Inspection Instructions for Red Sour Cherries for Processing

These inspection instructions are specifically developed and designed by the Fresh Products Branch to assist officially licensed inspectors in the interpretation and application of the U.S. Standards for Grades of Red Sour Cherries for Manufacture, CFR - Section 51.4340.

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 Raw Products for Processing for additional information pertaining to date, inspection point, etc. not covered in these instructions.

April 1993

This replaces instructions dated September 1960

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REPRINTED JULY 2001
RED SOUR CHERRY

- Stem
- Shoulders
- Suture
- Blossom End
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(1) Introduction

These instructions are intended to assist you in the inspection of Red Sour Cherries for Processing. Additional instructions may be given either orally or in writing by your Supervisor or are covered in other instructions. (See General Inspection Instructions for Raw Products for Processing Handbook.) When in doubt about any matter consult your Supervisor. If it is necessary to take immediate action without benefit of Supervisory instructions, use your best judgment and advise your Supervisor as promptly as possible of the action taken so that corrections can be made if the proper procedures were not followed.

Processors generally contract for cherries on the basis of the U.S. standards. Practices vary somewhat in methods of payment. Some processors contract to pay a certain price per pound for U.S. No. 1 cherries and nothing for culls. Other processors contract on the basis of the percentage of U.S. No. 1 quality, and deduct a small amount for each percent failing to meet U.S. No. 1. (Note: U.S. No. 1 and U.S. No. 2 grades are the same except for differences in tolerances for defects.) Processors frequently reserve the right by contract to reject all loads of cherries that contain worms or maggots, or loads that have more than a specified percentage of culls.

Inspections of Red Sour Cherries for Processing will be based on U.S. Standards for Grades of Red Sour Cherries for Manufacture. Deviations from the grade standards should be in writing in a grower - processor contract or in a written statement from the processor. The use of other standards may be included in the contract between the processor and the grower. The inspector is to accept instructions as to such modifications only from a Supervisor and not from the applicant.

The Inspection Service has no authority to reject loads that do not meet contract specifications. Your duty is to determine the percentage of the various defects, and issue a certificate showing these facts. The Inspection Service should have no part in any load rejection other than presentation of inspection results.
(2) Sampling Equipment

- Sample containers for collecting and mixing samples.
- Scale for weighing sample.
- Suitable grading table to be set up where there is adequate space and sufficient light.
- 5/8 inch size gauge or card.
- Optional: Cherry Probe.

(3) 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. All parts of a lot or load should receive the same attention in sampling regardless of the difficulty involved in reaching the more inaccessible parts of a load or lot.

It may prove impossible for you to select your own samples. When this is the case, it will be permissible, with the consent of the Supervising inspector, to have someone else select samples. The sample selector will have to be specifically designated, properly instructed and properly supervised to select official samples.

However, it is your personal responsibility to see that representative samples are selected. Therefore, you must take whatever steps are necessary to ensure that samples are properly drawn. You should observe and supervise the sampling process, and if you have any reason to believe that representative samples are not being drawn, you should correct the sampler immediately. If the sampler will not give you proper cooperation, then notify your Supervisor.

Remember, when sampling red sour cherries for processing, the quality of the cherries are determined on the basis of a 1,000, 2,000, or 3,000 gram sample or equivalent basis (see Size of Sample section), which has been removed from the composite sample. The samples drawn from individual containers in the load and/or lot are mixed together to represent the load and/or lot as a whole. Draw approximately equal quantities of cherries from each container sampled. Pre-determine where to obtain your sample, making sure to select containers in all parts of the load. Be sure to sample the various levels of the containers (obtaining samples from not only the easily accessible top layers, but the middle, and bottom of the containers as well).
A "Cherry Sampler" (probe) is a device recommended for sampling red sour cherries for processing. This device is a round metal tube with holes strategically placed in the tube to allow cherries from all levels of a tank to be sampled, and smaller holes to let only the water out. (See Appendix I). However, if the "cherry sampler" (probe) is broken, or if an applicant specifically requests samples to be drawn by "hand," then a handful of cherries will be sampled from each of several representative containers, making sure to sample the various levels of the containers.

(4) Size of Sample

The following tables are recommended minimum numbers of samples and size of samples for the most common types of containers. Remember these are minimums, it will be up to the inspector or the Supervisor to decide if more containers should be sampled or larger samples should be drawn.

**Recommended Minimum Sampling Plan for Sour Cherries for Processing**

<table>
<thead>
<tr>
<th>Number of Tanks in Lot</th>
<th>Number of Tanks to be Sampled</th>
<th>Size of Sample (or equivalent basis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or less</td>
<td>All</td>
<td>1000 grams</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>1000 grams</td>
</tr>
<tr>
<td>7-9</td>
<td>6</td>
<td>1000 grams</td>
</tr>
<tr>
<td>10-12</td>
<td>8</td>
<td>1000 grams</td>
</tr>
<tr>
<td>13-15</td>
<td>10</td>
<td>1000 grams</td>
</tr>
<tr>
<td>16-19</td>
<td>12</td>
<td>1000 grams</td>
</tr>
<tr>
<td>20-23</td>
<td>14</td>
<td>2000 grams</td>
</tr>
<tr>
<td>24-27</td>
<td>17</td>
<td>2000 grams</td>
</tr>
<tr>
<td>28-30</td>
<td>20</td>
<td>2000 grams</td>
</tr>
<tr>
<td>31-34</td>
<td>24</td>
<td>3000 grams</td>
</tr>
<tr>
<td>35-39</td>
<td>28</td>
<td>3000 grams</td>
</tr>
<tr>
<td>40 or more</td>
<td>30</td>
<td>3000 grams</td>
</tr>
<tr>
<td>Number of Lugs or Boxes in Lot</td>
<td>Number of Lugs or Boxes to be Sampled</td>
<td>Size of Sample (or equivalent basis)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>1-25</td>
<td>All</td>
<td>1000 grams</td>
</tr>
<tr>
<td>26-49</td>
<td>15</td>
<td>1000 grams</td>
</tr>
<tr>
<td>50-75</td>
<td>20</td>
<td>1000 grams</td>
</tr>
<tr>
<td>76-100</td>
<td>25</td>
<td>1000 grams</td>
</tr>
<tr>
<td>****101-624</td>
<td>30</td>
<td>1000 grams****</td>
</tr>
<tr>
<td>625 or more</td>
<td>40</td>
<td>2000 grams</td>
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</table>

After the samples have been drawn from each of several representative containers, be sure to mix the composite sample thoroughly without crushing or bruising the cherries. Then, weigh out your sample to determine percentages of undersize, defects, and worm count.

(5) Tolerances

Since most grower contracts with processors are based on the percentage of U.S. No. 1 quality, this percentage should always be reported on the certificate. The percentage of U.S. No. 1 quality is determined by subtracting the total of the percentages of defects and undersize from 100%. For example: 10% defects, plus 3% undersize, equals 87% U.S. No. 1 quality.

If the applicant requesting the inspection does not specify whether they have certain contract specifications or wish a percentage of U.S. No. 1 quality, then do the inspection based on the U.S. No. 1 grade. The following are the tolerances allowed: a total of not more than 7 percent by weight, of any lot of cherries may fail to meet the requirements of this grade, but not more than five-sevenths of this amount, or 5 percent, may fail to meet the grade requirements other than for attached stems, and no part of this tolerance shall be allowed for cherries which are affected by worms. For tolerances in the U.S. No. 2 grade refer to the standard.

(6) Size

The size of each red sour cherry for manufacture is not less than 5/8 inch in diameter, unless otherwise specified. Therefore, an applicant may specify, in their contract, a minimum size other than 5/8 inch in diameter (larger or smaller).
When determining size, measurement for minimum diameter shall be the greatest diameter measured at right angles to a line running from the stem end to blossom end. This means that the cherry must support its weight in the sizer in order to meet the minimum diameter. If the cherry fails through the minimum sizer, it is undersize.

If a cherry is undersize and also has a defect, score the cherry for the most serious defect. It is difficult to have a set rule as to when to score undersize or when to score the defect, due to the various specifications in a particular contract. Therefore, be sure to get a copy or explicit instructions from your Supervisor as to what the contract specifications are at the location in which you are inspecting. If you do not know, contact your Supervisor. If there are no contract specifications, a cherry which is undersize and also decayed or soft should be scored as decay or soft.

<table>
<thead>
<tr>
<th>缺陷</th>
<th>缩写</th>
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<th>缩写</th>
<th>缺陷</th>
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<td>Internal Discoloration</td>
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<td>BR</td>
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</table>

Worms

The U.S. grade standard has a "free from worms" requirement. A worm test must be performed on each lot to determine whether a lot meets U.S. No. 1 or U.S. No. 2 grade requirements. Therefore, unless the applicant specifically states in the contract that a worm test is not to be conducted, it must be performed. Also, if the worm test is not determined, because of contract specifications, a U.S. No. 1 or U.S. No. 2 grade cannot be applied to the load or lot. However, you may determine the percentage of defects and report them on the certificate.

Equipment Needed to Determine Worm Count:

- Container for cooking sample for worm count.
- Heating apparatus for cooking sample for worm count.
- Round pan 2 to 3 inches in depth, 12 inches in diameter (bottom painted black).
- Filter screen.
- 1/8 to 1/4 inch mesh sieve, approximately 6 inches in diameter by 3 inches in depth.
- Fresh water (available at all times).
- Trash can.
Taking Worm Count

From the composite sample, use a 500 gram sample (or equivalent basis). Put the sample of cherries into the container used for cooking the sample. Crush the cherries thoroughly so that the pulp and skins are loosened from the pits. Make a thin liquid by adding fresh water. Heat the container until the liquid reaches a rolling boil. Pour contents through sieve into round pan (2" x 3" x 12"). Before removing sieve from pan, wash skins, pulp and pits with fresh water, almost filling pan. Empty pits, skin and pulp into trash can. The contents of the pan will be cloudy at first, which will necessitate a short wait before proceeding. When the contents is clear, slowly pour water and some of the finer pulp out of the pan until there is about one-half inch of solution left. Repeat this by adding fresh water and pouring off the water and finer pulp until the solution in the pan is practically clear. The pan should then be placed on a flat surface. Stir the solution with your fingers in a circular motion. If maggots or worms are present, they will settle toward the center of the pan and will be readily apparent as small white objects against the black surface of the pan. The number of worms found should be shown on the written report. (Note: Each composite sample should be graded as soon as possible after it has been drawn.)

Color

The U.S. standards require sour cherries to be fairly well colored. "Fairly well colored means that the individual cherry has a decidedly pink or light red color predominating over the yellow on most of its surface." "Most of its surface" being 55% or more of the surface. Use color comparator PL-1-RSP; anything lighter than this shade of red and affecting approximately half of the surface or more shall be considered undercolor.

Decay

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Any amount of decay is to be scored. There are certain types and stages of decay that when rubbed between your fingers the tissue will disintegrate and there are types of decay (such as Brown Rot) that will not disintegrate when rubbed between the fingers. Regardless of how the decay manifests itself, if you recognize it as being decay you must score it as decay. If you are uncertain if it is decay contact your supervisor. ****

Mold

Mold is not specifically mentioned in the U.S. grade standard. However, sour cherries must be "free from damage by other means." Therefore, when mold materially detracts from the appearance or processing quality of the cherry it shall
be scored as damage. If there is deterioration or decay accompanied by mold, score it as decay.

**Pulled Pits**

"Pulled pits means cherries from which the pits have been removed in the process of harvesting." Therefore, when inspecting sour cherries for processing and the pit is removed, score the cherry as a **pulled pit**.

**Attached Stems**

"Attached stems means cherries with stems remaining attached." The U.S. standard states "free from attached stems," meaning if the stem is still attached to the cherry, it is scored as a defect. However, several companies put in their contracts either a special allowance or a clause to completely disregard this defect. If this defect is to be completely disregarded, due to contract specifications, then a U.S. grade, or a percentage of quality of either grade can not be applied to the load and/or lot.

**Sutures**

A suture is better known as the seam of the cherry. Often due to growing conditions, the skin will adhere to the pit at or along the suture. When this happens it is very difficult for the pitting equipment to pit the cherries. Therefore, cherries with the skin tightly attached to the pit more than 1/2 the distance from the stem to the blossom end along the suture, shall be scored as damage by sutures.

**Bird Pecks**

Bird pecks are a self explanatory type of defect, identified by holes or punctures in the cherries caused by the birds feeding on them. Bird pecks shall be scored as damage when: the area where the cherry has been punctured is badly oxidized, or if one puncture materially weakens the structure of the cherry to an extent that will cause it to be mutilated in processing, or if one puncture is more than 3/16 inch in diameter, or if there is more than one puncture.
**Scars or Limbrubs**

Scars, limbrubs, and other types of blemishes are generally the most serious defects of cherries. The causes of these defects are numerous. Scars, limbrubs, and other types of blemishes usually affect the skin of the cherry and may appear in various degrees of tan to brown discoloration. However, in severe cases scars or limbrubs may affect the skin and the flesh of the cherry.

Score any cherry as damage when the blemish affects the skin to the extent that the aggregate area covered by a dark brown scar exceeds the area of a circle 9/32 inch in diameter, or the aggregate area of a very dark or black scar exceeds the area of a circle 3/16 inch in diameter (See Model No. 9).

If the flesh beneath a scar or limbrub is discolored, score as damage on the following basis: when the flesh is tan to brown and the aggregate area affected exceeds that of a circle 3/16 inch in diameter. When the flesh is dark brown to black, allow a lesser area to be affected.

Allow greater areas of skin or flesh to be affected by lighter colored scars or limbrubs and lesser areas for darker colored scars or limbrubs.

**Hail Marks**

Hail marks resemble pitted or indented scars. Hail marks shall be scored as damage when: the marks are deeper than 3/32 inch in depth, or are unhealed and badly oxidized, or a dark brown mark exceeds an aggregate area of a circle 9/32 inch in diameter, or a very dark or black mark exceeds an aggregate area of 3/16 inch in diameter (greater or lesser areas for lighter or darker colored marks).

**Windwhips**

Cherries are a delicate fruit and sometimes are whipped badly by the wind while still on the tree causing discoloration to the surface as well as the flesh. Windwhip injury on cherries is different from scars or limbrubs in that scars usually affect a specific area. A limb or object injures the cherry, and then the cherry heals to form a scar or limbrub. In the case of windwhip, the force of the wind causes the exposed surface of the cherry to discolor.
Score as damage when the skin is blemished to the extent that the aggregate area covered by a dark brown scar exceeds the area of a circle 9/32 inch in diameter, or the aggregate of a very dark or black scar exceeds the area of a circle 3/16 inch in diameter (See Model No. 9).

If the discoloration caused by the windwhip affects the flesh to the extent that it is tan to brown in color and the aggregate area affected exceeds that of a circle 3/16 inch in diameter, it is damaged by windwhip. When flesh is dark brown to black allow a lesser area to be affected.

Allow greater areas of skin or flesh to be affected by lighter colored blemishes and lesser areas for darker colored blemishes.

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**Scald**

Scald is generally caused by prolonged delays at relatively high temperatures during harvest. Cherries affected by scald are distinguished by their “unevenly spotted” and discolored appearance. Scald first appears as a mild paling of the surface and/or pinking of the flesh and may progress to a light tan, tan, and finally brown.

Score as damage by scald when: more than 50% of the surface of the cherry is affected by a whitish-gray discoloration or paling, or the cherry is affected to the extent that the flesh has any amount of tan to brown discoloration.

At the applicant’s request, a more rigid scoring guide for scald may be included in contract specifications.

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**Internal Discoloration**

Internal discoloration generally appears as light brown corky areas beneath the skin. This condition seldom affects the processing quality unless present in a relatively large degree.

Score as damage when the cherries are noticeably deformed, corrugated, variegated in color, excessively rubbery in texture, and/or the flesh has a tan to brown discoloration affecting an aggregate area greater than a circle 3/16 inch in diameter.
Soft

Cherries which are so soft that the structure of the cherry is weakened to the extent that will cause it to be mutilated during the processing method shall be scored as soft.

Determine softness by rolling the cherry between the thumb and forefinger while applying slight pressure. If the skin is intact (not cut, split, or torn) and you can feel the pit, the cherry is scored as soft.

Mechanical

Cherries that are torn, mutilated, or have torn shoulders, shall be scored under the mechanical heading on the certificate. Tears, torn shoulders, and mutilated cherries are usually due to rough handling at harvest. Cherries which are mutilated, or the structure of the cherry is weakened to the extent that it will cause problems during the processing method, shall be scored as mechanical damage.

Cherries with tears shall be scored as damage according to the following guidelines: tears which extend over the shoulders of the cherry and are badly oxidized; fresh tears which weaken the structure of the cherry to an extent that will cause it to be mutilated in processing; a cherry having more than two tears; or, any one tear that is more than 1/2 the length of the cherry.

Cracks

Cracks usually occur when there is a lot of rain at or just prior to harvest. The excessive moisture causes the cherries to crack or split.

Cherries with cracks shall be scored as damage according to the following guidelines: cracks which extend over the shoulders of the cherry and are badly oxidized; cracks which weaken the structure of the cherry to an extent that will cause it to be mutilated in processing; a cherry having more than two cracks; or, any one crack that is more than 1/2 the length of the cherry.

Insects or Insect Damage

Insect or insect damage means any insect or insect larva is present or there is other visible evidence of the presence of insects. "Other visible evidence of the presences of insects" means, but is not limited to, frass, and feeding.
Foreign Material

Foreign material could be leaves, stems, pits which have been separated from the cherry, loose fresh pits or dried pits from last year’s crop (mummified cherries), or rocks, etc. Anything that is not the cherry or part of the cherry (attached stems and pits in the cherry are considered a part of the cherry) would be considered foreign material. Score all foreign material found in the sample for determining defects. If the applicant wishes to waive this defect, then it should be specified in the contract.

Oil or diesel fuel is a type of foreign material. However, since it is difficult to weigh, it should be noted on the certificate and brought to the applicant’s attention. It is very objectionable in that it could cause problems with the equipment in the processing plant, and contaminate the cherries making them unfit for human consumption.

Bruises

Bruises generally occur during the harvesting operation. However, unless they are severe or have had time to discolor, they are often difficult to see.

If the flesh beneath the bruise is discolored, score on the following basis: when the flesh is tan to brown and the aggregate area affected exceeds that of a circle 3/16 inch in diameter. When the flesh is dark brown to black allow a lesser area to be affected.

Other Means

Any defect not listed on the certificate, but found in your composite sample for determining defects should be reported. Simply cross out a defect not being used and write in the defect found.

Finally, if an applicant wishes to deviate from these instructions, be sure to get specific deviation(s) in writing prior to inspection. Only a Supervisor can issue these deviations to an inspector.
(8) Grade

Since most grower contracts with processors are based on the percentage of U.S. No. 1 quality, this percentage shall be reported on the certificate. The percentage of U.S. No. 1 quality is determined by subtracting the total of the percentages of defects and undersize from 100%. For example: 10% defects, plus 3% undersize, equals 87% U.S. No. 1 quality. Be sure to get a copy of the contract to substantiate reporting defects on the certificate according to contract specifications.

If no specific instructions are given, report the grade based on the tolerances for the U.S. No. 1 grade.

If certain defects are to be ignored or waived, do not give a percentage of U.S. No. 1 quality or report whether it meets or fails to meet a U.S. No. 1 grade, simply report the percentage of defects found.

(9) Remarks

Any explanatory or qualifying statements that are necessary to complete the certificate should be made under this heading. They may be one or more of the following:

- Restrictions to a lot or load.
- Information supplied by the applicant such as lot number, grower number, etc.
- Cross reference to another certificate number such as reinspections, appeals, etc.
- Contract specifications.
- Submitted samples.
Appendix I
Cherry Sampler
CHERRY SAMPLER (PROBE)
Appendix II

U.S. Standards
United States Standards for Grades of Red Sour Cherries for Manufacture

7 CFR

Sec.

51.4340 General.

51.4341 U.S. No. 1.

51.4342 U.S. No. 2.

51.4343 Unclassified.

Definitions

51.4344 Fairly well colored.

51.4345 Pulled pits.

51.4346 Attached stems.

51.4347 Damage.

51.4348 Diameter.

Authority: The provisions of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

51.4340 General.

(a) The following grades for red sour cherries are intended to facilitate transactions between growers and processors who may wish to use a purchasing system based upon the quality of cherries delivered to the processing plant. These grades are an outgrowth of the widely accepted principle that price should be directly proportional to quality. The grower delivering high quality cherries deserves a premium price, because such cherries enable the canner to pack a better quality finished product.

(b) A system of payments with proper price differentials based upon quality as determined by standard grades makes it possible for growers to be compensated for additional expenditures necessitated by better growing and harvesting practices.

(c) The most practical method of measuring the quality of cherries is by drawing a representative sample from the lot, sorting it to determine the percentage of defective fruit and giving it a grade designation. The application of these standards requires the services of private or official inspectors to determine the grade of each lot of cherries. Such inspectors must be capable, efficient, and above all, they must be absolutely impartial. The inspector's report should show the percentage of defective cherries and the grade assigned to the lot which the sample represents.

(d) Contracts for the purchase of cherries are usually made long before the cherries are harvested. When contracts are based upon the U.S. grades, two fundamental principles should be taken into consideration. First, provision should be made for an impartial inspection of each lot

of cherries delivered to the plant. Second, the contract should specify the prices to be paid for the cherries of various qualities determined by the grade or percentage of U.S. No. 1 cherries in the lot.

(e) A system of contracting commonly used is based upon the payment of a certain price for U.S. No. 1 grade allowing the full tolerance for defects without penalty. For lots failing to grade No. 1 because of an excess of defects, the price per hundred weight is adjusted so as to pay for the U.S. No. 1 cherries in the lot.

Grades

§ 51.4341 U.S. No. 1.

"U.S. No. 1" consists of sour cherries which are fairly well colored, free from decay, worms, pulled pits, attached stems, and free from damage caused by birds, pecks, hail, marks, limbs, limbs and other scars, sunscald, shriveling, foreign material, disease, insects, mechanical or other means.

(a) Size. Unless otherwise specified, each cherry shall have a diameter of not less than ⅞ inch.

(b) Tolerances. In order to allow for variations incident to proper handling, not more than a total of 7 percent, by weight, of any lot of cherries may fail to meet the requirements of this grade, but not more than five-sevenths of this amount, or 5 percent, may fail to meet the grade requirements other than for attached stems, and no part of this tolerance shall be allowed for cherries which are affected by worms.

§ 51.4342 U.S. No. 2.

"U.S. No. 2" consists of sour cherries which meet all of the requirements of U.S. No. 1 grade, except that a total tolerance of 12 percent, by weight, of any lot of cherries shall be permitted for grade defects, but not more than five-sixths of this amount, or 10 percent, may fail to meet the grade requirements other than for attached stems, and no part of this tolerance shall be allowed for cherries which are affected by worms.

51.4343 Unclassified.

"Unclassified" consists of cherries which have not been classified in accordance with either of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

Definitions

§ 51.4344 Fairly well colored.

"Fairly well colored" means that the individual cherry has a decidedly pink or light red color predominating over the yellow on most of its surface.

§ 51.4345 Pulled pits.

"Pulled pits" means cherries from which the pits have been removed in the process of harvesting.
§ 51.4346 Attached stems.

"Attached stems" means cherries with stems remaining attached.

§ 51.4347 Damage.

"Damage" means any defect, or any combination of defects, which materially detracts from the appearance, or the processing quality of the cherry. Light colored scars or scars which do not materially discolor the flesh beneath the skin shall not be considered as damage.

§ 51.4348 Diameter.

"Diameter" means the greatest dimension of the cherry measured at right angles to a line running from the stem end to the blossom end.

This is a reissue of U.S. Standards for Red Sour Cherries for Manufacture which were effective April 20, 1941. No substantive change is made in the text of the standard.