
Changes to legislation: There are currently no known outstanding effects for the Commission Decision of 15 April 2004 authorising methods for grading pig carcasses in the United Kingdom (notified under document number C(2004) 1340) (Only the English text is authentic) (2004/370/EC), ANNEX I. (See end of Document for details)

ANNEX I

METHODS FOR GRADING PIG CARCASSES IN THE UNITED KINGDOM (EXCLUDING NORTHERN IRELAND)

PART I

Intrascopes (Optical Probe)

1. Grading of pig carcasses shall be carried out by means of the apparatus termed 'Intrascopes (Optical Probe)'.
2. The apparatus shall be equipped with a hexagonal-shaped probe of a maximum width of 12 millimetres (and of 19 millimetres at the blade at the top of the probe) containing a viewing window and a light source, a sliding barrel calibrated in millimetres, and having an operating distance of between 3 and 45 millimetres.
3. The lean meat content of the carcass shall be calculated according to the following formula:

$$\hat{y} = 66,5 - 0,95x_1 + 0,068x_2$$

where:

\hat{y} = the estimated percentage of lean meat in the carcass,
 x_1 = the thickness of back-fat (including rind) in millimetres, measured at 6 centimetres off the midline of the carcass at the last rib (measurement known as 'P₂'),

or

x_2 = the average thickness of back-fat (including rind) in millimetres measured at 4 and 7,5 centimetres respectively off the midline of the carcass at the last rib (measurement known as ' $\frac{1}{2}(P_1 + P_3)$ '),
 = the weight of the cold carcass in kilograms.

The formula shall be valid for carcasses weighing between 30 and 120 kilograms.

PART 2

Fat-O-Meater (FOM)

1. Grading of pig carcasses shall be carried out by means of the apparatus termed 'Fat-O-Meater (FOM)'.
2. The apparatus shall be equipped with a probe of 6 millimetres diameter containing a photodiode of the Siemens SFH 950/960 type and having an operating distance of between 3 and 103 millimetres. The results of the measurements are converted into estimated lean meat content by means of a computer.
3. The lean meat content of the carcass shall be calculated according to the following formula:

$$\hat{y} = 63,4 - 0,51x_1 - 0,45x_3 + 0,18x_4$$

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where

\hat{y}	=	the estimated percentage of lean meat in the carcase,
x_1	=	the thickness of back-fat (including rind) in millimetres, measured at 6 centimetres off the midline of the carcase at the last rib (measurement known as 'P ₂ '),
x_3	=	the thickness of back-fat (including rind) in millimetres, measured at 6 centimetres off the midline of the carcase between the third and fourth last ribs (measurement known as 'rib-fat'),
x_4	=	the thickness of muscle in millimetres, measured at the same time and in the same place as x_3 (measurement known as 'rib-muscle').

The formula shall be valid for carcasses weighing between 30 and 120 kilograms.

PART 3

Hennessy Grading Probe (HGP 4)

1. Grading of pig carcasses shall be carried out by means of the apparatus termed 'Hennessy Grading Probe (HGP 4)'.
2. The apparatus shall be equipped with a probe of 5,95 millimetres diameter (and of 6,3 millimetres at the blade of the top of the probe) containing a photodiode (Siemens LED of the type LYU 260-EO and photodetector of the type 58 MR) and having an operating distance of between 0 and 120 millimetres. The results of the measurements shall be converted into estimated lean meat content by means of the HGP 4 itself or a computer linked to it.
3. The lean meat content of the carcase shall be calculated according to the following formula:

$$\hat{y} = 62,8 - 0,51x_1 - 0,44x_3 + 0,19x_4$$

where

\hat{y}	=	the estimated percentage of lean meat in the carcase,
x_1	=	the thickness of back-fat (including rind) in millimetres, measured at 6 centimetres off the midline of the carcase at the last rib (measurement known as 'P ₂ '),
x_3	=	the thickness of back-fat (including rind) in millimetres, measured at 6 centimetres off the midline of the carcase between the third and fourth last ribs (measurement known as 'rib-fat'),
x_4	=	the thickness of muscle in millimetres, measured at the same time and in the same place as x_3 (measurement known as 'rib-muscle').

The formula shall be valid for carcasses weighing between 30 and 120 kilograms.

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PART 4

CSB Ultra-Meater

1. Grading of pig carcasses shall be carried out by means of the apparatus termed 'CSB Ultra-Meater'.
2. The apparatus shall be equipped with ultrasound head, ultrasound equipment, image generating board, computer, video recorder and printer.

The apparatus shall be equipped with a Pie Medical Netherlands 3,5 MHz scanner.

The distance from the marking point to the centre of the ultrasonic head shall be 12 cm.

The results of the measurements shall be converted into estimated lean meat content by means of the CSB Ultra-Meater apparatus itself.

3. The lean meat content of the carcass should be calculated according to the following formula:

$$\hat{y} = 65,1 - 1,158x_1 + 0,176x_2$$

where:

\hat{y}	=	the estimated percentage of lean meat in the carcass,
x_1	=	the thickness of back-fat (including rind) in millimetres, measured at 6 cm off the dorsal midline of the carcass, between the third and fourth last ribs,
x_2	=	the thickness of muscle in millimetres, measured at the same time and in the same place as x_1 .

The formula shall be valid for carcasses weighing between 30 and 120 kilograms.

PART 5

Fully automatic ultrasonic carcass grading (Autofom)

1. Pig carcass grading shall be carried out using the apparatus termed Autofom (Fully automatic ultrasonic carcass grading).
2. The apparatus shall be equipped with 16 16,2 MHz ultrasonic transducers (Krautkrämer, SFK 2 NP), with an operating distance between transducers of 25 mm.

The ultrasonic data shall comprise measurements of back-fat thickness and muscle thickness.

The results of the measurements are converted into estimated lean meat content using a computer.

3. The carcass's lean meat content shall be calculated on the basis of 108 measurement points using the following formula:

$$\begin{aligned} \hat{y} = & 64,56076 - 0,011867x_1 - 0,037750x_2 - 0,013357x_3 - 0,011163x_4 \\ & - 0,021255x_5 - 0,006461x_6 - 0,016539x_7 - 0,026134x_8 - 0,011734x_9 - \\ & 0,010533x_{10} - 0,021250x_{11} - 0,011591x_{12} - 0,023174x_{13} - 0,035567x_{14} \\ & - 0,012220x_{15} - 0,010566x_{16} - 0,024556x_{17} - 0,015644x_{18} - \\ & 0,012601x_{19} - 0,024600x_{20} - 0,011233x_{21} - 0,010434x_{22} - 0,022287x_{23} - \\ & 0,015566x_{24} + 0,003953x_{25} + 0,004604x_{26} + 0,004438x_{27} + 0,004865x_{28} - \\ & 0,035444x_{29} - 0,022043x_{30} - 0,035690x_{31} - 0,043143x_{32} - 0,035588x_{33} - \end{aligned}$$

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$$\begin{aligned}
&0,034093x_{34} - 0,037165x_{35} - 0,027871x_{36} - 0,029070x_{37} - 0,028929x_{38} - \\
&0,028884x_{39} - 0,028174x_{40} - 0,023148x_{41} - 0,025299x_{42} - 0,035816x_{43} - \\
&0,044413x_{44} - 0,044408x_{45} - 0,034309x_{46} - 0,029252x_{47} - 0,018420x_{48} - \\
&0,008756x_{49} - 0,012405x_{50} - 0,016834x_{51} - 0,019488x_{52} - 0,021442x_{53} - \\
&0,023237x_{54} - 0,022466x_{55} - 0,033462x_{56} - 0,031548x_{57} - 0,031020x_{58} - 0,030049x_{59} \\
&- 0,029518x_{60} - 0,030063x_{61} - 0,049797x_{62} - 0,050145x_{63} - 0,049625x_{64} - \\
&0,049249x_{65} - 0,047528x_{66} - 0,045669x_{67} - 0,026058x_{68} - 0,025250x_{69} - 0,023297x_{70} \\
&- 0,022976x_{71} - 0,022032x_{72} - 0,022040x_{73} - 0,015719x_{74} - 0,028318x_{75} - \\
&0,017586x_{76} + 0,007988x_{77} + 0,008649x_{78} + 0,009642x_{79} + 0,009355x_{80} + 0,008768x_{81} + 0,006580x_{82} +
\end{aligned}$$

where:

\hat{y} = the estimated lean meat content of the carcasse,

x_1, x_2, \dots, x_{108} are the variables measured by Autofom.

4. Descriptions of the measurement points and the statistical method can be found in Part II of the United Kingdom protocol forwarded to the Commission in accordance with Article 3(3) of Regulation (EEC) No 2967/85.

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