

Cultures Reference Chart (Lactic Cultures)

Culture stocked by Cheesemaking	Equivalent names of alternative starter cultures	Species contained in the culture	Mesophile / Thermophile	Optimum growth temperature	Fermentation Type	Cheese types that can be made using these cultures
M265	Type A, MA11, C61, Mesophile Type 11, M0 030, R7, R703 – R708 series, LL50, MWO, MA0 series, C 101	LL + LC	M	25c (20c to 35c)	Homofermentative	Traditional Cheddar, Farmhouse Cheddar, Stirred Curd Cheddar, English acid styles, UK territorial styles, Colby, Brick, Jack, Farmers, Cottage cheese, white cheese, Continental cheese, milled curd, washed curd styles
M272	Type B, MM 100, MM101	LL + LC + LD	M	25c (20c to 35c)	Heterofermentative	Traditional Cheddar, Farmhouse Cheddar, Stirred Curd Cheddar, English acid styles, UK territorial styles, Colby, Brick, Monterey Jack, Farmers, Limburger, Camembert, Brie, Blue cheese, Cottage cheese, sour cream, milled curd, washed curd styles, cultured butter, can be used in white mould cheeses,
M235	Type B, Aroma B, C64, M O30R, M0 36, M0 36 R, Cultures called 'Farmhouse' or 'Aromatic', Flora Danica, Flora, CHN Series, Probat series, MH 1 Series	LL + LC + LD + LM	M	25c (20c to 35c)	Heterofermentative	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All Blue vein varieties, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Semi Soft Styles e.g. Colby, Edam., Gouda, Havarti, Cream cheese, Tomme (made with mesophile), Sour cream, Quark, Fromage blanc, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, cultured butter, Mizithra, soft fresh cheeses, Faisselle, Reblochon, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin, Jarlsberg (with mesophile culture culture), Manchego, Monterey Jack
Flora Danica	Type B, Aroma B, C64, Cultures called 'Farmhouse' or 'Aromatic', M235, Flora, CHN Series, Probat series, MH 1 Series, MM100	LL + LC + LD + LM	M	25c (20c to 35c)	Heterofermentative	See M235
MM100	M272, Type B, M235	LL + LC + LD	M	25c (20c to 35c)	Heterofermentative	See M272
TPM	Type E, Camembert, Modern Camembert, STB01, Stam series, TA 050 / 60series	ST	T	35c - 37c 20c to 35c but can go up to 50c	Homofermentative	Modern Camembert/Brie, Caciocavallo, scarmorze
TPC	Type C, TC or TCC series, Thermo Type B, C62, Type C, Grana, TM, Thermo B, hard cheese cultures, TM81,	ST + LB	T	35c - 37c (20c to 35c) but can go up to 50c	Homofermentative	Tomme made with thermophile, Bel Paise, Butter Cheese, Emmenthaler, Gruyere, Swiss, Harder and aged mozzarella, Provolone, Parmesan, Romano, Asadero, Kasseri, soft feta. Greek Feta

MTR	RST series, RSF Series, RA21, RA series, Choozit AM, DC, MCT series, MT53	LL + LC + ST	MT	From 30c to not greater than 40c	Homofermentative	Traditional Cheddar, Farmhouse Cheddar, Stirred Curd Cheddar, English acid styles, UK territorial styles, Colby, Brick, Jack, Farmers, Cottage cheese, white cheese, Continental cheese, milled curd, washed curd styles
MA4000/4001	MTR4 with v small amount of MA221 or M272 with v small amount of TPM2 or TPF1	LL + LC + LD + ST	MT	From 30c to not greater than 40c	Heterofermentative	Traditional Cheddar, Farmhouse Cheddar, Stirred Curd Cheddar, English acid styles, UK territorial styles, Colby, Brick, Jack, Farmers, Cottage cheese, white cheese, Continental cheese, milled curd, washed curd styles
TPF	Stam series, STM1, TA61, TA series, Stacc series, TS series	ST	T	35c - 37c (20c to 35c) but can go up to 50c	Heterofermentative	Italian fresh mozzarella, mozzarella di Bufala, Bocconcini
MTF	MA 4000/1/2 series, MT1 Feta	ST + LH + LL + LDL	MT	From 30c to not greater than 40c	Heterofermentative	Feta, Greek Feta, Simple to make cheeses, Strong flavoured Greek style feta (if used with M265), Pizza Cheese
Italian & Swiss	Alp D, MOT 092	LL + LC + LD + LB + LH + ST + LM	MT	From 30c to not greater than 57c	Heterofermentative	Comte, Tomme, Parmesan, Romano, Pecorino, Emmenthaler, Gruyere, Swiss, hard cheese, Tomme made with thermophile, Leerdammer, Appenzeller, Sbrinz, Asiago, Montasio
MA315	MD88	LD	M	18 - 25c (15c to 35c)	Heterofermentative	This is not a stand along acidifying culture and is used in conjunction with a primary acidifying culture. It can be added to All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All Blue vein varieties, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Semi Soft Styles e.g. Colby, Edam., Gouda, Havarti, Cream cheese, Tomme (made with mesophile), Sour cream, Quark, Fromage blanc, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, cultured butter, Mizithra, soft fresh cheeses, Faisselle, Reblochon, Lactic Acid Set cheeses, Pouigny St Pierre, Crottin, Jarlsberg (with mesophile culture culture), Manchego, Monterey Jack
LH	LHB01/02/03, LH100, ALH11, Flav54	LH + LDL	T	40 - 45c (25c - 50c)	Heterofermentative	This is not a stand along acidifying culture. It is used in Cheddars, Edam and Gouda, Swiss styles, large eye, small eye, hard Italian and Swiss styles, Parmesan, Romano. It can also be used as a culture I small amounts to inhibit bitterness in all cheese
MA221 (former MA215)	CAF, LN1, Ln Blue, LM57, LM 79, MG10	LM	M	20c - 25c (15c to 35c)	Heterofermentative	This is not a stand along acidifier culture and is used in conjunction with a primary acidifying culture such as M235, M272. Added to blue Vein for more 'blue veins'. It can be added to Brie, Blue, Gouda, Edam, Havarti, Cream cheese, Sour cream, Quark, , Fromage blanc, Chèvre frais, St-Maure, Valençay, cultured butter
Yoghurt Probiotic747	Comparison not available, see product description for more details	ST + LB + BB + LA	T	37 - 43c (35c - 45c)	Heterofermentative	Most yoghurt styles

Yoghurt Probiotic BA986	Comparison not available, see product description for more details	ST + LB + BB + LA		37 - 43c (35c - 45c)	Heterofermentative	Most yoghurt styles
Yoghurt Probiotic 602	Comparison not available, see product description for more details	ST + BB + LA	T	37 - 43c (35c - 45c)	Heterofermentative	Most yoghurt styles
Yoghurt SYAB 1 (vegan)	Comparison not available, see product description for more details	ST + LB + BB + LA	T	37 - 43c (35c - 45c)	Heterofermentative	Most yoghurt styles
Kefir Culture	Comparison not available, see product description for more details	ST + A + SD + LM + LL + various other Kefir cultures	MT	20 - 35c (20c - 35c)	Heterofermentative	Kefir is used as a probiotic health drink but can be used as a starter culture

Cultures Reference Chart (Ripening and Flavouring Cultures)

Culture stocked by Cheesemaking	Equivalent names of alternative starter cultures	Species contained in the culture	Optimum growth temperature	Cheese types that can be made using these cultures
Geotrichum Candidum 1 (GC65)	Geotrichum Candidum	GC	25 - 30c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin
Geotrichum Candidum 3 (Geo17)	Geotrichum Candidum	GC	25 - 30c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin
Geotrichum Candidum 4 (Geo13)	Geotrichum Candidum	GC	25 - 30c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin
White Mould Spores 1 (Mix)	Penicillium Candidum	PCA	20 - 22c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin
White Mould Spores 2 (PCABL)	Penicillium Candidum	PCA	20 - 22c	All white mould styles: Camembert, Brie and Triple Cream, Coulommiers, All Lactic Acid Set styles: Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin

White Mould Spores 5 (PC Neige)	Penicillium Candidum	PCA	20 - 22c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin, It is ideally suited to higher fat cheeses such as triple cream and Blue/White Mixed
White Mould Spores 6 (HP6)	Penicillium Candidum	PCA	20 - 22c	All white mould such as Camembert, Brie and Triple Cream, Coulommiers, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin, It is ideally suited to higher fat cheeses such as triple cream and Blue/White Mixed
Blue Mould 2 (Medium)(PRB6)	Penicillium Roqueforti	PR	20 - 25c	All Blue Vein styles, Blue/Cam Blue
Blue Mould 3 (Strong) PRB18	Penicillium Roqueforti	PR	20 - 25c	All Blue Vein styles, Blue/Cam Blue
Blue Mould 4 (PJ ROQ)	Penicillium Roqueforti	PR	20 - 25c	All Blue Vein styles, Blue/Cam Blue
Blue Mould 5 (PS ROQ)	Penicillium Roqueforti	PR	20 - 25c	All Blue Vein styles, Blue/Cam Blue
Blue Mould 6 (PA ROQ)	Penicillium Roqueforti	PR	20 - 25c	all Blue Vein styles, Blue/Cam Blue
SX34	MVA, MVS, SALSA 1, SALSA2, XULY, MIC 2, (Micrococci)	SX	25-35c (min 4)	Can be used across all cheeses. All white mould such as Camembert, Brie and Triple Cream, Coulommiers, All Blue vein varieties, All wash rind varieties e.g. Raclette, Port Salut, Reblochon, Muenster Taleggio, Tilsit, All washed curd Semi Soft Styles e.g. Colby, Edam., Gouda, Havarti, Cream cheese, Tomme (made with mesophile), Sour cream, Quark, Fromage blanc, Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure, St Marcellin, Valençay, Selles- sur- Cher, cultured butter, Mizithra, soft fresh cheeses, Faisselle, Reblochon, Lactic Acid Set cheeses, Pouligny St Pierre, Crottin, Jarlsberg (with mesophile culture culture), Manchego, Monterey Jack
CU77	KL71 (Yeast)	CU	20 - 30c (min 4)	Lactic acid set curds e.g. Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure. White Mould ripened cheeses e.g. Camembert, Brie Triple Cream, Washed rinds styles e.g. Raclette, Port Salut, Reblochon, All Blue Vein styles, Milled Curd
DH40	DH, DHR, (Yeast)	DH	20 - 30c (min 4)	Lactic acid set curds e.g. Chaource, Neufchatel, Chevre, Chèvre frais, St-Maure. White Mould ripened cheeses e.g. Camembert, Brie Triple Cream, Washed rinds styles e.g. Raclette, Port Salut, Reblochon, All Blue Vein styles, Milled Curd
BL 403 Washed Rind 1	SR1, SR3, LR – FR13, BLO (Corynebacteria)	BL	20-25 c (min 6)	All washed rind cheese: Epoisse, Langres, Mariolas, Livarot, Muenster, Pont L'Eveque, Vacherin, Raclette, Reblochon, Oka, Port-Salut, St. Paulin, Bel Paese, Limburger. Can also be added to White Mould cheeses to change flavour profile
BL 405 Washed Rind 2	LR, FR 2, BLO. BLE 3, (Corynebacteria)	BL	20-25c (min 6)	All washed rind cheese: Epoisse, Langres, Mariolas, Livarot, Muenster, Pont L'Eveque, Vacherin, Raclette, Reblochon, Oka, Port-Salut, St. Paulin, Bel Paese, Limburger. Can also be added to White Mould cheeses to change flavour profile
PR35	lactobacilli	LP, LR	25 - 45c (min 10)	All cheeses that have a soft to medium hard body: Cultured creams, butter, fresh lactic, quark, labneh, soft fresh cheese, feta, white mould and blue vein. It can also be used on harder styles of cheese but to a lesser effect

PP79	lactobacilli	LP, LR	25 - 45c (min 10)	Cheddar, English Territorial, Comte, Tomme, Parmesan, Romano, Pecorino, Emmenthaler, Gruyere, Swiss, hard cheese, Tomme made with thermophile, Leerdammer, Appenzeller, Sbrinz, Asiago, Montasio
BA406	Swing BC, (Corynebacteria)	BA	20-25c (min 6)	Cheddar, English Territorial, Comte, Tomme, Parmesan, Romano, Pecorino, Emmenthaler, Gruyere, Swiss, hard cheese, Tomme made with thermophile, Leerdammer, Appenzeller, Sbrinz, Asiago, Montasio,
Propionibacterium		Prop	25 - 30c (min 10)	All cheese with medium to large eye holes
Lipase	Lipase	Lipase Enzyme	25 - 37c	All cheese with a savoury flavour
Rennet		Vegetarian Chymosin	40 - 42c	All cheeses
CaCl		Calcium Chloride	n/a	Optional addition to help improve curd sets
Annatto		Colour	n/a	Colouring for all cheeses

Cheese and Yoghurt Culture Comparison Chart

Select a starter culture using this table This table provides a comparison between many of the cultures that are available to home cheesemakers. It aims to provide the home cheesemaker with some standardisation of the 'corporate' names attached to packets of cultures and the specific names of the bacteria, yeasts and moulds that go together to make up those packets. This may help when you look at a recipe of a cheese that you want to make. This chart will enable you to compare that recipe to another recipe that you have for the same cheese and 'link' the different cultures that you have on those recipes. This is good cheesemaking research. The two cultures from these recipes could be very similar or they could be very different. This can be very confusing even for experienced cheesemakers. Hopefully, this chart will give you some clarification of what culture to select next time you make cheese. *If you come across deficiencies in this table or suggestion to improve it, if you have names of cultures not listed on this chart, please send me an email to info@cheesemaking.com.au. Enjoy your cheesemaking.*

Overview of using starter cultures Starter cultures are one or more than one specifically selected strain or strains of bacteria that are added to milk during the cheesemaking process to produce desired flavours, texture and general characteristics required of a specific style of cheese. Starter cultures along with rennet and other enzymes are the most important ingredients added to milk to make cheese. There are only a few starter culture manufacturers across the world, and they have at their disposal very large libraries of defined strains of bacteria, yeasts and moulds. From these 'microbial libraries', these companies have researched and developed a very thorough understanding of the characteristics of each culture strain e.g. the ideal temperature growth range, survival at different temperatures, rate of acid production, volume of acid production, the ability and degree that fats, proteins and sugars are broken down within the cheese by the starter culture itself and the effect of the many enzymes the cultures produce to develop flavour, texture and other desirable attributes in a cheese. The starter culture manufacturers are able to combine selected microbes into one product to make a starter culture to suit a cheese. It is no longer necessary to use the same one or two starter cultures across several types of cheese. This technology is evolving and has progressed so now a single cheesemaker may have several different starter culture blends in their freezer. The diversity of the starter cultures available also means that each cheese can be made to be different, by allowing different characteristics to develop as the cheese matures.

Bioprox starter cultures Bioprox is Cheesemaking's preferred manufacturer of specialty acidifying and ripening cultures for the cheese, yoghurt and fermented milk industry. Bioprox specialise in the provision of cheesemaking cultures for Cheesemaking companies in over 40 countries across the world. They have a highly qualified team of cheesemakers and technologists that have selected specific strains and families of cultures that will produce cheese that has unique and wonderful flavour and characteristics. Cheesemaking also stock a selection of cultures from other manufacturers.

What are freeze dried cultures ?	The cheese, yoghurt, flavour and ripening cultures are freeze dried. These cultures look like milk powder at first glance. The starter culture companies select the cultures and grow them in a sterile skim milk liquid medium until the culture numbers reach very high levels. This culture filled liquid is then freeze dried, technically it is a process called 'lyophilisation', or 'cryodesiccation'. It is a process which uses very low temperatures, below 0°C, which is created under a partial vacuum, so water is evaporated but the live bacteria cells are not damaged as no heat is applied. Freeze drying preserves what is a perishable product and makes it more convenient and less sensitive to temperature fluctuations for transport.
M = Mesophilic	Mesophilic starter cultures will multiply rapidly in number when the temperature of milk is approximately 20°C - 35°C and produce more acid at this temperature. Mesophiles will still produce acid, but at a slower rate as the temperatures drops below 20°C. If the milk temperature increases into the low 40's, then acid production may stop and the increased heat may potentially kill the starter culture.
T = Thermophilic	Thermophilic starter cultures will multiply rapidly in number when the temperature of milk is approximately 35°C - 45°C and produce more acid at this temperature. Thermophiles will still produce acid, but at a slower rate as the temperatures drops below 35°C down to approximately 20°C. If the milk temperature increases into the low 50's, then acid production may stop and the heat may potentially kill the starter culture. Some thermophilic starter cultures can survive at temperatures as high as 58°C.
MT = Mesophile Thermophile Blend	A mixture of both mesophile and thermophile starter cultures together. These cultures are specifically designed to provide acid production, enzymes or other products when the temperature of the milk or curds is in the range of 35°C - 45°C.
Homofermentative	Homofermentative Lactic Acid Bacteria. The principal role of this culture is to ferment lactose to produce lactic acid. This is most of the starter cultures.
Heterofermentative	Heterofermentative Lactic Acid Bacteria have a dual-purpose role. To ferment lactose as in the Homofermentative cultures but also to produce one or more 'extras' such as ethanol, acetic acid, carbon dioxide, propionic acid and diacetyl. The result is varying additional characteristics provided to a cheese.
LL	<i>Lactococcus lactis subsp. lactis</i>
LC	<i>Lactococcus lactis subsp. cremoris</i>
LD	<i>Lactococcus lactis ssp Lactis biovar. diacetylactis</i>
LM	<i>Leuconostoc mensenteroides subs. cremoris</i>
ST	<i>Streptococcus thermophilus</i>
LB	<i>Lactobacillus delbrueckii subsp. bulgaricus</i>
LDL	<i>Lactobacillus delbrueckii subsp. lactis</i>
LH	<i>Lactobacillus helveticus</i>
LA	<i>Lactobacillus acidophilus</i>
BB	<i>Bifidobacterium lactis</i>
LP	<i>Lactobacillus plantarum</i>
LR	<i>Lactobacillus rhamnosus</i>
KL	<i>Kluyveromyces lactis (Yeast)</i>

DH	<i>Debaryomyces hansenii</i> (Yeast)
BL	<i>Brevibacterium linens</i> , <i>Washed Rind</i> , <i>Corynebacteria</i>
PR	<i>Penicillium Roqueforti</i> (blue mould spores) (liquid or powder format)
PCA	<i>Penicillium Candidum</i> (white mould spores)
GC	<i>Geotrichum Candidum</i> (yeast) or (Yeast/Mould like)
SX	<i>Staphylococcus Xylosus</i> (<i>Micrococcaceae</i> family)
LP	<i>Lactobacillus plantarum</i>
LR	<i>Lactobacillus rhamnoses</i>
CU	<i>Candida Utilis</i>
BA	<i>Brevibacterium Aurantiacum</i>

Shipping and Storage of Cultures Ideally freeze dried cultures should be stored in the freezer during storage, during shipping and on arrival. However, this is not practical all the time, especially when cultures are being transported. Freeze dried cultures are stable over several weeks out of frozen storage. When you order your cultures, Cheesemaking will provide you with a few options to ship your cultures:

- **Express Postage (preferred if you order cultures)**
- **Standard Postage.**
- **Pickup from Stafford Qld 4053**

All orders over \$100 will have free express post shipping even if the Standard Postage is selected (heavy and bulky non-perishable items such as the cheese presses and the larger vats may be excluded)

Express Post is the best option for shipping cultures. Your cultures will be shipped in a foil pouch with a frozen gel pack (which will defrost slowly during shipping). This means your cultures will spend minimal time out of the freezer but may arrive in a package where the coolness has disappeared. On receipt of the cultures place the contents in the fridge or freezer (all containers are marked) as soon as possible after receipt, this short time out of the freezer is not detrimental to the life of the cultures. A text message is provided at the time of postage and an email is sent with the tracking number so you should know when the cultures arrive at their destination. Ideally arrange for someone to place the cultures in the fridge or freezer as soon as they are delivered.

Quality ingredients are an essential part of making good cheese. Ingredients need to be predictable in their use. If they are not, then your cheese may not turn out as you want them to. There are many variables in cheesemaking that can affect how cheese turns out. Using old and unpredictable ingredients should not be one of those variables. If you have been making cheese long enough, you will have come across cheesemaking ingredients in your fridge or freezer that will soon have reached or even passed their best before or expiry date.

If you have purchased perishable items, we strongly recommend that you provide an address that is attended during delivery hours, where someone will be available to receive and refrigerate the items that you have purchase, track the package via the email provided, ideally do not leave perishable items in a hot letter box or in the sun while you are not home.

