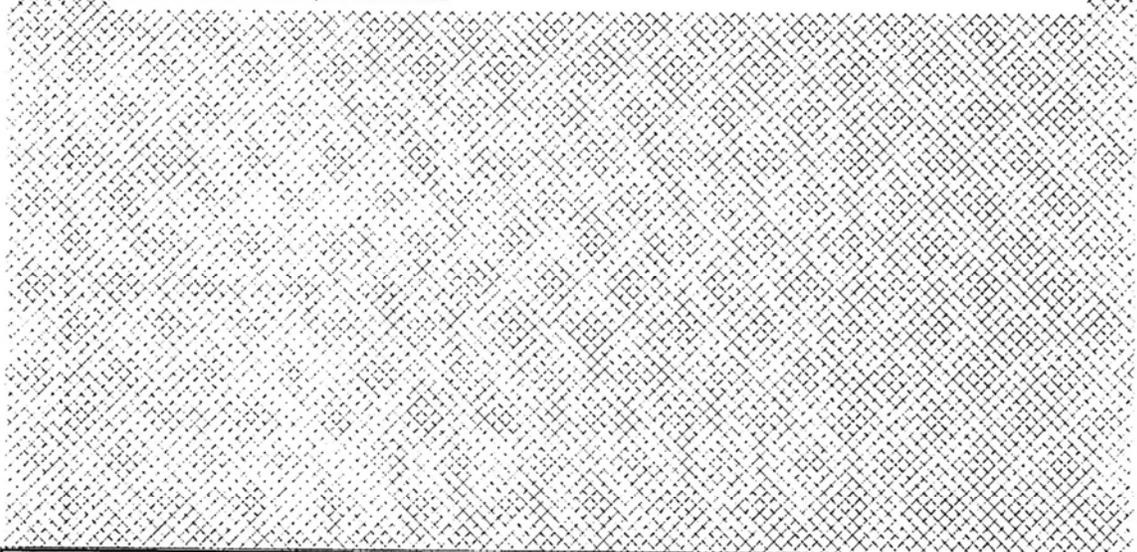
MARKINGS:	BRAND: TOMATO MAN MARKINGS: THE TOMATO MAN GROWERS ASSOC. JENNINGS FL NET WT 25 LBS PRODUCE OF USA MARKED 5X6
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PLI: USDA/FL1793	OTHER ID:
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INJURY	DAM	SER DAM	V.S. DAM	OFFSIZE/DEFECTS
NA	0	0	0	QUALITY DEFECTS
NA	17	0	0	ABNORMAL COLORING (14 to 23%)
NA	4	4	4	SOFT (2 to 7%)
NA	5	5	5	DECAY (2 to 8%)
NA	26	9	9	CHECKSUM

GRADE:	FAILS TO GRADE U.S. NO. 1 ACCOUNT CONDITION.
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LOT DESC:	STAGES OF DECAY: EARLY COLOR: AVERAGE APPROXIMATELY 10% GREEN/BREAKERS, 25% TURNING/PINK, 40% LIGHT RED/RED MEETS SIZE AS MARKED, NO UNDERSIZE
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I, the undersigned, a duly authorized inspector of the United States Department of Agriculture, do hereby certify that at the request of the applicant and on the date indicated, samples of the herein described product were inspected and the quality and/or condition as shown by said samples were as herein stated.		
Warning: Any person who knowingly shall falsely make, issue, alter, forge, or counterfeit this certificate or participate in any such actions, is subject to a fine of not more than \$1,000 or imprisonment for not more than one year, or both. FORM FV-E300 (1.0.8.1)	Signature: <i>IM INSPECTOR</i>	Date: 11/17/2005

## Example 7 – Inspection Certificate FV E300

 <b>U.S. DEPARTMENT OF AGRICULTURE</b> <b>AGRICULTURAL MARKETING SERVICE</b> <a href="http://FPBInspections.ams.usda.gov">http://FPBInspections.ams.usda.gov</a>		<b>INSPECTION CERTIFICATE</b> T-000-0173-00358 <b>PAGE 1 of 1</b> <i>EXAMPLE 7</i>	
CARRIER or LOT ID: LOAD 134211		APPLICANT: (000000000)	
LOADING STATUS: UNLOADED		REQUESTED: 11/17/2005 10:39 AM	
STATED BY: APPLICANT		STARTED: 11/17/2005 10:41 AM	
ADDITIONAL ID: NA		COMPLETED: 11/17/2005 11:00 AM	
CARRIER TYPE: NA		PASSWORD FOR ONLINE ACCESS	
REFRIG UNIT: NA		ZCJYU7Y4GZHKE6LN	
DOORS: NA		ESTIMATED FEE:	
REMARKS:			
<b>LOT A (QAC) - TOMATOES, FRESH (RED TOMATOES)</b>			
TEMP: 51° to 55°F	INSP CT: YES	NUMBER OF CONTAINERS: 240 CARTON(S)	ORIGIN: CA
MARKINGS: BRAND: SACRAMENTO MARKINGS: SACRAMENTO TOMATO CO SACRAMENTO CA NET WT 25LBS PRODUCE OF USA MARKED 6X6 FMO			
PLI: CA FED/STATE 987		OTHER ID:	
<b>INJURY</b>	<b>DAM</b>	<b>SER DAM</b>	<b>V.S. DAM</b>
<b>OFFSIZE/DEFECTS</b>			
NA	16	0	0
DIAMETER UNDER 2-17/32 INCHES (13 to 22%)			
NA	0	0	0
QUALITY DEFECTS			
NA	3	1	0
BRUISES (0 to 6%)			
NA	3	0	0
ABNORMAL COLORING (0 to 5%)			
NA	0	0	0
DECAY			
NA	22	1	0
CHECKSUM			
<b>GRADE:</b>	MEETS U.S. NO. 1. FAILS TO MEET SIZE AS MARKED.		
<b>LOT DESC:</b>	COLOR: AVERAGE APPROXIMATELY 5% TURNING/PINK, 90% LIGHT RED/RED TEMPERATURES(3): 51°F, 55°F, 54°F		
<small>I, the undersigned, a duly authorized inspector of the United States Department of Agriculture, do hereby certify that at the request of the applicant and on the date indicated, samples of the herein described product were inspected and the quality and/or condition as shown by said samples were as herein stated.</small>			
<small>Warning: Any person who knowingly shall falsely make, issue, alter, forge, or counterfeit this certificate or participate in any such actions, is subject to a fine of not more than \$1,000 or imprisonment for not more than one year, or both.</small> <small>FORM FV-E300 (1.0.8.1)</small>		Signature: <i>IM Inspector</i>	Date: 11/17/2005