



HANDBOOK OF AUSTRALIAN BEEF PROCESSING

THE AUS-MEAT LANGUAGE



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AUSTRALIA'S BEEF INDUSTRY



Australia is one of the world's most efficient producers of cattle and the world's third largest exporter of beef. The off-farm value (domestic expenditure plus export value) of Australia's beef and cattle industry was \$17.87 billion in 2015-16 (ABS, MLA estimate)

Fast Facts

- 27.4 million head of cattle (ABS Agricultural Commodities 2014-15)
- 180,000 registered LPA PIC numbers (beef)
- 12.5 million beef cows and heifers one year and over. (ABS Agricultural Commodities 2014-15)
- The beef industry involves 58% of all farms with agricultural activity.
- Queensland is the biggest producer of beef and veal
- In 2015-16, Australia produced approximately 2.34 million tonnes of cwt of beef and veal (ABS)
- In 2015-16, 2.8 million grainfed cattle were marketed - 35% of all adult cattle slaughtered
- Australia has 3% of the world cattle and buffalo inventory, with India, Brazil and China taking the top three places (USDA 2015)
- Around 95.7% of Australian fresh meat buyers purchased beef in 2015-16 (AC Nielsen Homescan)
- Australia produces 4% of the world's beef supply and was the world's largest beef exporter in 2015 (USDA 2015)
- In 2015-16 Australia exported 74% of its total beef and veal production to 84 countries
- The value of total beef and veal exports in 2015-16 was \$8.5 billion (ABS)
- Australia's largest export markets include the USA, Japan, Korea and China

The above figures quoted come courtesy of the Beef Industry Fact Sheets supplied by MLA. For further information visit: www.mla.com.au

AUS-MEAT



INDUSTRY OWNERSHIP

AUS-MEAT Limited is an industry owned company operating as a joint venture between Meat & Livestock Australia (MLA) and the Australian Meat Processor Corporation (AMPC). AUS-MEAT runs efficient, disciplined business practices operating under internationally recognised quality management systems.

In 1998, AUS-MEAT was corporatized as a separate entity as part of a major restructure of industry bodies. It now operates as a non-profit company limited by guarantee that is wholly owned by its member bodies, MLA and AMPC. AUS-MEAT is cited as the 'standards body' responsible for setting standards for meat for export under regulation 3 (1) of the Australian Meat and Livestock Industry (Export Licensing) regulations 1998.

A Memorandum of Understanding (MOU) confirms the arrangements between The Department of Agriculture and AUS-MEAT for the verification of trade description requirements under the Export Control Act 1982 and the Export Control (Meat and Meat Products) Orders 2005 (Orders). The principle objectives of AUS-MEAT relevant to this MOU are the management of industry standards for trade description through the Australian Meat Industry Classification System (AUS-MEAT Language) and the AUS-MEAT National Accreditation Standards for accredited enterprises. The core objectives have remained unchanged since its inception in 1987.

AUS-MEAT's industry ownership is a key feature of the co regulatory partnership between government and industry which is implemented through the Australian Meat Industry Language and Standards Committee convened by AUS-MEAT.



AUS-MEAT LANGUAGE AND STANDARDS

AUS-MEAT develops, maintains and reviews accreditation standards through the Australian Meat Industry Language and Standards Committee (AMILSC). The AMILSC are responsible for setting the standards for the Australian Meat Industry. The standards are designed to protect the reputation of AUS-MEAT, the integrity of the AUS-MEAT language and the interests of the Australian industry in relation to the sale, distribution and export of Australian Meat and Livestock.

The AUS-MEAT language is a common language which uses objective descriptions to describe meat products accurately to meet market requirements both nationally and internationally. The AUS-MEAT Language objective descriptions are for use by the producer on the land, meat processors, boning rooms, wholesalers and food service organisations. The language has been adopted throughout the Australian Meat Industry and provides customers with an accurate way of ordering meat products.

The language includes the Australian Beef Carcase Evaluation scheme (chiller assessment) and has been integrated within the Meat Standards Australia (MSA) grading system where common measurements / assessments are used.

Changes to the language are progressed through the consultative process with industry stakeholders and final approval and implementation comes from the Australian Meat Industry Language and Standards Committee.

INDUSTRY STRUCTURE

Industry Ownership

Standards Funding & Corporate Governance

Industry Certification Program

Secretariat Services / Technical Advice & Information

Regulatory Interface



MOU / Approved Arrangements

LPA Advisory Committee

AUSTRALIAN MEAT INDUSTRY LANGUAGE AND STANDARDS COMMITTEE

Subcommittees

Animal Welfare

Retail Language

Feedlot Industry Accreditation Committee

Industry Standards

AUS-MEAT National Accreditation Standards

AUS-MEAT Language

Domestic Retail Beef Register
Animal Raising Claims



Certification Systems

Recognition of Industry Standards, Certification Requirements, Databases and Registers, Verification / Audit Requirements, Approved Auditors, Reporting, Sanctions, Policies



Verification / Audit Activities



Accreditation Programs

AUS-MEAT offers accreditation programs for meat processing facilities including abattoirs and boning rooms.

All export abattoirs and boning rooms must be accredited by AUS-MEAT under federal legislation. Establishments wishing to be accredited by AUS-MEAT must implement an AUS-MEAT approved quality management system designed to ensure consistency of quality and accurate product description.

Auditing Services

AUS-MEAT offers accreditation programs for abattoirs, boning rooms (Packer Enterprises) and meat traders, referred to as Non Packer Exporters (NPE's). Each accreditation type is underpinned by the industry owned National Accreditation Standards.

The Packer Enterprise accreditation program covers Export and Domestic enterprises – Abattoirs, Boning Rooms and Further Processors (e.g. Smallgoods). Accreditation is progressed through internationally recognised quality management principles and best practice methods.

Other accreditation programs (e.g. Livestock) are administered by AUS-MEAT on behalf of industry owners.

Training Services

AUS-MEAT Training services are provided to comply with industry standards to ensure trained personnel implement correct use of the AUS-MEAT Language and accurate product description terminology is applied to all meat products.

AUS-MEAT's status as a Registered Training Organisation (RTO) ensures training courses comply with training and assessment standards under the Australian Quality Training Framework (AQTF).

Other Certification Services

Whilst AUS-MEAT's charter is to provide services to the meat and livestock industry, business diversification and growth led to the formation of AUS-QUAL Pty Ltd, a subsidiary company of AUSMEAT, providing services to the agriculture, horticulture and plant production and processing industries.

See further information: www.ausqual.com.au





— OVER-*THE-HOOKS* — TRADING



What is OTH trading

OTH trading is the direct selling of livestock to a processor, where payment is based on Hot Standard Carcase Weight (HSCW)

Benefits of OTH trading

OTH trading offers a number of significant benefits to both producers and processors, including:

- by providing feedback directly to the producer on carcase performance, enabling a better understanding of market requirements and signals.
- Direct delivery to the processor reduces damage to carcasses caused by bruising and reducing meat quality problems caused by stress; and
- providing a true reflection of the "real worth" of a carcase

Payment in OTH trading

Payment for livestock is generally based on a cents per kilogram price multiplied by the HSCW.

In some instances final determination of price is not possible until carcase quality characteristics have been assessed (e.g. meat colour, fat colour, marbling). Where carcase quality characteristics or other factors are used to determine price, the buyer and vendor would normally have agreed on the payment criteria at the time the agreement is made between the vendor and the buyer.

The vendor and the buyer would normally have agreed on the period between slaughter and payment.



Pricing Systems

The majority of meat processors and feedlots purchase cattle based on a price grid. The grid indicates by price, which are the most desirable animals and shows discounts for animals not meeting the ideal specifications.

Some grids offer higher premiums but may also have larger discounts for animals falling outside the ideal specification. Others may be wider and easier to fit more cattle into resulting in a better average price.

To assess which price grid is going to give you the highest return and to match livestock to specifications it is necessary for a producer to accurately assess cattle for live weight, expected dressed weight, sex, dentition, P8 fat depth and muscularity.

A grid is a good example of value-based trading where products, in this case, carcasses are priced according to objective measurements of what is valued by the customer. The more accurately a product can be identified, measured and priced according to its value for a particular market, the higher the degree of value-based payment. Whether breeding or trading cattle, good records and more accurate value-based trading will reveal which cattle are most valuable and where they have come from. Perhaps one of the greatest difficulties of value-based trading and interpreting feedback is tracing individual animal records on the property and obtaining feedback from buyers that can be matched to the specific animal.

The following example over the page shows a specific grid for a processor sourcing steers. The highest premium of \$3.85 is achieved by supplying a carcass which meets the minimum MSA requirements (PBR 1-6), carcass weight 320-340 kgs, dentition 0 to 2 teeth, P8 fat depth 6-22mm, butt shape A,B or C.

It is necessary in today's environment that producers understand and select the market/s that suit their production system. Like any business they must get to know their customer, target their production to meet their customer's specifications. Where a producer consistently achieves a high level of compliance to a required specification they will likely receive price premiums and be sought by all the processors supplying that market.

GOOD MEAT EXPORTERS PTY LTD**GRASS FED CATTLE GRID | (STEER)**

DATE: 20th JANUARY 2015

- SAMPLE ONLY -

	MSA STEER	STEER			
	PBR 1-6	YGS	YPS	PRS	S
DENTITION	0-2	0-2	0-4	5-6	0-8
P8 FAT DEPTH	6-22	6-22	6-22	6-22	6-22
FAT PENALTIES	*A five (5) cent penalty applies where carcasses are over 22mm				
BRUISING	None	None	None	None	None
BUTT SHAPE	ABC	ABC	ABC	ABC	ABCDE
MEAT COLOUR	1B to 3	1A to 3	1A to 3	1A to 4	1A to 5
FAT COLOUR	0 to 3	0 to 3	0 to 3	0 to 4	0 to 5
WEIGHT	180-340 kgs	180-340 kgs	240-420 kgs	240-420 kg	240-420 kg
WEIGHT	PRICE (Cents)	PRICE (Cents)	PRICE (Cents)	PRICE (Cents)	PRICE (Cents)
340+	-	-	330	325	315
320-340 kgs	385	335	330	325	315
300-320 kgs	380	335	330	325	315
280-300 kgs	375	330	325	320	310
260-280 kgs	370	325	320	315	305
240-260 kgs	365	320	315	310	300
220-240 kgs	360	315	-	-	295
200-220 kgs	350	305	-	-	290
180-200 kgs	335	300	-	-	285
< 180 kgs	-	-	-	-	280

* Five (5) cents less for all HGP treated cattle

* Ten (10) cent penalty will apply for any recorded bruising



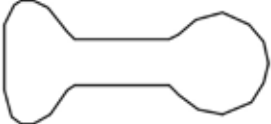


—SLAUGHTER FLOOR— LANGUAGE



What is AUS-MEAT Slaughter Floor Language

The AUS-MEAT slaughter floor language is a trading language used to objectively describe meat and livestock. The language is used throughout Australia and it is mandatory that all product leaving Australia is described using the AUS-MEAT language.

1.

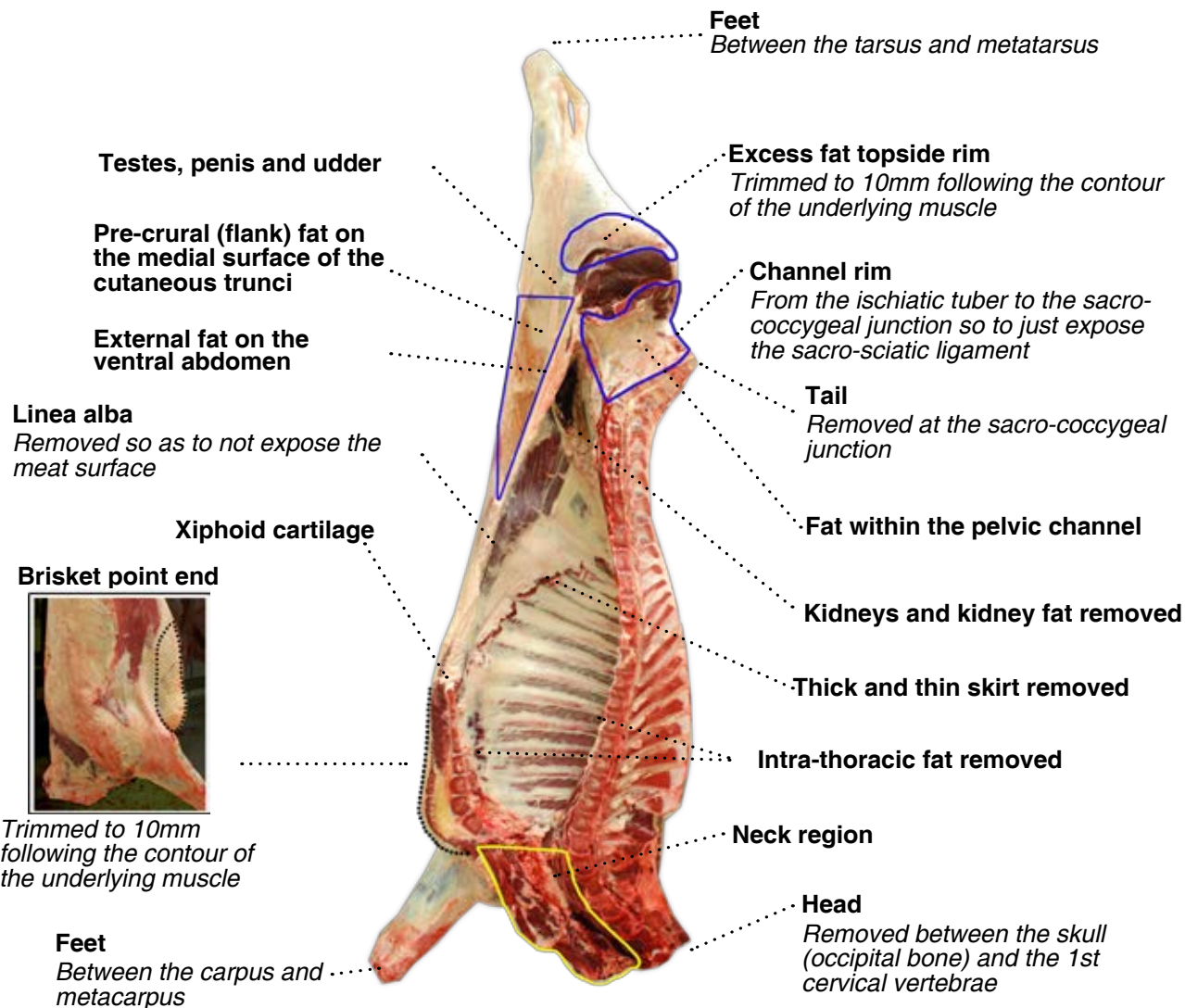
 Any Meat Company ANY Road Any state PRODUCT OF AUSTRALIA Keep Chilled Est No: 9999		Net HSCW 123.5 kg	*Y-4-0*	Body No: 9656L					
	Oper AB34	 <small>(01)99312345678900(3101)001235(11)020729(21)1249656L</small>							
	GRADE AA3	Sex M	Dent 0	Fat D. 4	Cat Y	Bruise 0	B.Shape C	Lot 45	Kill Date: 29-JUL-02
	2.	3.	4.	5.	6.	7.			

AUS-MEAT slaughter floor language characteristics

- | | |
|---------------------------------------|---------------------------------|
| 1. Hot Standard Carcase Weight (HSCW) | 5. Category (sex and dentition) |
| 2. Sex (male/female) | 6. Bruise score |
| 3. Dentition | 7. Butt shape |
| 4. P8 fat depth (mm) | |

AUS-MEAT Standard Carcase Trim

Trimming is limited to:



VEAL - As per beef except; that thin skirt and pelvic fat may be retained in an unsplit carcase up to 70kg.

Hygiene Trim - Wholesomeness and Integrity

As required by the Department of Agriculture an additional hygiene trim may exist due to operational processes (eg sticking). Sufficient trimming will be carried out under supervision of visually contaminated surfaces that may compromise food safety or wholesomeness. It may include faecal material, urine, milk, lesions or defects and blood clots around the neck region.

The AUS-MEAT Standard Carcase applies to all over-the-hooks trading in AUS-MEAT accredited processing facilities, unless a variation is agreed to by the producer / processor involved. In this case, the trim can not go beyond the Standard Carcase definition.

Definition of an AUS-MEAT Standard Carcase

A standard beef or veal carcase, is the body of a slaughtered bovine animal after:

- Bleeding.
- Hide removal.
- Removal of all internal digestive, respiratory, excretory, reproductive and circulatory organs.

and the removal of:

- Head between the skull (occipital bone) and the first (1st) cervical vertebrae, by a square cut transversely across the neck muscles.
- Feet between the knee joint (carpus and metacarpus) and the hock joint (tarsus and metatarsus).
- Tail at the junction between the sacral and coccygeal vertebrae.
- Skirts (thick and thin) by separating the connective tissues as close as possible from the abdominal and thoracic walls. On un-split veal carcasses (maximum 70kg) thin skirts may be left in situ.
- Kidneys, kidney fat and fat within the pelvic channel (meat and tendoneus membrane must not be scored or scalloped). On un-split veal carcasses the pelvic channel fat may be left in situ.
- Removal of testes, penis and udder.
- Precrural (flank) fat on the medial surface of the m.cutaneous trunci, external fat on the ventral abdomen including udder and cod fat.
- Fat on the channel rim from the ischiatic tuber to the sacro-coccygeal junction trimmed at no greater than 90 degrees to the sawn sacral vertebrae so to just expose the sacro-sciatic ligament.
- Excess fat on the topside rim (udder and cod) trimmed to 10mm (where excess fat is applicable) following the contour of the underlying muscle. Further trimming is accepted only where contamination is visible.
- Xiphoid cartilage and intra-thoracic fat.
- Scar tissue (linea alba) that extends from the xiphoid cartilage at the sternum to the most caudal point of the thin flank so as to not expose the meat surface.
- External fat on the brisket point end (where excess fat is applicable) to be trimmed to 10mm following the contour of the underlying muscle.

The carcase must be weighed hot, within 2 hours of slaughter. This is referred to as Hot Standard Carcase Weight (HSCW)

Identifying carcass sex



Why identify carcass sex

In beef carcasses the accurate identification of sex and sexual maturity is important for five main reasons:

Bulls must be identified:

- They are in a separate category.

Customer Service:

- If the vendor or buyer has requested that sex be recorded, it is their right to expect that it will be recorded accurately as they usually know how many castrate males, females and entire males are in their lot.

Accuracy of documentation on:

- Feedback sheets
- Carcass ticket

Eligibility for certain categories:

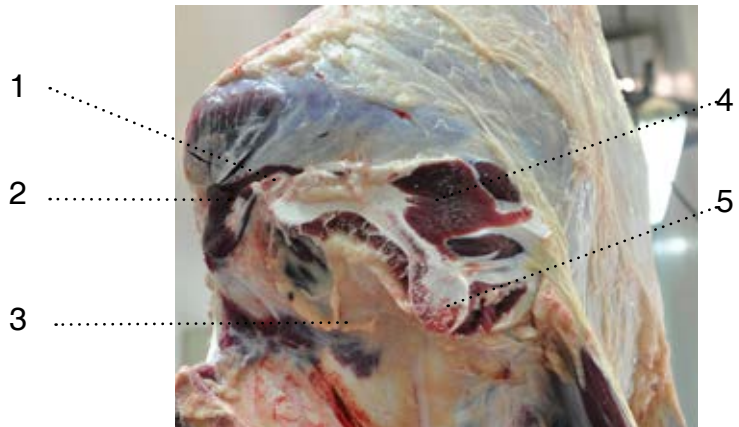
- Only castrate males or entire males without SSC's can be placed in steer categories.

Price determination:

- Some processors have a preference for carcasses of either sex
- Sex has an impact on eating quality (MSA)
- Product associated with bull carcasses may attract a discount on the Australian domestic market.
- Premiums may be paid for bull for manufacturing products.

Identifying a male carcass

1. Penis stub
2. Erector muscle
3. Pelvic channel
4. Smaller triangular muscle
5. Aitch bone



Identifying a female carcass



1. Aitch bone
2. Pelvic channel
3. Larger lean area
4. Udder fat

Determining Secondary Sexual Characteristics (SSC)

SSC's are the features of a male carcass which indicate the level of sexual maturity that has been reached. It is important to assess SSC's as this will help to determine the correct Basic or Alternative Category of the carcass.

Features of a male include

- Advanced development of muscles in the neck and shoulder region
- A prominent penis stub and erector muscle
- A well developed scrotum with relatively scarce scrotal fat.
- Well developed inguinal canal.



Dentition



Why measure dentition

In the AUS-MEAT language, dentition is used as a measure of approximate age in order to determine both basic and alternative categories for beef. This is based on the number of permanent incisors that have erupted (that is, zero, two, four, six or eight teeth)

The tooth assessment method of ageing cattle involves assessing the time of appearance and the degree of wear on the temporary and permanent teeth. The temporary or milk teeth, are easily distinguished from the permanent teeth by their smaller size and whiter colour.

At maturity cattle have a total of 32 teeth, 8 of which are permanent incisors on the lower jaw (biting teeth), these are the teeth assessed when determining a dentition score.

Dentition is assessed on the slaughter floor while there is still a direct correlation between the head and the carcase.

What effects dentition assessment

Times at which teeth erupt will vary. Breed and nutrition have an effect on how early or late teeth are cut. i.e. British bred cattle may mature earlier therefore cut their teeth at an earlier age.

Cattle under rough feed conditions, i.e. feedlots and drought affected cattle will wear their teeth at a much faster rate.



Definition of a permanent incisor

A permanent incisor is defined as a new incisor that has broken (erupted) through the gum surface.

From this, it will be determined whether the animals are zero (0), two (2), four (4), six (6) or eight (8) teeth.

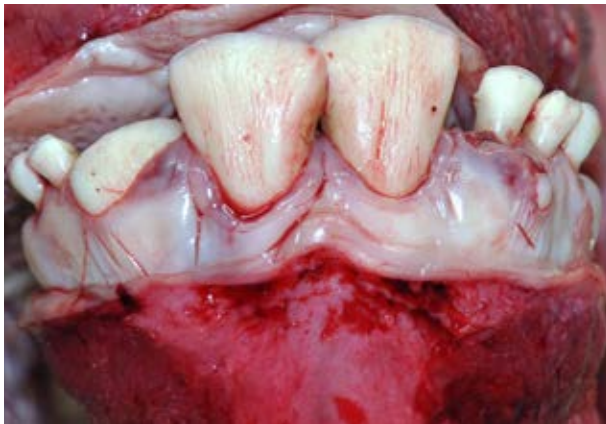
See below detailed colour images to show a representation of each classification.



Zero (0) Teeth (milktooth)



Two (2) Teeth



Four (4) Teeth



Six (6) Teeth



Eight (8) Teeth

Advanced Carcase Fat Measurement (P8)

Measuring P8 fat depth

Measuring P8 fat depth applies to any AUS-MEAT accredited processor that employs certified staff, and in particular companies where over-the-hooks traded cattle are processed.

Processors that pay and trade on the basis of carcase fat measurement need highly trained and skilled measurers to ensure that carcase fat depth is accurately recorded.



Why measure fat depth

The two key factors in determining the value of a carcase are:

1. **Market destination, and**
2. **The yield of saleable meat from the carcass.**

The suitability of a carcase for a particular market will be determined by consumer preferences in that market. The P8 measurement is one objective measurement that is used to determine the destination of the carcass.

A carcass which yields a higher percentage of saleable meat is generally more valuable.

An accurate measurement of carcass fat depth will indicate the yield of the carcass and its suitability for a particular market. Research results support this claim and indicate that P8 measurements can provide useful data for plant management, the producer and the end-user. This information is used, not only as a means of determining payment to producers, but also as a management tool for the processor and producer.

Why measure at the P8 site

Although fat depth has in the past been measured over the 12/13th rib, it was subsequently discovered that dressing damage, particularly with the hide puller, made this site a less reliable indicator of carcass fat depth.

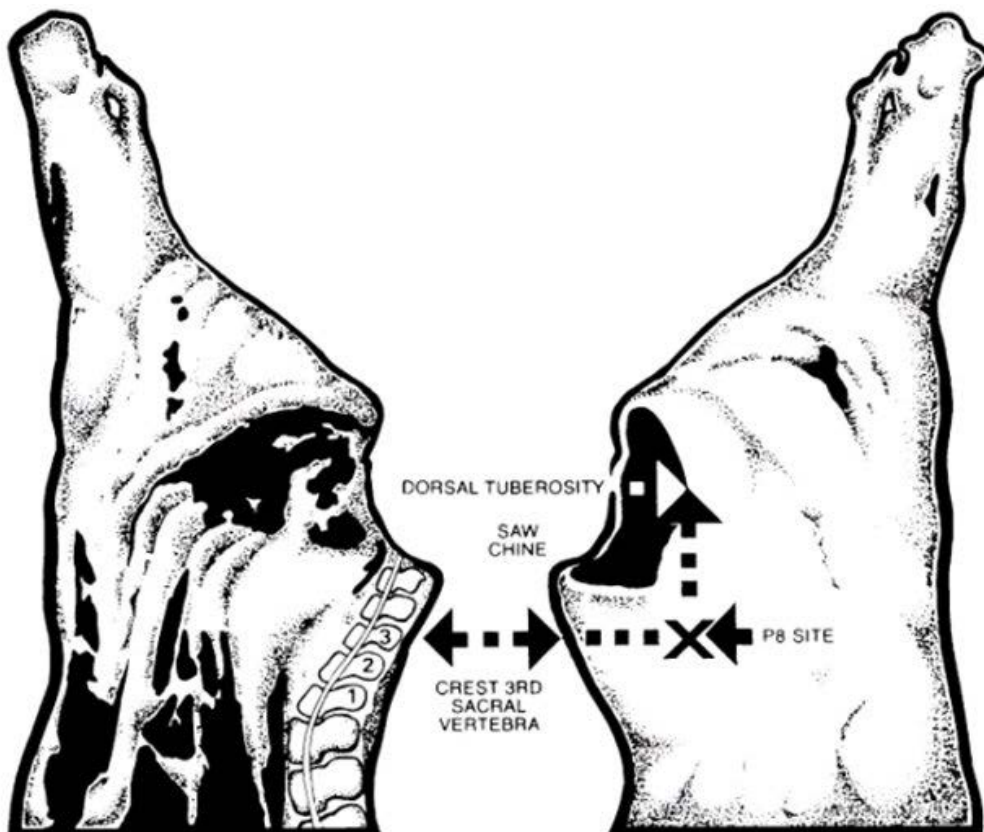
Research into alternative sites for measurement of fat depth recommended that the P8 site is less susceptible to damage by the hide puller. It was also found that the demarcation between muscle and fat is more distinct at the P8 site making measurements with electronic devices more reliable.



Definition of the P8 site

The P8 site is a point defined by the following anatomical description:

The point of intersection of a line from the dorsal tuberosity of the tripartite tuber ischii parallel with the chine, and a line at 90° to the sawn chine centred on the crest of the spinous process of the third sacral vertebrae.



Identifying carcass category descriptions by dentition

Category is an objective way of describing a carcass for the purposes of trading beef products. It provides a system for the Australian meat industry to trade products both nationally and internationally.

Categories give a measure of sex, age, and in the case of Veal only, carcass weight and dentition.

This allows for a simplified system for carcasses to be boned out and cuts labelled according to the unique category of each carcass presented for boning.

There are two main groups of category – Basic and Alternative.

There are three Basic categories and eleven Alternative (optional) categories to Beef A. Alternative categories can be chosen as options to the Basic category Beef A.

Basic Category

Basic categories are based on sex, dentition and, in the case of Veal only, carcass weight and dentition.




Basic categories only separate veal and bulls from Beef A. The Beef A category still has a broad range of ages and there is no distinction between males and females.

Alternative Categories

Steer and Ox are two of the categories used as an alternative to Beef A. These are determined by carcass age and sex.

Alternative categories do not indicate carcass weight. There are other, more specific Alternative categories that describe the carcass as the animal ages.

BEEF - BASIC CATEGORIES (VEAL / BEEF / BULL)

DENTITION	DESCRIPTION	CATEGORY / CIPHER
<p>0</p> 	<p>VEAL - Female or castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no evidence of eruption of permanent incisor teeth. • Weighs no more than 150kg (HSCW). • In males after SSC assessment shows no evidence of SSC. • Shows youthfulness and Veal colour (Veal meat colour must not exceed the AUS-MEAT Veal meat colour standard V5). 	<p>VEAL * V *</p> <p>OPTIONAL VEAL CLASSES: REFER VEAL SECTION</p>
<p>0 - 8</p> 	<p>BEEF - Female or castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • In males shows no evidence of Secondary Sexual Characteristics (SSC). • Dentition range for this category is 0 to 8 permanent incisor teeth. 	<p>BEEF * A *</p> <p>OR</p> <p>BEEF</p>
<p>0 - 8</p> 	<p>BULL - Derived from entire or castrate male bovine animals showing signs of Secondary Sexual Characteristics (SSC).</p> <ul style="list-style-type: none"> • (SSC) in bovine are defined by the following well developed aspects: <ul style="list-style-type: none"> - Muscles on the neck and shoulder. - Inguinal canal and prominent erector muscle - Penis stub. - Pubic tubercle. <p>A smaller triangular lean area within the region of the topside, relatively scarce scrotal fat and dark muscle colour:</p>	<p>BULL * B *</p>

BEEF - ALTERNATIVE CATEGORIES (BEEF)

DENTITION	DESCRIPTION	CATEGORY / CIPHER
<p>0</p> 	<p>Carcase is derived from castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has 0 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YEARLING STEER * YS * * Up to 18 months</p>
<p>0</p> 	<p>Carcase is derived from female, castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has 0 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YEARLING BEEF * Y * * Up to 18 months</p>
<p>0 - 2</p> 	<p>Carcase is derived from castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 2 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YOUNG STEER * YGS * * Up to 30 months</p>
<p>0 - 2</p> 	<p>Carcase is derived from female, castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 2 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YOUNG BEEF * YG * * Up to 30 months</p>
<p>0 - 4</p> 	<p>Carcase is derived from castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 4 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YOUNG PRIME STEER * YPS * * Up to 36 months</p>
<p>0 - 4</p> 	<p>Carcase is derived from female, castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 4 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>YOUNG PRIME BEEF * YP * * Up to 36 months</p>
<p>0 - 7</p> 	<p>Carcase is derived from castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 7 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>PRIME STEER * PRS * * Up to 42 months</p>
<p>0 - 7</p> 	<p>Carcase is derived from female, castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has no more than 7 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). 	<p>PRIME BEEF * PR * * Up to 42 months</p>
<p>0 - 7</p> 	<p>OX – Carcase is derived from female (only) bovine that:</p> <ul style="list-style-type: none"> • Has no more than 7 permanent incisor teeth. 	<p>OX * S * * Up to 42 months</p>
<p>0 - 8</p> 	<p>STEER – Carcase is derived from castrate or entire male bovine that:</p> <ul style="list-style-type: none"> • Has up to 8 permanent incisor teeth. • Has no evidence of Secondary Sexual Characteristics (SSC). <p>(Note: product from this category may be included in the * S * OX category)</p>	<p>STEER * SS * * Any age</p>
<p>0 - 8</p> 	<p>Carcase is derived from female bovine that:</p> <ul style="list-style-type: none"> • Has 8 permanent incisor teeth. 	<p>COW * C * * All ages</p>

AUS-MEAT Bruise Scoring



Why assess bruising

The beef industry in Australia is worth several billions of dollars a year.

Bruising cost the Australian beef industry many millions of dollars a year in meat lost when bruises are trimmed out. Further loss occurs when primal cuts have to be downgraded to cuts of less value or to manufacturing beef.

Poor handling and excessive use of prodders or jiggers are major causes of bruising.

Changes in handling methods will significantly reduce the cost of bruising to the industry and there is a range of practical solutions. So where do we begin?

Generally we need to know two things – which cattle are bruised and where did the bruising occur?

Bruise score will tell us if the bruising consistently occurs in:

- All or most of the cattle slaughtered.
- All or most of the cattle transported by a driver.
- All or most of the cattle from one producer.

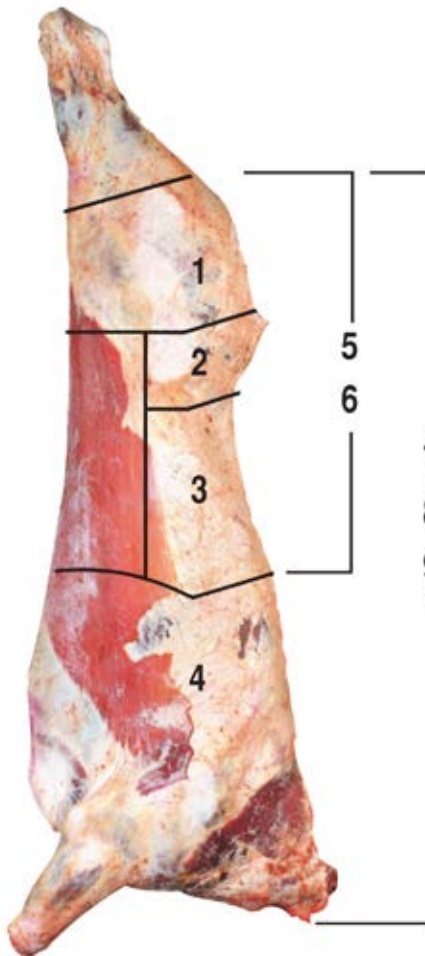
This will help pinpoint where the bruising occurs and therefore, who is responsible for solving the problem.

Bruise score information is also a valuable product description item, which encourages the open and fair trade of meat such as over-the-hooks trading.

It is a mandatory requirement under the Guidelines for Over-the-Hooks (OTH) trading that the processor provide a bruise score for individual cattle with serious bruising.



The AUS-MEAT Bruise Scoring System



NUMBER OF
SERIOUS BRUISE AREAS

SCORE	LOCATION	
1	BUTT	1
2	RUMP	1
3	LOIN	1
4	FOREQUARTER	1
5	HINDQUARTER	2
6	HINDQUARTER	3
7	FOREQUARTER HINDQUARTER	2
8	FOREQUARTER HINDQUARTER	3
9	SIDE	4

Scorable Bruise Description:

1. Where muscle is bruised, it qualifies as a scorable bruise if; an area of muscle (exposed) by trimming into the muscle tissue to the extent that it cannot be covered by a 100mm diameter circle or an irregular shaped equivalent area.
2. Where the trimming of a serious bruise has exposed muscle tissue smaller than 100mm and deeper than 20mm.

Serious (flank bruise):

A serious bruise located in the thin flank area is recorded as a score (3) when the muscle tissue of the primal (striploin) is damaged.

Where a bruise straddles two scorable areas:

1. The score will be recorded in the area where the bruise is most predominant.
2. A straddle bruise that covers at least 100 mm in both scorable areas will count as separate bruises and be recorded as such.

Butt Shape



What is Butt Shape

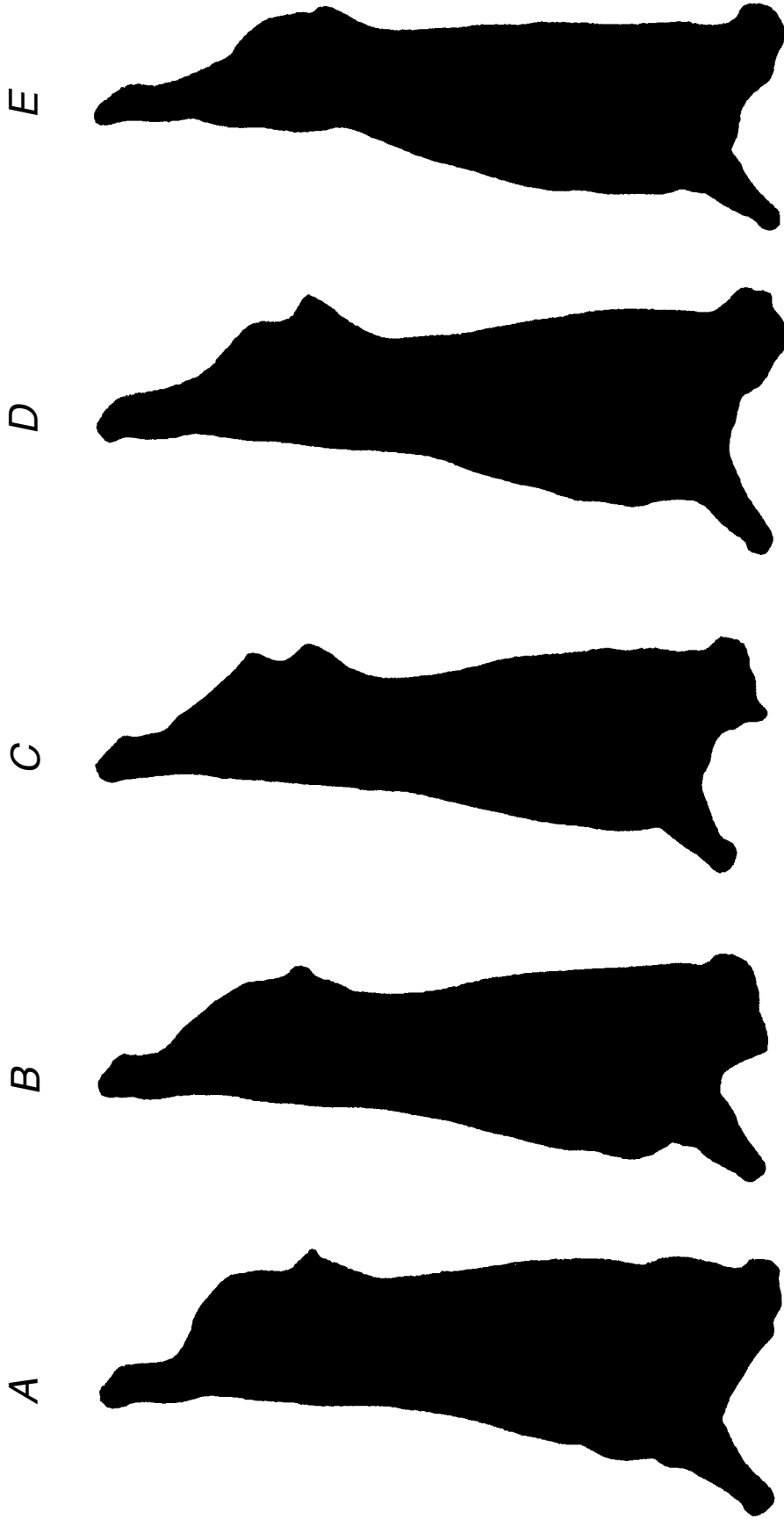
Butt Shape refers to the shape of the profile or convexity of the caudal aspect of the carcass silverside, as seen from the lateral surface. Measured from A to E the shape is compared with the five standard silhouettes.

Butt Shape silhouettes were introduced into the AUS-MEAT Language and were mainly applied to the Korean Quarter beef trade as part of that Government's specification and used as a cut off point for acceptable and unacceptable carcasses. Butt Shape profiles were also used for Japanese carcass full set specifications.

Due to the fact that butt shape is not a reliable indicator of saleable meat yield, it was removed from the domestic National Carcass Branding Scheme in 1992.

Today, although not mandatory Butt Shape is still part of the AUS-MEAT language and is used in company specifications, customer requirements or carcass price determinant, conducted under agreement between the buyer and seller (Export and Domestic). Where an assessment is conducted as part of any specification it continues to be scored against the Butt Shape silhouettes.

The Industry decision to retain Butt Shape in the Language allows AUS MEAT to audit those that use the measurement, thus ensuring consistency of application. Therefore Butt Shape remains an optional slaughter floor carcass measurement.





— AUSTRALIAN BEEF —

CARCASE EVALUATION

(BEEF AND VEAL CHILLER ASSESSMENT LANGUAGE)



Chiller Assessment was developed to enable AUS-MEAT accredited processors to assess, grade or class carcasses using a uniform set of standards under controlled conditions. The scheme provides a means of describing meat characteristics and of classifying product prior to packaging. These characteristics include the colour of meat and fat, the amount of marbling, eye muscle area, rib fat thickness and the maturity of the carcass.

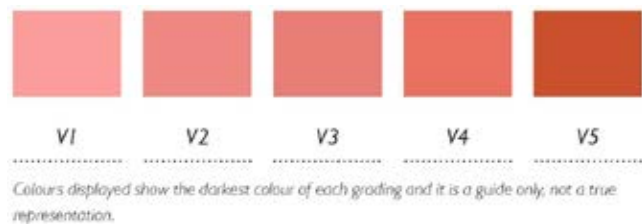
Assessments are made by qualified assessors and results are allocated to the carcass. This provides a means of (carcass) selection according to individual characteristics contained in specifications.

The AUS-MEAT Chiller Assessment Language is only available to AUS-MEAT accredited Enterprises, their clients and suppliers.

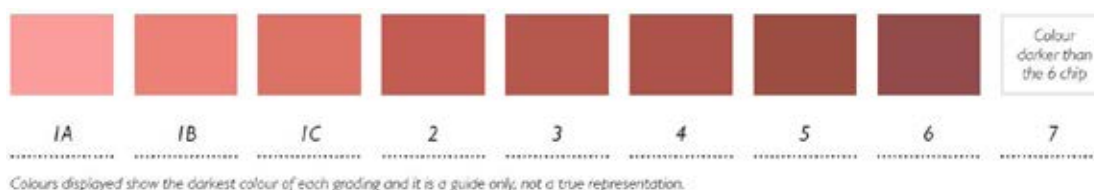
Meat Colour (MC)

Meat Colour is the predominant colour of the rib eye muscle. Meat Colour (Beef and/or Veal) is assessed on the chilled carcass at the bloomed rib eye muscle area and is scored against the AUS-MEAT colour reference standards.

Veal Meat Colour



Beef Meat Colour





Beef Fat Colour (FC)

Fat Colour is the colour of the intermuscular fat lateral to the rib eye muscle and adjacent to the M. iliocostalis, It is assessed on the chilled carcass and scored against the AUS-MEAT Fat Colour reference standards from 0 to 9



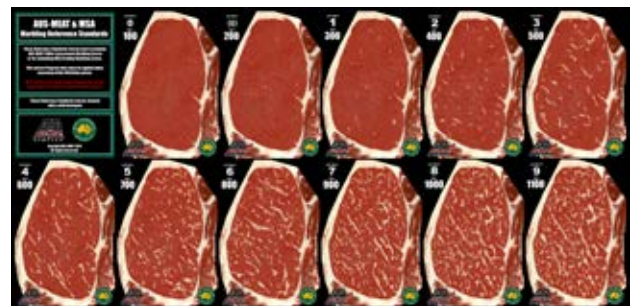
Marbling (MB)

Marbling is the fat that is deposited between muscle fibres (intramuscular fat). Marbling is assessed on the chilled carcass at the M. longissimus dorsi muscle and scored against the AUS-MEAT / MSA Marbling reference standards.

The AUS-MEAT Marbling system provides an indication of the amount of marbling in beef measured from 0 (least) to 9 (most). AUS-MEAT Marbling is assessed against the proportion of marbling to meat depicted in the Marbling reference standards.

Where Chiller Assessors assess marbling scores 7-9, they must hold a high marbling endorsement

The MSA grading system uses MSA marbling scores in the prediction of eating quality.



Rib Fat Measurement (RF)

Rib fat is the measurement of the thickness of subcutaneous fat measured in millimetres at the specified rib.

The MSA Grading System uses Rib Fat in the prediction of eating quality.



Eye Muscle Area (EMA)

Eye Muscle Area is the area of the surface of the M.longissimus dorsi at the ribbing site and is calculated in square centimetres. EMA may be measured at the 10th, 11th, 12th or 13th rib.

EMA is measured manually using a plastic grid.



Maturity / Ossification (OSS)

Maturity scoring provides a scale for the assessment of physiological age of a bovine animal. The term, ossification, refers to the cartilage turning to bone in the spinous processes in three sections along the backbone - sacral (tail), lumbar (loin) and thoracic (head). The process starts in the sacral region in the form of red spots and as the process increases, turns to hard, yellow bones.

The shape and colour of the rib bones are also used to determine maturity. Maturity is measured in standardised increments with the lowest being 100 and the highest being 590.

Maturity is used as part of the Chiller Assessment language for beef when determining eligibility for 7 and 8 tooth carcasses to be packed under the minimum standards Grain Fed (GF)

The Meat Standards Australia (MSA) grading system uses Maturity score as an indication to determine the eating quality outcome of a carcass.



— AUSTRALIAN GRAIN — FED BEEF *MINIMUM* *STANDARD SPECIFICATION*



The Australian Grain Fed cattle industry through the National Feedlot Accreditation Scheme, administers the certification and specification for minimum standards for Grain Fed Beef.

Certification

Cattle slaughtered and processed as Grain Fed must be sourced from a feedlot accredited with the National Feedlot Accreditation Scheme (NFAS) and audited by AUS-MEAT. All cattle from accredited feedlots must have the necessary NFAS Delivery Documents at time of slaughter. The Department of Agriculture, are the responsible organisation for the administration of declaration/documents on plant.

AUS-MEAT is the organisation responsible for post-slaughter monitoring of Grain Fed product. Carcasses eligible for Grain Fed Certification must comply with the following criteria for meat quality assessments.

Carcase specifications

GRAIN FED

SYMBOL - GF



- **Number of days on feed:** 100 days
- **Age of animal (Dentition):** 6 permanent incisor teeth (maximum) except where carcasses with thoracic vertebrae are only partially ossified.
- **P8 Fat depth (mm):** 7 mm (minimum)
- **Meat Colour Score:** 1 a-b-c – 3
- **Fat Colour Score:** 0 – 3

GRAIN FED YOUNG BEEF

SYMBOL - GFYG



- **Number of days on feed:** 70 days (females not less than 60)
- **Age of animal (Dentition):** 0 to 2 permanent incisor teeth
- **P8 Fat depth (mm):** 5 mm (minimum)
- **Meat Colour Score:** 1 a-b-c – 3
- **Fat Colour Score:** 0 – 3

— PASTUREFED —

CATTLE ASSURANCE SYSTEM



Cattle Council of Australia, with support from Meat & Livestock Australia (MLA), has developed a voluntary assurance program that enables the industry to prove claims made about pasturefed or grassfed production methods. This program is called the Pasturefed Cattle Assurance System (PCAS).

Underpinning PCAS are the PCAS Standards which govern the on-farm feed requirements and traceability of the cattle as well as pre-slaughter handling practices which influence eating quality. The PCAS Standards also include two optional modules to support claims relating to freedom from antibiotics and hormone growth promotants (HGP's).

The program was developed in consultation with industry stakeholders, retailers and processors and the PCAS Standards were piloted with producers.

Program Standards

There are three Standards; one core and two optional. These may be used in combination.

<i>Core-Element</i>	<i>Requirements</i>
1. Identification and lifetime traceability	On-farm systems have been implemented to ensure that cattle are individually identified and that they retain a Lifetime Traceable (LT) status on the National Livestock Identification System (NLIS) Database.
2. No confinement for the purpose of intensive feeding for production	On-farm systems have been implemented to ensure that cattle are not confined for the purpose of intensive feeding for production.
3. Pasturefed only	On-farm systems have been implemented to ensure that cattle have never been fed separated grain or grain by-products and have access to graze pasture with an Eligible Diet.
4. Minimum eating quality standards (on-farm)	On-farm systems have been implemented to ensure that cattle are eligible to be Meat Standards Australia (MSA) Graded.
<i>Core-Element 1 + HGP Free</i>	<i>Requirements</i>
5. Lifetime free from HGP's	On-farm systems have been implemented to ensure that cattle have never been treated with hormonal growth promotants (HGPs).
<i>Core-Element 2 + HGP Free</i>	<i>Requirements</i>
6. Lifetime free from antibiotics	On-farm systems have been implemented to ensure that cattle have never been treated with antibiotics including: Low-level (subtherapeutic) or therapeutic level doses; sulphonamides, ionophores, coccidiostats; or any other synthetic antimicrobials.



— TRADING — LANGUAGE



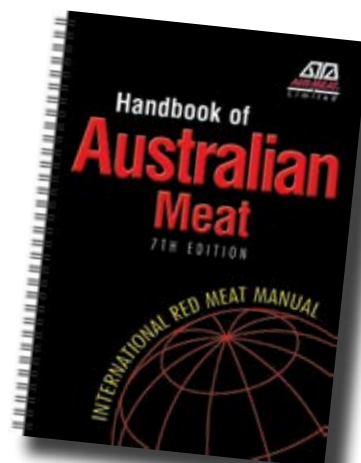
The AUS-MEAT Language is a common language which uses objective description to describe meat products accurately to meet market requirements both nationally and internationally. For a boning room intending to export meat under the Australian Meat and Livestock Industry Act 1997 states that all Export abattoirs and boning rooms must hold AUS-MEAT Accreditation.

The principle objective of AUS-MEAT in this case is the management of industry standards for trade description through the AUS-MEAT Language and the AUS-MEAT National Accreditation Standards. The Standards are designed to protect the integrity of the AUS-MEAT Language and the interests of the Australian Meat Industry in relation to the sale, distribution and export of Australian meat and the reputation of AUS-MEAT Limited.

A significant achievement for AUS-MEAT since 2001, has been the development of the The United Nations (UN) Economic Commission for Europe (ECE) Bovine Standards, this has been developed under the auspices of the United Nations UN/ECE involving fifty-five member countries. The Standards provide an International Trading Language for Bovine Meat. AUS-MEAT played a significant role in the development of these Standards on behalf of Australia. The Standards are largely based on the AUS-MEAT Language and are a major development in positioning Australian Processors at the forefront of International Trading in bovine meat products.



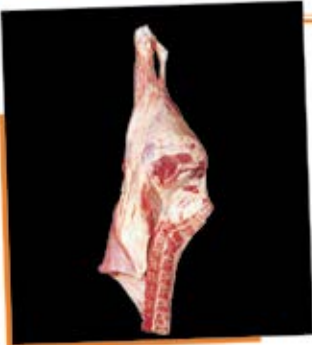

Handbook of Australian Meat

The Handbook of Australian Meat is designed to enable Exporters and Importers of Australian product to communicate detailed specifications and descriptions of red meat items using the same common Language. AUS-MEAT has assigned a distinct four-digit number for every primal cut and offal product derived from beef, veal, sheep and goat. Primal cuts are a muscle, or group of muscles, (Bone in or Boneless) which are defined by detailed cutting lines using objective measurements (e.g. rib number), standard descriptions and directions.



How to read and understand the Handbook of Australian Meat



Meat Image	Product Description	Unique Product code number								
BONE-IN BEEF										
	<p>SIDE 1000</p> <p>Carcase is split into Sides down the length dividing the spinal column. Carcase trim must comply with all government hygiene regulations that passes a carcass fit for human consumption and with the Australian meat industry agreed minimum trim requirements. For further details of the minimum trim standard definition for beef carcass see page 110 or visit the AUS-MEAT web site.</p> <p>Point requiring specification:</p> <ul style="list-style-type: none"> Variations to minimum trim standard definition (buyer/seller agreed variation). 	 <p>ITEM NO. 1000</p>								
	<p>HINDQUARTER 1010</p> <p>Hindquarter is prepared from a Carcase Side by the separation of the Hindquarter and Forequarter by a cut along the specified rib, at right angles to the vertebral column through to the ventral portion of the Flank.</p> <p>Points requiring specification:</p> <ul style="list-style-type: none"> Rib number required. Diaphragm removed. 	 <p>ITEM NO.</p> <table border="0"> <tr> <td>1010 (3-rib)</td> <td>1015 (8-rib)</td> </tr> <tr> <td>1011 (0-rib)</td> <td>1016 (4-rib)</td> </tr> <tr> <td>1012 (1-rib)</td> <td>1017 (6-rib)</td> </tr> <tr> <td>1013 (2-rib)</td> <td>1018 (9-rib)</td> </tr> </table>	1010 (3-rib)	1015 (8-rib)	1011 (0-rib)	1016 (4-rib)	1012 (1-rib)	1017 (6-rib)	1013 (2-rib)	1018 (9-rib)
1010 (3-rib)	1015 (8-rib)									
1011 (0-rib)	1016 (4-rib)									
1012 (1-rib)	1017 (6-rib)									
1013 (2-rib)	1018 (9-rib)									
Points requiring specification	Unique Product code number									

Australian Meat specifications and product code listings can be obtained by contacting your AUS-MEAT accredited meat supplier. Details of Accredited meat establishments can be found at www.ausmeat.com.au

Further details

Australian Meat specifications and product code listings can be obtained by contacting an AUS-MEAT accredited meat supplier. Details of Accredited meat establishments can be found at www.ausmeat.com.au

Australian Meat Industry Stakeholders can access the Handbook of Australian Meat Database through their AUS-MEAT online membership. For more details contact AUS-MEAT at ausmeat@ausmeat.com.au

Labelling and trade description



A label is applied on cartons of packaged meat identifying the product and traceability aspect.

The above label is an example of a beef product label applied to a carton of meat

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. GENERIC: Bone-in or boneless statement as well as species identification 2. CARCASE IDENTIFICATION: Category cipher which identifies carcass age and sex 3. PRODUCT NAME: Primal cut description as shown in the Handbook of Australian Meat 4. GRAINFED DESCRIPTION: Identifies the product as meeting Grainfed requirements 5. CHILLER ASSESSMENT: Chiller Assessment attribute statement | <ol style="list-style-type: none"> 6. MSA DESCRIPTION: Identifies the product as MSA graded with eating quality outcomes 7. NET WEIGHT: The meat content of the carton minus the carton weight 8. AI STAMP: Australian Federal Government Inspected stamp 9. REFRIGERATION STATEMENT: Indicates the product has been held in controlled chilling 10. COMPANY DETAILS: Indicates the name of the packer of the product. |
|---|--|

— INTERNATIONAL —

MARKETS



Australia is one of the world's most efficient producers of cattle and the world's third largest exporter of beef and is internationally recognized as free of all major livestock diseases. The Australian Meat and Livestock Industry has had a long-term commitment to food safety, product integrity and traceability, and its product quality complements Australia's focus on responsibility in meeting the demands of its international customers.

Due to high demand Australian beef competes with both other proteins and with the beef from other countries for market share. Supplying beef cuts and carcasses that meet the individual market specifications of our international customers is crucial in ensuring that Australia remains competitive in the international marketplace.

As the world's third largest exporter Australia currently supplies over 100 countries with beef and veal products. Current figures indicate the largest importers of Australian product include: USA, Japan, Korea, Chile and China

Market access

Different commodities and markets have different requirements with respect to Country to Country agreements and protocols. "Free for All", deregulated export from Australia runs a risk for all industry participants. In the past three decades, Australian Meat Exporters have successfully faced a number of market access challenges which have required a co-operative approach in partnership with Government since the now infamous meat substitution scandals of the early 1980's. Since that time industry participants have invested significant effort in developing and maintaining the reputation of Australian product in over 160 markets around the globe.

With respect to meat, trade description requirements, agreements and protocols vary from country to country.

Examples include:

- The USDA recognise the AUS-MEAT Language as meeting their labelling requirements.
- High Quality Beef (HQB) to the EU is subject to an access agreement for which specifications are determined by measurements within the AUS-MEAT Classification System
- Japanese authorities recognise the AUS-MEAT chiller assessment Language as being equivalent to their grading system
- Chile uses the AUS-MEAT classification system to meet their grading system requirements

— CARCASS — FEEDBACK



In the intense business environment of today, gone are the days when decisions could be based on gut feel and all information relevant to a business could be kept in your head. Businesses need relevant information to be able to make sound decisions. If cattle are not performing to expectations or there is room for improvement, producers can make changes to their management system to direct production towards the required specifications.

With the provision of carcass feedback by AUS-MEAT, producers are provided with the essential information required to make decisions regarding carcass performance during over-the-hooks trading.

Feedback and industry implications

Feedback is necessary to achieve high levels of compliance against consumer-derived specifications. High compliance is an essential component of the maintenance of beef's price competitiveness against the other protein sources such as chicken and pork.

Feedback can provide producers with the necessary information to:

- Make informed breeding decisions to improve compliance rate against specifications.
- Make informed management decisions, to improve compliance.
- Make the correct selection decisions as to which animals to deliver and when to deliver them, to meet specific market (supply chain) specifications e.g. fatness, carcass weight and growth rate.
- Monitor particular practices beyond the farm gate, particularly where they are involved in retained ownership supply associations
- Benchmark within their supply chain alliances for traits that can be meaningfully compared to improve ultimate farm business performance and profitability.
- Make sound decisions when considering target market changes



Mandatory feedback requirements from processors

When stock are purchased over-the-hooks the processor must provide a feedback sheet to the vendor or to an authorised person of the vendor. Where stock are processed pursuant to a service kill, the stock must be processed as over-the-hooks unless the service kill contractor otherwise requests in writing.

Upon written request from the vendor or an authorised person of the vendor the enterprise must, within 24 hours of slaughter provide feedback for livestock traded over-the-hooks.

The feedback sheet must contain the following information:

a) For all cattle other than cows and bulls, individual carcass data recording:

- Hot Standard Carcass Weight (HSCW);
- P8 fat measurement (mm);
- Dentition;
- Bruise score.

b) For cows and bulls, individual carcass data recording:

- Hot carcass weight;
- Bruise score;
- P8 fat measurement (mm), where P8 fat measurement is used to determine price;
- Dentition, where dentition is used to determine an alternative category (for example, Young Bull, *BYG*).

Sample feedback report

AUS-MEAT Feedback Sheet

Operator: John Smith Mob/Lot: 3526 Kill Date: 06/07/2012 Weights Displayed: HSCW 1ST SIDE 2ST SIDE

ACFM: 96752

Body	Sex	Dent	Stock Type	Breed	Fat Dep	Fat Cls	Cnt	ID	Eartag	Time	Cyp	Mkt	Cnd	Fts	Brs	Wgt Cls	HSCW	Cyp	Mkt	Cnd	Fts	Brs	Wgt Cls	HSCW	Total
1	M	4	S		10.0	3	C	NA999999	12345609	06:21:50	S	A1				40	195.0	S	A1				40	193.0	388.0
2	M	4	S		15.0	4	C	NA999999	12345645	06:27:28	S	A1				40	196.5	S	A1				40	197.5	394.0
3	M	4	S		15.0	4	C	NA999999	12345636	06:32:56	S	A1				38	185.5	S	A1				38	186.0	371.5
4	M	4	S		12.0	3	C	NA999999	12345682	06:38:15	S	A1				38	181.5	S	A1				38	181.0	362.5
5	M	4	S		10.0	3	C	NA999999	12345610	06:44:40	S	A1				42	204.0	S	A1				42	205.0	409.0
6	M	6	S		9.0	3	C	NA999999	12345672	06:50:37	S	A1				34	167.0	S	A1				34	167.5	334.5
7	M	4	S		18.0	4	C	NA999999	12345653	07:01:20	S	A1				36	176.5	S	A1				36	177.0	353.5
8	M	4	S		16.0	4	C	NA999999	12345623	07:06:45	S	A1				34	169.5	S	A1				34	168.5	338.0
9	M	4	S		10.0	3	C	NA999999	12345637	07:11:28	S	A1				36	182.0	S	A1				36	180.5	362.5
10	M	4	S		15.0	4	C	NA999999	12345685	07:16:43	S	A1				34	195.5	S	A1				34	195.0	390.5
11	M	2	S		15.0	4	C	NA999999	12345617	07:21:32	S	A1			1	34	189.5	S	D				34	181.0	370.5
12	M	4	S		12.0	3	C	NA999999	12345636	07:26:51	S	A1				34	166.5	S	A1				34	166.0	332.5
13	M	2	S		10.0	3	C	NA999999	12345625	07:31:16	S	A1				40	195.5	S	A1				40	196.5	392.0
14	M	2	S		9.0	3	C	NA999999	12345683	07:36:31	S	A1				42	206.5	S	A1				42	204.5	411.0
15	M	2	S		18.0	4	C	NA999999	12345677	07:41:19	S	A1				36	175.5	S	A1				36	173.0	348.5
16	M	4	S		16.0	4	C	NA999999	12345639	07:47:25	S	A1				38	186.0	S	A1				38	186.5	372.5
17	M	4	S		10.0	3	C	NA999999	12345604	07:51:36	S	A1				40	197.0	S	A1				40	198.0	395.0
18	M	4	S		15.0	4	C	NA999999	12345655	07:56:17	S	A1				36	178.5	S	A1				36	178.0	356.5
19	M	6	S		15.0	4	C	NA999999	12345689	08:04:42	S	A1				38	186.5	S	A1				38	188.5	375.0
20	M	4	S		12.0	3	C	NA999999	12345624	08:10:33	S	A1				38	186.0	S	A1				38	184.0	370.0
21	M	2	S		10.0	3	C	NA999999	12345696	08:15:12	S	A1				36	172.0	S	A1				36	173.0	345.0
23	M	6	S		9.0	3	C	NA999999	12345631	08:21:38	S	A1				38	181.5	S	A1				38	180.0	361.5
24	M	4	S		18.0	4	C	NA999999	12345616	08:26:17	S	A1				36	172.0	S	A1				36	172.5	344.5
25	M	4	S		16.0	4	C	NA999999	12345659	08:37:52	S	A1				40	198.5	S	A1				40	198.0	396.5

Operator: ABC MOB: 123 Count: 25 Av weight: 367.4 Av Fat: 13.4 Condemns: 0.0 Total weight 10,567.5

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Page 1 of 1



HANDBOOK OF
AUSTRALIAN BEEF
PROCESSING

THE AUS-MEAT LANGUAGE

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