Australian Government

Department of Agriculture, Fisheries and Forestry

Approved methods for microbiological testing of meat and meat products

(Amended April 2025)

The following is a list of Department of Agriculture, Fisheries and Forestry (DAFF) approved test methods for meat and meat products. All testing of product relating to export certification, including carcass testing under National Carcase Microbiology Monitoring Program (formerly known as ESAM), must be by one of the methods listed with the modifications and options specified; no other modifications are permitted. Laboratory manuals and protocols must reflect the above and will be subject to audits to ensure compliance.

Aerobic Plate Count/Total Viable Count (TVC)

➢ **AS 5013.5-2016**	Microbiology of the food chain – Horizontal method for the enumeration of microorganisms – Colony count at 30°C by the pour plate technique
➢ **AOAC 990.12**	TVC Petrifilm™
➢ **AOAC 2015.13**	Neogen Petrifilm® Rapid Aerobic Count (RAC) Plate Method
➢ **AOAC 2008.10**	TEMPO TVC Method: Automated Enumeration of Total Viable Count in Food
➢ **AOAC 010404**	Compact Dry TC
➢ **AOAC 091702 and MicroVal 2015LR52**	MC-Media Pad AOAC 091702 is a validation study for incubation of MC-Media Pad at 35 ± 1°C for 24 -48 h and applies only to 50 g raw meats and other foods. MicroVal 2015LR52 is a validation study for 10 g samples, incubated at 30 ± 1°C for 72 h

Escherichia coli O157:H7

Confirmation methods

➢ **AS 5013.26:2020**	Microbiology of food and animal feeding stuffs – Horizontal method for the detection of *Escherichia coli* O157
➢ **FSIS MLG 5**	Detection, isolation, and identification of *Escherichia coli* O157:H7 from meat products
➢ **FDA BAM Chapter 4A(K)**	Diarrheagenic *Escherichia coli* - Enrichment and isolation of *E. coli* Serotype O157:H7 from Foods

Screening methods

Where positive confirmation is required, such confirmation must be a DAFF approved confirmatory method.

Note all modifications/notes listed for each method must be followed

➢ **FSIS MLG 5A**	FSIS procedure for the use of *Escherichia coli* O157:H7 screening tests
➢ **AOAC 031002**	DuPont Qualicon BAX® System PCR Assay for Real-Time *E. coli* O157:H7
➢ **AOAC 2005.04**	Assurance GDS for *Escherichia coli* O157:H7 in Selected Foods and Assurance GDS *E. coli* O157:H7 Tq
➢ **AOAC 071001**	MicroSEQ(R) Real-Time PCR System for Detection of *E. coli* O157:H7 in raw ground beef and beef trim
➢ **AOAC 2017.01**	Neogen Molecular Detection Assay (MDA) 2 – E. coli O157 (including H7) Method
➢ **AOAC 022002**	BACGene *E. coli* O157:H7 Workflow
➢ **AOAC 2019.03**	GENE-UP *E. coli* O157:H7 2 (ECO 2)
➢ **AOAC 021501**	SureTect *E. coli* O157:H7 PCR Assay

The following rapid methods are not to be used for the routine testing of export meat and meat products for *E. coli* O157. They are approved as backup methods for use when PCR methods are temporarily unavailable. They may be used for the testing of product under commercial arrangements when a methodology is not specified under that arrangement.

➢ **AOAC 996.09**	BioControl VIP (8-12 h and 18-28 h options)
➢ **AOAC 2000.13**	Reveal (8-hours)
➢ **AOAC 2000.14**	Reveal (20-hours)
➢ **AOAC 070201**	Rapid√ for *Escherichia coli* O157 Lateral Flow Assay

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Shiga-toxin producing *E. coli* (STEC)

Confirmation methods

➢ **MLG 5C**	Detection, Isolation and Identification of Top Seven Shiga Toxin-Producing *Escherichia coli* (STEC) from Meat and Meat Products
➢ **FSIS MLG 5B**	Detection and isolation of non-O157 Shiga-toxin Producing *Escherichia coli* (STEC) from meat products
➢ **AOAC 2020.06**	GENE-UP EHEC Detection Method (detection, isolation and identification of Top Seven STEC)
➢ **AOAC 081901**	NeoSeek STEC – Detection and identification of top 7 STEC testing.

Screening methods

Where positive confirmation is required, such confirmation must be by a DAFF approved confirmatory method.

➢ **AOAC 071301**	Assurance GDS® MPX Top 7 STEC for detection of top 7 pathogenic STEC in beef trim
➢ **AOAC 091301**	DuPont Qualicon BAX® System Real-Time PCR Assays for detection of selected STEC in beef trim
➢ **AOAC 0100701**	IEH *E. coli* Test System for detection of non-O157 Shiga-toxin producing *E. coli* and *E. coli* O157 in raw ground beef
➢ **AOAC 061602**	RapidFinder™ STEC Detection Workflow for detection of top 7 STEC serogroups in beef products.
➢ **AOAC 031401**	Pall GeneDisc(R) Plate STEC Top 6 methods for detection of O157 and top 6 non-O157 Shiga toxin producing *E. coli* in raw ground beef and beef trim
➢ **AOAC 101502**	Assurance GDS® MPX ID for Top 6 STEC Detection of Top 6 Shiga toxin-producing E. coli (O26, O45, O103, O111, O121 and O145) in beef trim as a secondary screening method following a positive result using the Assurance GDS® MPX Top 7 STEC assay (AOAC 071301).
➢ **AOAC 022003**	BACGene STEC Top 7 Workflow
➢ **AOAC 071902**	Neogen Molecular Detection Assay (MDA) 2 – STEC Gene Screen (stx and eae)
➢ **MLG 5C Appendix 3, 4 and 5**	Detection, Isolation and Identification of top seven STEC from Meat & Meat Products (screening only)
➢ **AOAC 012102**	SureTect™ E. coli O157:H7 and STEC Screening PCR Assay

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Generic *Escherichia coli*

➢ **AS 5013.15**	General guidance for enumeration of presumptive *Escherichia coli* - Most probable number technique
➢ **AOAC 991.14**	*E. coli* PetriFilm™
➢ **AOAC 998.08**	*E. coli* PetriFilm™
➢ **AOAC 2005.03**	SimPlate® Colour Indicator: Detection and Quantitation of Coliforms and *E. coli* in foods
➢ **AOAC 2009.02**	Tempo® EC AFNOR Bio 12/13 – 02/05 for testing of generic *E. coli*
➢ **AOAC 110402**	Compact Dry EC
➢ **AOAC 070901 and MicroVal 2017LR71**	MC-Media Pad *E. coli* AOAC 070901 is a validation study that applies only to 50 g raw meats and other foods. MicroVal 2017LR71 is a validation study that applies to sample diluted 1:10. This method is approved for 50 g sample in 450 mL diluent.
➢ **AOAC 2018.13**	Neogen Petrifilm Rapid E. coli/Coliform Count Plate

Listeria

Confirmation methods

➢ **AS 5013.24.1**	Food and animal feeding stuffs – Horizontal method for the detection and enumeration of *Listeria monocytogenes*. Detection method
➢ **FSIS MLG 8**	Isolation and identification of *Listeria monocytogenes* from red meat, poultry, egg, and environmental samples Note alternative secondary enrichment has been included

Screening methods

Where positive confirmation is required, such confirmation must be by Australian Standard AS 5013.24.1 or FSIS MLG 8

Note the following biochemical test systems can be used for confirmation for all methods instead of the traditional CAMP test procedure: MICRO-ID® Listeria or API®-Listeria and β-lysin CAMP factor discs (Remel #21-120, or equivalent).

➢ **FDA BAM Ch 10**	Detection and Enumeration of *Listeria monocytogenes* in Foods
➢ **FSIS MLG 8A**	FSIS procedure for the use of *Listeria monocytogenes* BAX screening test Note the method has been updated to include testing of liquid egg products
➢ **AOAC 2003.12**	Automated BAX System for Detection of *Listeria monocytogenes* in Foods
➢ **AOAC 999.06 & AOAC 2004.06**	VIDAS LIS Assay for *Listeria* in Food
➢ **AOAC 997.03**	BioControl *Listeria* Visual Immunoprepicipate (VIP) Assay
➢ **AOAC 996.14**	BioControl Assurance *Listeria* Immunoassay

➢ **AOAC 070401**	Foodproof *Listeria moncocytogenes* Detection Kit, 5'Nuclease and Hybridization Probes
➢ **AOAC 031204**	Pall GeneDisc(R) method for the detection of *Listeria monocytogenes* in food and environmental samples
➢ **AOAC 011002**	MicroSEQ(R) Real-Time PCR System for Detection of *Listeria monocytogenes* in food
➢ **NF BIO 12/33-05/12**	VIDAS UP *Listeria* method (VIDAS LPT)
➢ **NF SOL 37/02-06/13**	Solus *Listeria* ELISA
➢ **AOAC 071304**	Thermo Scientific™ SureTectTM *Listeria* species PCR Assay - AOAC 071304 (AFNOR UNI 03/09 - 11/13)
➢ **AOAC 121402**	DuPont™ BAX® System Real-Time PCR Assay for *Listeria monocytogenes* - AOAC 121402
➢ **AOAC 2016.08**	Neogen Molecular Detection Assay (MDA) 2 – *Listeria monocytogenes* Method
➢ **AOAC 061703**	BACGene *Listeria monocytogenes*

Salmonella

Confirmation methods

➢ **AS 5013.10**	Microbiology of food and animal feeding stuffs - Horizontal method for the detection of *Salmonella* spp The following options are required: Second agar choice must be capable of detecting H_2S negative *Salmonella* (internationally validated *Salmonella* media e.g. BGA, BGS, Rambach, ChromAgar)
➢ **FSIS MLG 4**	Isolation and identification of *Salmonella* from meat, poultry and egg products

Screening methods

When positive confirmation is required, such confirmation must be by Australian Standard AS 5013.10 or FSIS MLG 4.

➢ **FSIS MLG 4C**	FSIS procedure for the use of the BAX system PCR assay for screening *Salmonella* in raw meat, carcass sponge samples, whole bird rinses, ready-to-eat meat and poultry products and pasteurised egg products
➢ **AOAC 2003.09**	BAX Automated System for Screening *Salmonella* in foods
➢ **AOAC 992.11**	BioControl Assurance EIA
➢ **AOAC 999.08**	BioControl Assurance Gold pre-enrichment with BPW + novobiocin as per instructions

➢ **AOAC 999.09**	BioControl VIP
➢ **AOAC 996.08**	VIDAS *Salmonella* (SLM) Assay
➢ **AFNOR BIO 12/16–09/05**	VIDAS EASY *Salmonella* method – AFNOR
➢ **AOAC 2013.01 (AOAC 071101)**	VIDAS UP *Salmonella* method (VIDAS SPT)
➢ **AOAC 2001.09**	VIDAS Immuno Concentration *Salmonella* (ICS)
➢ **AOAC 2009.03**	Assurance GDS™ *Salmonella* method for foods and Assurance GDS *Salmonella* Tq method
➢ **AOAC 100701**	IEH PCR assay for detection of *Salmonella* in carcass and environmental sponges or swabs
➢ **AOAC 120301**	foodproof(R) *Salmonella* Detection Kit, 5'Nuclease and Hybridization Probes
➢ **AOAC 100201**	DuPont Qualicon BAX (R) System *Salmonella*2 PcR Assay
➢ **AOAC 2013.02**	DuPont Qualicon BAX(R) System real-time PCR assay for *Salmonella*
➢ **AOAC 031001**	MicroSEQ(R) Real-Time PCR System for Detection of *Salmonella* in food
➢ **AOAC 050602**	Assurance GDS for *Salmonella*
➢ **AOAC 2014.01**	Neogen Petrifilm *Salmonella* Express
➢ **AOAC 011404**	Veriflow™ *Salmonella* Species (SS)
➢ **NF SOL 37/01-06/13**	Solus *Salmonella* ELISA
➢ **AOAC 2021.02**	Thermo Scientific™ SureTect™ *Salmonella* spp PCR Assay - AOAC 051303 (AFNOR UNI 03/07 – 11/13)
➢ **AOAC 2016.01**	Neogen Molecular Detection Assay (MDA) 2 – *Salmonella* Method
➢ **AOAC 121501**	BACGene *Salmonella* spp.

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