

DAIRYSAFE has an obligation to actively promote food safety learnings that are important to your business.

Key points –

- FSANZ has released the Compendium of Microbiological Criteria for Food (March 2022).
 - The Compendium includes a new chapter for dairy products and consolidates requirements for microbiological testing in one document.
 - The updated Compendium supersedes previous guidance on microbiological testing.
 - Overall, not much has changed in terms of requirements for microbiological testing.
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Food Standards Australia New Zealand (FSANZ) has released an updated version of the Compendium of Microbiological Criteria for Food (March 2022).

What's new?

The March 2022 edition of the Compendium features updated guidance and microbiological criteria for dairy products. It consolidates guidance on microbiological testing criteria, corrective actions and environmental monitoring into a dairy chapter to create a comprehensive microbiological testing guideline for the dairy industry. It also includes an expanded environmental monitoring section and new fact sheets on *Clostridium botulinum* and *Shigella spp.*

The updated Compendium brings together information on pathogens and indicator organisms significant to food safety, microbiological guideline criteria for Ready-to-eat (RTE) foods, and process hygiene criteria (PHC) that have been established for dairy.

It provides a basis for development of your microbiological verification procedure and specifies recommended minimum testing frequencies.

The updated Compendium replaces DairySAFE's 'Microbiological testing criteria - 2015' and the 'National Guidelines – Pathogen Management (Guidelines for Dairy industry response to pathogen detections in dairy product and the processing environment)'.



Important things to note

- The process (control) hygiene criteria for liquid milk, cream, cheese, powdered infant formula have been retained from the 2018 version of the Compendium.
- New process control criteria have been provided for ice cream and other frozen products, fermented milk products, butter and dairy blends, dairy-based dips and deserts, and bulk milk for raw cheese.
- Testing frequencies have not changed – these are available in the attachment to this Bulletin.
- Corrective action information is summarised from the pathogen management guidelines.
- Guidance on environmental monitoring provides more dairy specific information and aligns more with existing guidance for the dairy industry – information from the pathogen management guidelines has been condensed.
- Details on environmental monitoring have been updated from what was in the previous edition of the Compendium.

What's in the new dairy section in the Compendium?

- the 6 main microbiological hazards associated with dairy products
- microbiological criteria and process hygiene criteria for dairy
- sampling plans and testing frequency suitable for the verification of your food safety program
- process hygiene criteria for indicator organisms in individual dairy product categories that identify when a control failure has occurred
- microbiological specifications for bulk raw milk
- process control tables & guideline microbiological and process hygiene criteria for dairy commodities
- appropriate actions should the results of testing for these organisms fall outside stated levels
- instances where a manufacturer may want to implement a different sampling plan or suggest alternative means of verification in place of microbiological testing

What's still critical!

It is important to consider holding product until test results are received, as this can mitigate the risk of having to remove product from the marketplace or supply chain. This process may not be practicable however with short shelf life products.

It is also very important where microbiological criteria are not met, the cause of the issue is investigated and identified, with corrective action taken to rectify the cause (see p.52).

The Compendium is available online:

- in the Food Safety Toolbox on Dairysafe's website – <https://dairy-safe.com.au/rules-tools/food-safety-toolbox/>, or
- on the FSANZ website - https://www.foodstandards.gov.au/publications/Documents/Compendium_revised%20M arch%202022.pdf.



Please contact the Dairysafe team if you have any questions.



Dairysafe's regulatory management system is certified to the ISO 9001:2015 Quality Standard

Attachment – test frequencies for dairy products

Butter and Dairy Blends – p.39

Table 5.3 Microbiological guideline criteria for butter and dairy blends

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Butter and dairy blends (salted)	CPS/g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 20 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 2 m = 3 M = 10 n = 5 c = 2 m = 10 M = 100 n = 5 c = 2 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 20 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 20 batches
	CPS/g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
Unsalted butter and dairy blends, reduced fat and reduced salt spreads	CPS/g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 2 m = 3 M = 10 n = 5 c = 2 m = 10 M = 100 n = 5 c = 2 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	CPS/g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
All butter and dairy blends with post-pasteurisation ingredients and inclusions Testing high-risk ingredients separately for the presence of <i>Salmonella</i> spp. may be an appropriate alternative to more frequent testing of finished batches	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 2 m = 3 M = 10 n = 5 c = 2 m = 10 M = 100 n = 5 c = 2 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	CPS/g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches

Regulatory requirements are highlighted in orange; CPS = coagulase-positive staphylococci; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

Cheese (heat treated milk) – p.41

Table 5.5 Microbiological guideline criteria for cheese (heat-treated milk)

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
All cheese (Except categories listed below)	CPS/g*	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 20 batches
	<i>E. coli</i> /g*	n = 5 c = 1 m = 10 M = 100	1 sample (limit: 10/g)	Every 20 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g (in products that support growth) n = 5 c = 0 m = 100 (in products that will not support growth)	5 samples composited (limit: ND/125g) 5 samples composited and tested. Enumerate if positive	Every 20 batches
	CPS/g*	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
Soft and semi-soft cheese (Moisture content greater than 39% and pH greater than 5.0)	<i>E. coli</i> /g *	n = 5 c = 1 m = 10 M = 100	1 sample (limit: 10/g)	Every 10 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	CPS/g*	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
Cheese with post-pasteurisation inclusions (excluding starter cultures, fermentation aids and rennet)	<i>E. coli</i> /g*	n = 5 c = 1 m = 10 M = 100	1 sample (limit: 10/g)	Every 10 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g (in products that support growth) n = 5 c = 0 m = 100 (in products that will not support growth)	5 samples composited (limit: ND/125g) 5 samples composited and tested. Enumerate if positive	Every 10 batches
	CPS/g*	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
Shredded, grated and cut cheese (excluding soft and semi-soft cheese)	<i>E. coli</i> /g*	n = 5 c = 1 m = 10 M = 100	1 sample (limit: 10/g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g (in products that support growth) n = 5 c = 0 m = 100 (in products that will not support growth)	5 samples composited (limit: ND/125g) 5 samples composited and tested. Enumerate if positive	Every 10 batches (high risk >39% moisture) Every 20 batches (medium risk <39% moisture)
	CPS/g*	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g*	n = 5 c = 1 m = 10 M = 100	1 sample (limit: 10/g)	Every 10 batches

Regulatory requirements are highlighted in orange; CPS = coagulase-positive staphylococci; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded
* Levels of CPS and *E. coli* (if present) may decline during ageing, therefore testing in process and/or prior to ageing may be more appropriate than final product testing for the purpose of identifying control failures in aged cheeses.
* Where testing for *E. coli* is for the purpose of determining acceptability, this should be conducted on food ready for retail sale.
* Some adjunct cultures may include organisms belonging to the coliform group. Care should be taken when interpreting results from cheeses produced using these types of cultures.

Raw Milk Cheese – p.43

Table 5.7 Microbiological criteria for raw milk cheese

Product type	Test	Sampling plan	Frequency
Raw milk cheese	CPS/g*	n = 5 c = 2 m = 100 M = 1000	Testing frequency should be every batch until it is demonstrated that the requirements can be consistently met, as advised by your state regulator.
	Staphylococcal enterotoxins/25g	n = 5 c = 0 m = not detected in 25g	
	<i>E. coli</i> /g*	n = 5 c = 1 m = 10 M = 100	
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	

Regulatory requirements are highlighted in orange; CPS = coagulase-positive staphylococci
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

* Levels of CPS and *E. coli* may decline during ageing, therefore testing in process and/or prior to ageing may be more appropriate than final product testing for the purpose of identifying control failures in aged cheeses.

Dairy-based Dips & Deserts – p.45

Table 5.9 Microbiological guideline criteria for dairy-based dips and desserts

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Dairy-based desserts and dips with a pH above 4.5 (e.g. custard, mousse)	CPS/g	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	CPS/g	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
Dairy-based desserts and dips with a pH above 4.5 with high-risk post-pasteurisation inclusions Testing high-risk ingredients separately for the presence of <i>Salmonella</i> spp. may be an appropriate alternative to more frequent testing of finished batches	<i>L. monocytogenes</i> /25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	CPS/g	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 20 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 20 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 20 batches
Dairy-based desserts and dips with a pH below 4.5 with high-risk post-pasteurisation inclusions Testing high-risk ingredients separately for the presence of <i>Salmonella</i> spp. may be an appropriate alternative to more frequent testing of finished batches	CPS/g	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 10 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches

Regulatory requirements are highlighted in orange; CPS = coagulase-positive staphylococci; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

Dried Milk Powder – p.46

Table 5.11 Microbiological guideline criteria for dried milk powders

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Dried milk powder	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 20 batches
	<i>B. cereus</i> /g	n = 5 c = 1 m = 100 M = 1000	1 sample (limit: 100/g)	Every 20 batches

Regulatory requirements are highlighted in orange; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

Fermented Milk Products (yoghurt, etc) – p.48

Table 5.13 Microbiological guideline criteria for fermented milk products

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Yoghurt and other fermented milk products (e.g. sour cream)	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 20 batches
	<i>L. monocytogenes</i>	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 20 batches
Yoghurt and other fermented milk products with high-risk post-pasteurisation inclusions	CPS/g	n = 5 c = 2 m = 100 M = 1000	1 sample (limit: 100/g)	Every 10 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
Testing high-risk ingredients separately for the presence of <i>Salmonella</i> and CPS may be an appropriate alternative to more frequent testing of finished batches	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches
	<i>L. monocytogenes</i> /25g	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 10 batches

Regulatory requirements are highlighted in orange; CPS = coagulase-positive staphylococci; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

Ice Cream & Other Frozen Products – p.50

Table 5.15 Microbiological guideline criteria for ice cream and other frozen products

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Frozen ice cream, frozen ice cream mix, and edible frozen ices	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 20 batches
	<i>L. monocytogenes</i>	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 20 batches
Frozen ice cream, frozen ice cream mix, and edible frozen ices with high-risk post-pasteurisation inclusions	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 20 batches
	<i>Salmonella</i> spp./25g	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 20 batches
Testing high-risk ingredients separately for the presence of <i>Salmonella</i> may be an appropriate alternative to more frequent testing of finished batches	<i>L. monocytogenes</i>	n = 5 c = 0 m = 100	5 samples composited and tested. Enumerate if positive	Every 20 batches
	<i>E. coli</i> /g OR Coliforms/g OR Enterobacteriaceae/g	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/g) 1 sample (limit: 10/g) 1 sample (limit: 10/g)	Every 10 batches
Refrigerated ice cream soft serve (e.g. soft serve mix)	<i>L. monocytogenes</i>	n = 5 c = 0 not detected in 25g	5 samples composited (limit: ND/125g)	Every 10 batches

Regulatory requirements are highlighted in orange; ND = not detected
n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded

Pasteurised Milk & Cream – p.51

Table 5.17 Microbiological guideline criteria for pasteurised milk and cream

Product types	Test	Sampling plan	Alternative sampling plan for small batches	Frequency
Pasteurised liquid milk products (Includes flavoured milk and extended shelf life (ESL) products)	<i>E. coli</i> /ml OR Coliforms/ml OR Enterobacteriaceae/ml	n = 5 c = 1 m = 3 M = 10 n = 5 c = 1 m = 10 M = 100 n = 5 c = 1 m = 10 M = 100	1 sample (limit: 3/ml) 1 sample (limit: 10/ml) 1 sample (limit: 10/ml)	Every 10 batches
	<i>L. monocytogenes</i> /25ml	n = 5 c = 0 not detected in 25ml	5 samples composited (limit: ND/125ml)	Every 10 batches
Pasteurised liquid cream products	<i>E. coli</i> /ml OR Coliforms/ml OR Enterobacteriaceae/ml	n = 5 c = 1 m = 3 M = 10 n = 5 c = 0 m = 10 M = 100 n = 5 c = 0 m = 10 M = 100	1 sample (limit: 3/ml) 1 sample (limit: 10/ml) 1 sample (limit: 10/ml)	Every 10 batches
	<i>L. monocytogenes</i> /25ml	n = 5 c = 0 not detected in 25ml	5 samples composited (limit: ND/125ml)	Every 10 batches

Regulatory requirements are highlighted in orange; ND = not detected. n = number of sample units; c = the number of sample units allowed to exceed m; m = the acceptable microbiological limit; M = the limit which must not be exceeded. Approved alternative processes to pasteurisation (e.g.HPP) will involve different processing steps; however, the above microbiological criteria would still apply.