

# **PHILIPPINE NATIONAL STANDARD**

**PNS/BAFS 326:2022  
ICS 67.120.10**

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## **Pork Carcass – Product Standard – Grading**



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## **Foreword**

In 2018, the Department of Agriculture – National Meat Inspection Service (DA-NMIS) proposed to develop Philippine National Standards (PNS) on the grading of food animal carcass. In 2021, the BAFS developed the PNS for Chicken Carcass Product Standard– Grading. In 2022, the PNS for Pork Carcass – Product Standard- Grading was developed largely as an output of the Research Project entitled "Establishment of Philippine Pork Carcass Grade Standards Using Yield and Quality Parameters" funded as Grant by Korea's Ministry of Agriculture, Food and Rural Affairs (MAFRA) and implemented by the Korea Rural Economic Institute (KREI) thru the DA- Bureau of Animal Industry (BAI) - Animal Product Development Center (APDC), in collaboration with the NMIS and BAFS. The Research Project was an offshoot of the training given by the Korean Government which was attended by DA-BAI, DA-NMIS, DA-BAFS and other government agencies involved in swine production held in Korea.

The Technical Working Group (TWG) tasked to develop the PNS was created through Special Order (SO) No. 817, series of 2021 (Addendum to the SO No. 81, series of 2021 "Creation of TWG for the Development of PNS for Agriculture and Fishery Products, Machinery, Tools, and Equipment) and SO No. 103, series of 2022 (Creation of TWG for the Development of PNS for Agriculture and Fishery Products, Machinery, Tools, and Equipment). The TWG was composed of representatives from the relevant government agencies, academe, and private sector. The draft PNS underwent a series of TWG meetings and stakeholder consultations conducted physically and via online platforms before its endorsement to the Secretary for approval.

It is drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2.

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## **1 Scope**

This standard applies to fresh warm carcass and chilled carcass of commercial pork derived from finishing hogs intended for further fabrication. This standard does not cover the pork carcasses from boar, sow, stag, and native pigs.

## **2 Normative References**

The following documents are referred to in the text in such a way that some or all their contents constitute the requirements of this document. The latest edition of the referenced documents (including any amendments) applies.

An act strengthening the meat inspection system in the country, ordaining for this purpose a “Meat inspection code of the Philippines” and for other purposes, Republic Act No. 9296. (2004).

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<https://www.officialgazette.gov.ph/2012/01/12/da-administrative-order-no-5-s-2012/>

NMIS-DA. (2012). Rules and regulations on hygienic handling of chilled, frozen, and thawed meat in meat markets. (DA Administrative Order No. 6, series of 2012).

<https://www.officialgazette.gov.ph/2012/01/12/da-administrative-order-no-6-s-2012/>

### 3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply:

#### 3.1

##### **backfat thickness**

average of the fat thickness measurements taken at the site opposite the first rib, last rib, and last lumbar vertebra

#### 3.2

##### **belly thickness**

thickness of the belly measured at the ventral area opposite the 8<sup>th</sup> rib including the skin

#### 3.3

##### **carcass**

body of pig after bleeding and dressing

#### 3.4

##### **carcass conformation**

symmetry, size, shape, and proportion of the various body regions relative to each other or to the general appearance of the carcass

#### 3.5

##### **carcass weight**

weight of the carcass after complete dressing and removal of head

#### 3.6

##### **chilled carcass**

carcass derived from newly slaughtered animal, the temperature of which is brought down to a minimum product internal temperature higher than 0°C and maximum product internal temperature of 10°C

#### 3.7

##### **Dark, Firm, Dry (DFD) meat**

meat with darker color, very firm, lean, and has dry surface

#### 3.8

##### **feathering**

intermingling of lean meat and fats in the belly region determined at the cross section of the carcass between 4<sup>th</sup> and 5<sup>th</sup> ribs

#### 3.9

##### **fresh warm carcass**

carcass from newly slaughtered animals which has not been subjected to cold treatment

#### 3.10

**grading**

classifying and sorting carcass according to various groups of conditions and quality characteristics

**3.10.1 yield grading** – grading pertaining to the amount of utilizable part of fresh warm carcass based on carcass conformation, carcass weight, and backfat thickness

**3.10.2 quality grading**– grading pertaining to the physical characteristics of chilled carcass based on lean color, firmness, degree of feathering, loin eye area, and belly thickness

**3.11****lean color**

color evaluated at the loin eye muscle (*longissimus dorsi*) cut between the 4<sup>th</sup> and 5<sup>th</sup> ribs assessed in chilled carcass

**3.12****loin eye area**

size of the loin eye muscle measured between the 4<sup>th</sup> and 5<sup>th</sup> ribs expressed in cm<sup>2</sup>

Formula used:

$$LEA = W \times L \times 0.8$$

where: LEA = loin eye area

L = length or the longest diameter of the loin eye muscle

W = width or the longest diameter perpendicular to the length (L) of the loin eye muscle

0.8 = constant value

**3.13****Pale, Soft, Exudative (PSE) meat**

meat characterized by having very light color, soft texture, and a high degree of drip loss (exudative)

**3.14****Red, Soft, Exudative (RSE) meat**

meat characterized by having normal color of grayish pink to grayish red with soft texture and watery surface

**4 Minimum Requirements**

The pork carcass to be subjected to yield and quality grading shall comply with all the relevant food safety measures stated in the Republic Act No. 9296 (Meat inspection code of the Philippines, as amended) and PNS/BAFS 168:2015 (COHP for meat).

**4.1** The pork carcass shall have the following physical characteristics:

4.1.1 dressed and headless in accordance with PNS/BAFS 41:2018 (Pork cuts) and PNS/BAFS 261:2018 (Edible offal of swine);

4.1.2 totally eviscerated with retained leaf-fat;

4.1.3 no other observable defects appearing on the outside of the carcass; and

4.1.4 partially or completely split into two halves (sides).

4.2 Minor trimming of the lower neck shall be allowed to remove the bloody parts.

## 5 Yield Grading

5.1 Yield grading is done on fresh warm carcass to classify pork carcasses in terms of predicted yield as shown in Table 1:

**Table 1. Yield grading for fresh warm pork carcass**

Grade	Grade Factors			General Grade Description
	Carcass Conformation <sup>1</sup>	Carcass Weight <sup>2</sup> (kg)	Backfat Thickness (cm)	
A <sup>+</sup>	3	>85.0	≤2.5	Grade A pork carcasses are generally lean type with minimum expected fat-free lean (FFL) yield of 51%. The backfat thickness ranges from thin to average depending on size.
A	3	70.0 – 85.0	1.9 – 2.3	
B <sup>+</sup>	1/2/3	>85.0	≤3.0	Grade B pork carcasses have expected minimum FFL of 49%, thin to slightly thick backfat depending on size.
B	2	70.0 – 85.0	≤3.0	
B <sup>-</sup>	3	60.0 – 70.0	1.9 – 2.5	
C	1	≤85.0	No Limit	Grade 3 hogs are generally fat type with minimum 44% of FFL.
U (Unclassified)	-	-	-	Those carcasses which do not qualify as Grade A, B, or C.
	With defects such as hematoma, and/or with foul odor, or undergone trimmings due to bruises, etc.			
Footnote:				
<sup>1</sup> Carcass conformation (muscling): 1 = thin; 2 = average; 3 = thick (see Annex A)				
<sup>2</sup> Hot carcass weights: head-off				

5.2 Grades A<sup>+</sup> and A have the highest expected fat-free lean yield for pork carcass.

5.3 Grades B<sup>+</sup>, B, and, B<sup>-</sup> have the average fat-free lean yield for pork carcass.

5.4 Grade C has the lowest fat-free lean yield for pork carcass.

5.5 Grade U are pork carcasses that do not qualify as Grades A<sup>+</sup>, A, B<sup>+</sup>, B, B<sup>-</sup>, and C.

5.6 All pork carcass bearing the yield grades shall be practically free from any physical defects and foul odor that will affect the quality of the pork.

5.7 Pork carcass which has undergone substantial trimmings due to mechanical injuries, abscess, and wounds shall be considered as unclassified.

5.8 Pork carcasses bearing the yield grades A, B, and C may be subjected to quality grading after chilling.

## 6 Quality Grading

6.1 Quality grading is done on chilled carcass. Only fresh warm carcasses that passed the yield grading are eligible to quality grading as shown in Table 2. The pH may be taken 45 minutes after complete bleeding (pH<sub>45</sub>).

**Table 2. Factors for quality grading**

Grade	Grade Factors			
	Lean Color <sup>3</sup>	Feathering <sup>4</sup>	Loin Eye Area <sup>5</sup> (cm <sup>2</sup> )	Belly Thickness <sup>6</sup> (cm)
1	3	3	>30.0	>4.5
2	2 or 4	2 or 4	25.0 to 30.0	3.5 – 4.5
3	5	1 or 5	<25.0	<3.5
U(Unclassified)	pork carcasses with defects such as PSE or color score of 1.			

Footnote:

<sup>3</sup> - Lean color: 1 = Pale pinkish gray to white (considered PSE; Unclassified); 2 = Grayish pink; 3 = Reddish pink; 4 = Dark reddish pink; 5 = Purplish red to dark purplish red (See Annex C): pork color chart (see Annex B)

<sup>4</sup> - Feathering: 1 = Layers of thick lean meat and thin fats; 2 = Layers of thick lean meat and slightly thin fat; 3 = Layers of moderate lean meat and fat (optimum feathering); 4 = Layers of thick fat and slightly thin lean meat; 5 = Layers of thick fat and thin lean meat (See Annex D).



<sup>5</sup> - Loin Eye Area is the size of the loin eye muscle measured between the 4<sup>th</sup> and 5<sup>th</sup> ribs expressed in cm<sup>2</sup>

<sup>6</sup> - Belly thickness is the thickness of the belly measured at the point opposite the 8<sup>th</sup> rib including the skin using Vernier caliper and stainless ruler (see Annex E)

**6.2** Grade 1 is considered as the premium and highest quality for chilled pork carcass.

**6.3** Grade 2 is considered as the optimum acceptable quality for chilled pork carcass.

**6.4** Grade 3 should meet the minimum quality requirements.

**6.5** The final quality grade of chilled pork carcass should be determined based on the lowest grade gathered using the grade factor. For example, if the pork carcass lean color is 5, feathering is 3, loin eye area is >30.00, and belly thickness is 3.50, the final grade of that particular meat is grade 3 since the lowest grade is 3 – lean color.

**6.6** All chilled pork carcass should be stamped with yield and quality grades.

**6.7** All chilled pork carcass bearing the quality grade should be intended to be sold in the supermarkets or markets/outlets with chiller and/or freezer.

## **7 Labeling and Handling**

This section should be in accordance with PNS/BAFS 168:2015 (COHP for meat), DA Administrative Order (AO) No. 5, series of 2012 (Rules and regulations on hygienic handling of newly slaughtered meat in meat markets), and DA AO No. 6, series of 2012 (Rules and regulations on hygienic handling of chilled, frozen, and thawed meat in meat markets). The packaging should indicate the grade of the carcass.

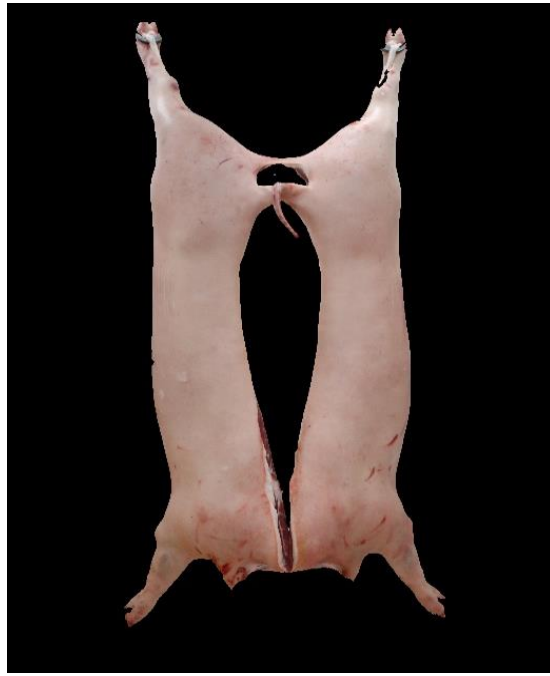
### **7.1 Labeling of Graded Carcasses**

**7.1.1** The graded carcass should bear a legible stamp using a food-grade ink.

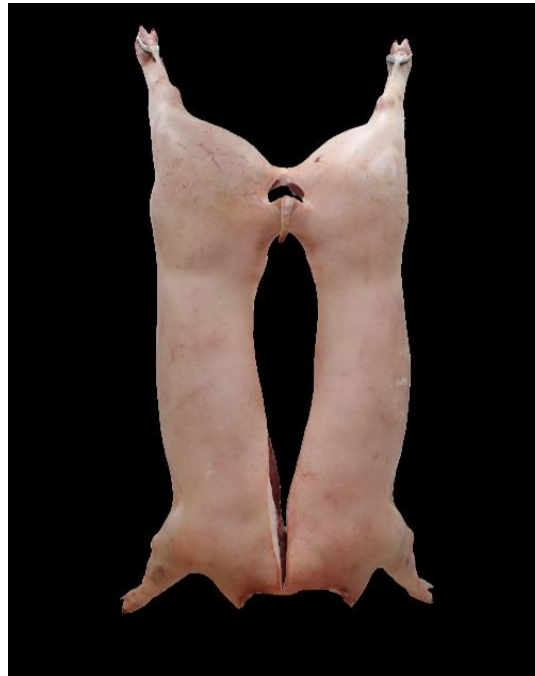
**7.1.2** The stamp should contain the logo for yield grade for fresh warm carcasses and yield and quality grades for chilled carcasses.

**Annex A.1**  
(Informative)

**Carcass conformation (dorsal view)**



**Figure A.1.1.** Carcass conformation – 1 (thin)  
*Description: Hind leg is perfectly rounded and thickly muscled*



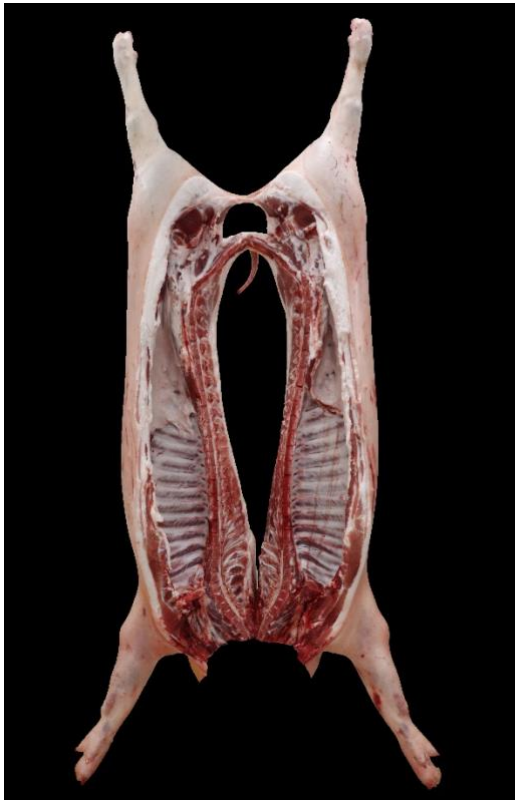
**Figure A.1.2.** Carcass conformation -2 (average)  
*Description: Hind leg is slightly rounded and averagely muscled*



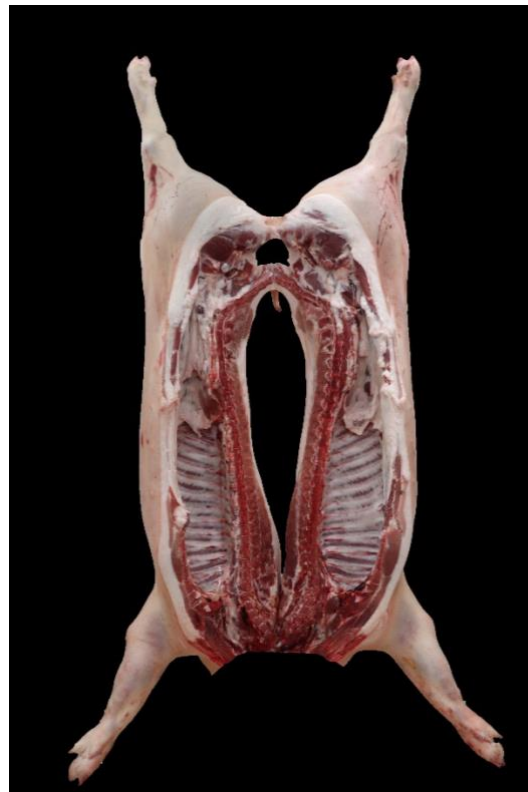
**Figure A.1.3.** Carcass conformation – 3 (thick)  
*Description: Hind leg is bulging averagely and muscled but tend to have more fat*

**Annex A.2**  
(Informative)

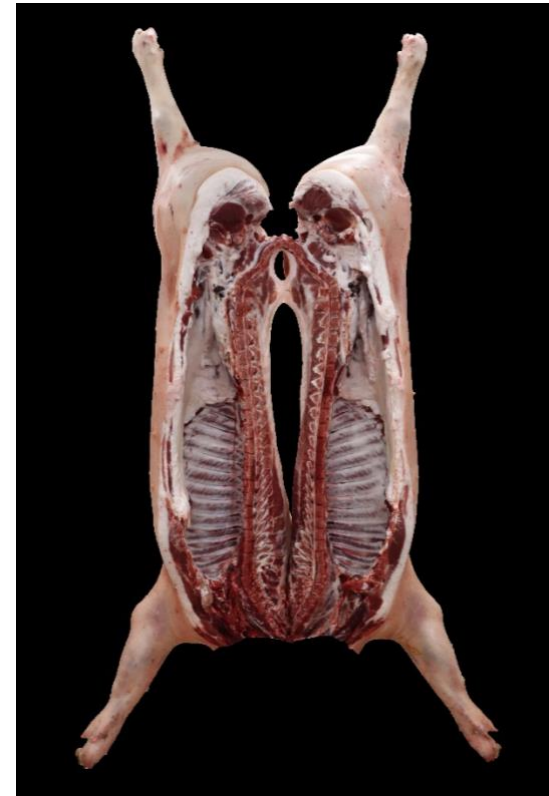
**Carcass conformation (ventral view)**



**Figure A.2.1.** Carcass conformation – 1 (thin)



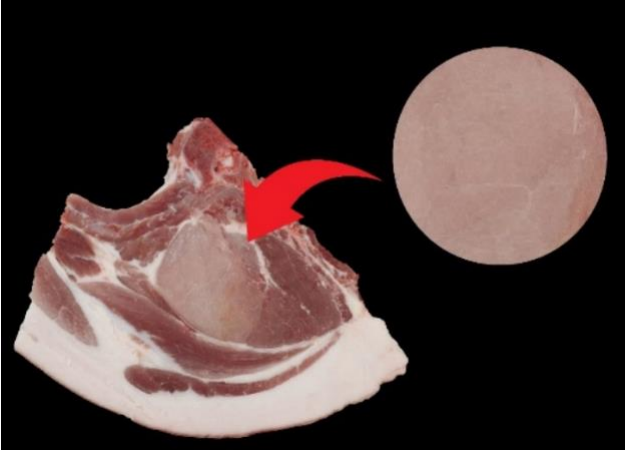
**Figure A.2.2.** Carcass conformation – 2 (average)



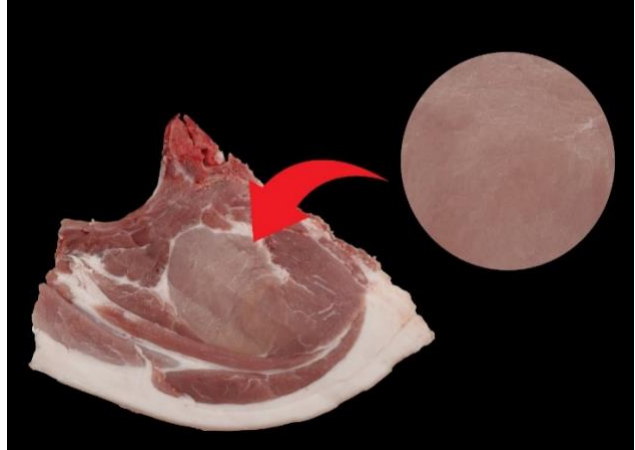
**Figure A.2.3.** Carcass conformation – 3 (thick)

**Annex B**  
**(Informative)**

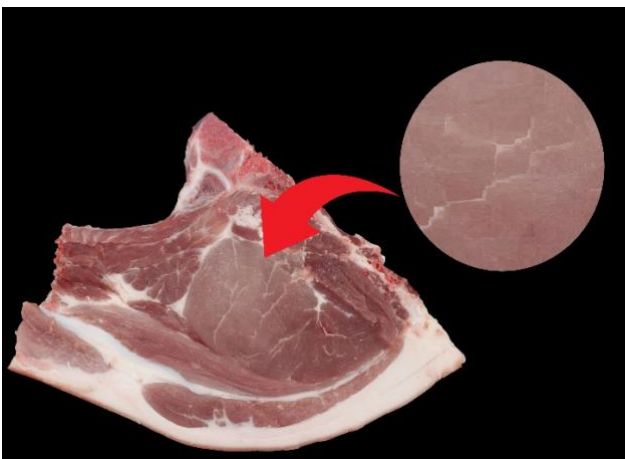
**Lean color**



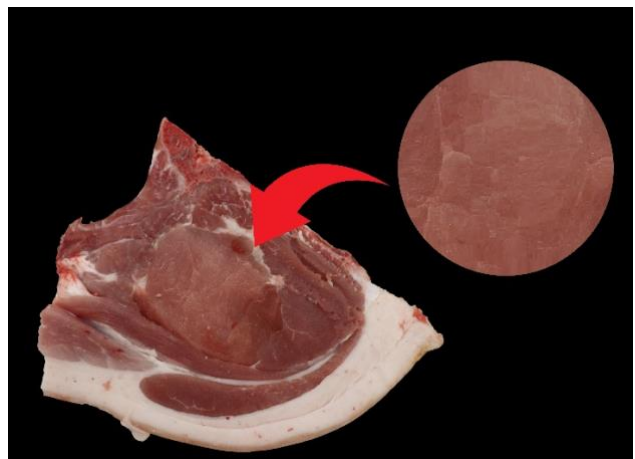
**Figure B.1.** Lean color – 1 (pale pink to white)



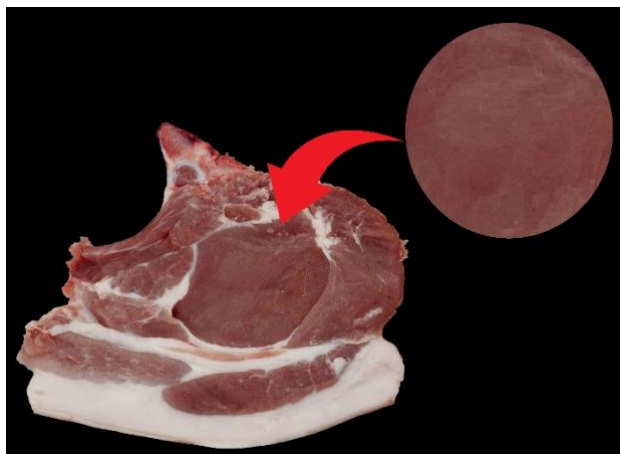
**Figure B.2.** Lean color – 2 (grayish pink)



**Figure B.3.** Lean color – 3 (reddish pink)



**Figure B.4.** Lean color – 4 (dark reddish pink)



**Figure B.5.** Lean color – 5 (purplish red)

**Annex C**  
(Informative)

**Pork color chart**

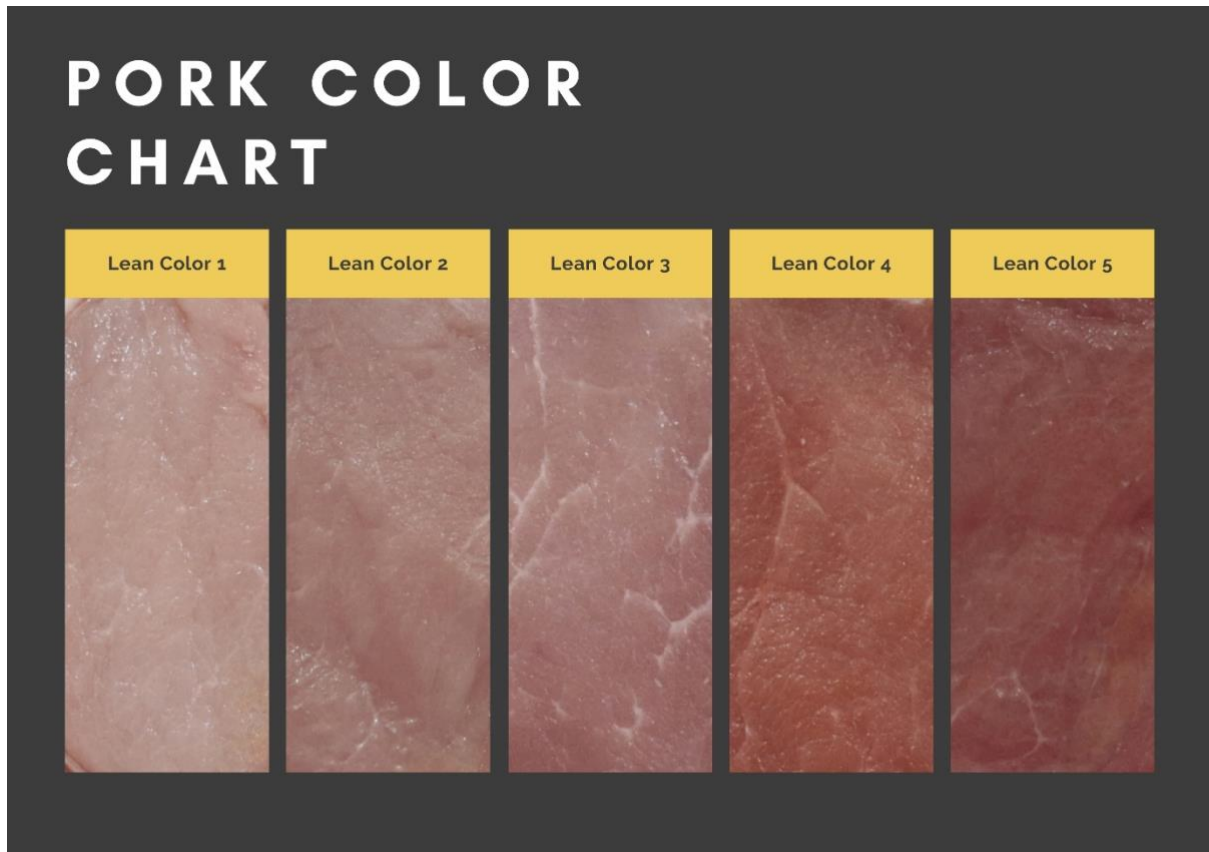


Figure C.1. Lean color chart of pork carcass

**Annex D**  
**(Informative)**

**Feathering**



**Figure D.1.**Feathering - 1



**Figure D.2.**Feathering - 2



**Figure D.3.**Feathering – 3



**Figure D.4.**Feathering - 4



**Figure D.5.**Feathering – 5

**Annex E**  
(Informative)

**Methods to measure belly thickness**



**Figure E.1.** – Vernier caliper or stainless steel ruler



**Figure E.2.** – Measuring belly thickness using vernier caliper



**Figure E.3.** – Measuring belly thickness using stainless steel ruler

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