



United States Standards for Grades of Whole or Dressed Fish

Scope and product description.

This standard shall apply to whole or dressed fish, whether fresh or frozen, of any species suitable for use as human food and processed and maintained in accordance with good manufacturing practices.

Product forms.

(a) *Types.*

- (1) Fresh.
- (2) Frozen solid packs; glazed or unglazed.
- (3) Frozen individually; glazed or unglazed.

(b) *Styles.*

- (1) Whole.
- (2) Dressed-eviscerated.
- (3) Head-on or headless.
- (4) With or without fins.
- (5) Skin-on scaled or unscaled; semi-skinned (epidermis removed) or skinless.
- (6) Other (as specified).

Grades-quality factors.

(a) *U.S. Grade A.* Whole or dressed fish shall:

- (1) Possess good flavor and odor and;
- (2) Comply with the limits for defects for U.S. Grade A quality in accordance with Determination of grade.

(b) *U.S. Grade B.* Whole or dressed fish shall:

- (1) Possess reasonably good flavor and odor and;
- (2) Comply with the limits for defects for U.S. Grade B quality in accordance with Determination of grade.

(c) *Substandard.* Whole or dressed fish does not possess reasonably good flavor and odor and/or exceeds the limits for defects for U.S. Grade B quality in accordance with Determination of grade.

Determination of grade.

(a) *Procedures for grade determination.* The grade shall be determined by sampling in accordance with the sampling plan described in paragraph (b) of this section evaluating odor and flavor in accordance with paragraph (c) of this section examining for defects in accordance with paragraphs (d), (e) and (f) of this section and using the results to assign a grade as described in paragraph (g) of this section.

(b) *Sampling.* The sampling rate of specific lots for all inspections, other than for military procurement, shall be in accordance with the sampling plans contained in Part 260 of this chapter except that the sample unit is ten (10) fish for fish weighing up to 10 pounds. Fish weighing over ten (10) up to fifty (50) pounds-



the sample unit shall be five (5) fish. For fish weighing over fifty (50) pounds, the sample unit shall be a minimum of three (3).

(c) *Evaluation of flavor and odor.*

(1) Evaluation of the odor on each of the raw fish in the sample unit shall be carried out as follows:

- (i) For the examination of small units, break the flesh or thawed sample either with the thumbs or by cutting with a knife in several places. Hold the cut or broken flesh close to the nose for evaluation.
- (ii) For the examination of large units, a core may be used. Drill a hole into the hard frozen fish with a high speed quarter inch drill. As soon as the drill is withdrawn, the hole and drillings are smelled.

(2) If the results of the raw odor evaluation indicate the existence of any off-odors, the sample shall be cooked by any of the methods set forth below to verify the flavor and odor.

- (i) *Boil in bag method.* Insert the sample into a boilable film-type pouch; fold the open end of the pouch over a suspension bar and clamp in place to provide a loose seal after evacuating the air by immersing the pouch into boiling water. Cook the contents for 20 minutes (until the internal temperature of the product reaches 160 degrees F.).
- (ii) *Steam method.* Wrap the sample in a single layer of aluminum foil, and place on a wire rack suspended over boiling water in a covered container. Steam the packaged product for 20 minutes.
- (iii) *Bake method.* Package the product as previously described. Place the packaged product on a flat cookie sheet or shallow flat-bottom pan of sufficient size so that the packages can be evenly spread on the sheet or pan. Place the pan and frozen contents in a properly ventilated oven preheated to 400 degrees F. for 20 minutes.

(3) The amount of material to be cooked shall be based on the results of the raw odor evaluation. A minimum of 25 percent of the sample except that not less than 3 sample units shall be used.

(d) *Examination for physical defects.* Each of the fish in the sample will be examined for defects using the list of defect definitions, and the defects noted and categorized as minor, major, and serious in accordance with Table 1.

(e) *Definitions of defects in whole or dressed fish.*

(1) “Abnormal condition” means that the normal physical and/or chemical structure of the fish flesh has been sufficiently changed so that the usability and/or desirability of the fish is adversely affected. It includes, but is not limited to, the following examples:

- (i) *Jellied*--refers to the abnormal condition wherein a fish is partly or wholly characterized by a gelatinous, glossy, translucent appearance.
- (ii) *Milky*--refers to the abnormal condition wherein a fish is partly or wholly characterized by a milky-white, excessively mushy, pasty, or fluidized appearance.



- (iii) Chalky--refers to an abnormal condition wherein a fish is partly or wholly characterized by a dry, chalky, granular appearance, and fibrous structure.
 - (A) Moderate--refers to a condition that is distinctly noticeable but does not seriously affect the appearance, desirability and/or the eating quality of the product.
 - (B) Excessive--refers to a condition which is both distinctly noticeable and seriously objectionable.

(2) "Appearance defects" shall refer to the overall general appearance of the fish (consistency of the flesh, odor, eyes, gills, and skin) and presence of excessive blood or drip and appearance of the package.

- (i) Slight--refers to an appearance defect that is slightly noticeable but does not seriously affect the appearance, desirability, and/or eating quality of the fish.
- (ii) Moderate--refers to an appearance, defect that is conspicuously noticeable but does not seriously affect the appearance, desirability, and/or eating quality of the fish.
- (iii) Excessive--refers to an appearance defect that is conspicuously noticeable and that does seriously affect the appearance, desirability, and/or eating quality of the fish.

(3) "Discoloration" refers to any color not characteristic of the species used.

- (i) Slight--refers to the area affected by discoloration of significant intensity involving up to 10 percent of the total area.
- (ii) Moderate--refers to the area affected by discoloration of significant intensity involving over 10 percent and up to 50 percent of the total area.
- (iii) Excessive--refers to the area affected by discoloration of significant intensity involving 50 percent or more of the total area.

(4) "Dehydration" refers to loss of moisture from fish surfaces during frozen storage. For skin-on fish, dehydration shall be evaluated by degree of dullness and shrinkage.

- (i) Slight dehydration--is surface color masking affecting more than 3 percent of the area which can be readily removed by scraping with a blunt instrument.
- (ii) Moderate dehydration--is deep color masking penetrating the flesh, affecting less than 3 percent of the area, and requiring a knife or other sharp instrument to remove.
- (iii) Excessive dehydration--is deep color masking penetrating the flesh, affecting more than 3 percent of the area, and requiring a knife or other sharp instrument to remove.

(5) "Surface defects" shall refer to the following where applicable:

- (i) Scales. An occurrence of attached or loose scales in any sample unit (where applicable).
- (ii) Blood spot. An accumulation of coagulated opaque, masses of blood on a fish.
- (iii) Fins or pieces of fin. An occurrence or absence of attached or loose fins or pieces of fin in any sample unit (where applicable). Dorsal spine shall be removed (where applicable).
- (iv) Skin. The presence of the dark or light inner layers of skin for skinless. For semi-skinned, reference is to the presence of the dark outside layers.



- (v) Bruises. An accumulation of damaged portions of fish muscle, red and opaque in appearance (on a fish).
 - (vi) Damage to protective coating refers to voids in ice glaze or tears in covering membrane, also to breaks or splits in the skin which are readily discernible and not normally part of the processing.
- (6) “Cutting and trimming defects” refers to the following:
- (i) Body cavity cuts--refers to misplaced cuts made during evisceration.
 - (ii) Improper heading (as specified)--refers to the presence of pieces of gills, gill cover, pectoral fins (spine), or collarbone after the fish have been headed. No ragged cuts should be evident after heading.
 - (iii) Evisceration defects--refers to inadequate cleaning of the belly cavity of the fish. All viscera, kidney (where applicable), spawn, and blood should be removed.
 - (A) Slight degree of improper evisceration and improper heading refers to a condition that is scarcely noticeable but does not affect the appearance, desirability, and/or eating quality of the fish.
 - (B) Moderate degree of improper evisceration and improper heading refers to a condition that is conspicuously noticeable but does not seriously affect the appearance, desirability, and/or eating quality of the fish.
 - (C) Excessive degree of improper evisceration refers to a condition that is conspicuously noticeable and that seriously affect the appearance, desirability, and/or eating quality of the fish.
 - (iv) Improper washing--inadequate removal of slime, blood, and bits of viscera from the surface of the fish and from the body cavity.
 - (v) Belly burn--an enzymatic action on the flesh causing a burned or discolored appearance.
- (7) “Texture defects” texture of the cooked fish; not characteristic of the species.
- (i) Slight--fairly firm, only slightly tough or rubbery, does not form a fibrous mass in the mouth, moist but not mushy.
 - (ii) Moderate--moderately tough or rubbery, has noticeable tendency to form a fibrous mass in the mouth, moist but not mushy.
 - (iii) Excessive--excessively tough or rubbery, has marked tendency to form a fibrous mass in the mouth, or is very dry or very mushy.



(f) *Categorization of physical defects.* See Table 1.

TABLE 1

Types	Physical defects	Categories			
	Degree	Minor	Major	Serious	
Abnormal condition	Moderate	-	201	-	
	Excessive	-	-	301	
Appearance defects	Slight	102	-	-	
	Moderate	-	202	-	
	Excessive	-	-	302	
Discoloration	Slight	103	-	-	
	Moderate	-	203	-	
	Excessive	-	-	303	
Dehydration	Slight - more than 3 percent area affected and easily removed.	104	-	-	
	Moderate - less than 3 percent area affected but difficult to remove.	-	204	-	
	Excessive - greater than 3 percent area affected	-	-	304	
Surface defects	Slight - 3 to 10 percent are affected	105	-	-	
	Moderate - greater than 10 percent area affected	-	205	-	
Cutting and trimming defects	Body cavity cuts	106	-	-	
	Improper heading:	Slight	-	-	
		Moderate	107	-	-
	Evisceration defects:	Slight	-	-	
		Moderate	108	-	-
		Excessive	-	207	-
	Improper washing	-	-	305	
Belly burn	109	-	-		
Texture defects	Slight	-	208	-	
	Moderate	110	-	-	
	Excessive	-	209	-	
		-	-	306	

NOTE: The code numbers shown in the above table are for identification of defects for recording purposes only and are keyed to the nature and severity of the defect. They are not scores.

(g) *Grade assignment.* (1) Each fish in a sample unit will be assigned the grade into which it falls in accordance with the limits for defects, summarized as follows:

Flavor and Odor		Maximum number of physical defects permitted		
		Minor	Major	Serious
Grade A	Good	3	0	-
Grade B	Reasonably good	5	1	-



(2) Upon determination of grade of each fish in each sample unit, the sample will be designated a grade as follows:

(i) *Grade A.*

Number of sub-sample units (fish)	Minimum Number grade A fish	Maximum Number grade B fish	Maximum Number substandard
10 (up to 10 lb)	8	2	0
5 (10 to 50 lb)	4	1	0
3 (over 50 lb)	3	0	0

(ii) *Grade B.*

Number of sub-sample units (fish)	Maximum Number grade B fish	Maximum Number substandard
10 (up to 10 lb)	8	2
5 (10 to 50 lb)	4	1
3 (over 50 lb)	3	0

(iii) *Substandard.* Any fish not meeting the minimum requirements for Grade B quality.

(3) Upon determination of the grade for each sample unit a lot of whole or dressed fish shall be assigned that grade in which:

- (i) For physical defects, the number of sample units in the next lower grade does not exceed the acceptance number for deviants prescribed in § 260.61 of the sampling plan, Table II, and
- (ii) Not more than 5 percent of the fish in sample (total fish examined per lot) are in the next lower grade for odor and/or flavor.

NOTE: Sampling for inspection for military procurement shall be in accordance with MIL-STD-105. Lot size shall be expressed in terms of pounds. The sample size shall be in accordance with Inspection Level S-3. Acceptable Quality Levels shall be expressed in terms of defects per hundred units. The AQL's shall be 6.5 for minor and 4.0 for major.

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Hygiene.

Whole or dressed fish shall be processed and maintained in accordance with the applicable requirements of the regulations contained in §§ 260.96 to 260.103 of this chapter and of the good manufacturing practice regulations contained in 21 CFR Part 110.

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