Enumeration of total bacterial count in raw milk - FC/BC interlaboratory studies Sept. 2023 - MS 10

		Stain	Enzym	BZ	BCS-Standard		LED	Signal-	Noise	PMT	MS 09A			MS 09 B/C			MS 10A			MS 10 B/C			Controlmilk CM I			Rel.
	instr. No.	Batch-No.	Batch-No.	Batch-No.	% sign.	% Imp.	Set-Point	width	level	level	Imp.	VK% `r	% calc.	Imp.	VK% `r	% calc.	Imp.	VK% `r	% calc.	Imp.	VK% `r	% calc.	Imp.	VK% `r	% mean	MS10 B/MS10A
		Microsph	Enzyme	IBC-Std																						
1	FC 4	22120297	22120308	6011717	105%	91%	750	31	6	606	135	5,4	92%	387	3,5	94%	119	4,8	90%	337	2,5	90%	148	4,7	97%	2,83
2	FC 73	22070170	22090223	6011717	105%	100%	760	31	9	617							126	9,6	95%	340	8,1	91%	171	1,8	112%	2,70
3	FC 94	22120297	22120308	6011717	90%	90%	754	30	7	572	133	3,9	91%	371	2,6	90%	123	4,4	93%	357	4,2	96%	141	4,5	93%	2,89
4	FC 2	22120297	22120308	6011717	100%	95%	765	26	6	530	137	4,1	94%	399	2,9	97%	123	4,6	93%	346	3,1	93%	152	4,8	100%	2,80
5	FC 36	22120297	22120308	6012108	105%	86%					137	5,0	94%	385	2,1	93%	126	3,4	95%	358	2,1	96%				2,85
6	BS 02-B	23030068	23030074	6010971	98%	106%		16	9		137	6,0	94%	374	5,3	91%	128	4,8	97%	364	3,4	98%	142	5,5	93%	2,84
7	BC 112/I										172	2,90	96%	503	1,70	99%	158	5,10	98%	464	2,20	101%	187	3,00	93%	2,93
8	FC 132	22100252	23030052	6012225		101%											126	4,8	95%	359	1,7	97%	161	5,8	106%	2,85
9	FC 96	22120297	22120308	6011717	98%	93%	822	27	7	596	141	4,0	96%	378	2,8	91%	129	3,7	98%	359	1,7	96%	143	4,1	94%	2,78
10	FC 72	22020046	22100264	6011983	98%	92%	735	28	7	544	134	5,7	92%	404	5,2	98%	128	3,7	97%	355	3,3	95%	130	5,2	85%	2,76
11	FC 8	22040107	22040083	6012225	102%	112%	620	29	5	550	137	4,5	94%	397	3,6	96%	128	5,0	97%	357	3,3	96%	152	4,3	100%	2,79
12	FC 9	22020046	23020045	6011100	93%	115%	560	26	5		139	3,2	95%	384	3,0	93%	130	4,3	98%	363	1,0	98%	136	6,5	89%	2,80
13	FC 38-I	23020044	23050104	6012228	100%	98%	738	26	6	528	138	3,1	95%	394	2,1	95%	127	3,8	96%	365	3,1	98%	149	3,4	98%	2,87
14	FC 6	22120297	22120308	6011717	100%	96%	715	27	6	613	143	3,9	98%	402	2,7	97%	126	4,8	96%	347	2,6	93%	155	2,0	102%	2,75
15	FC 74	22070170	23010052	6011983	93%	90%	800	30	6	548	143	6,4	98%	400	3,4	97%	126	4,5	96%	350	3,3	94%	138	3,9	91%	2,77
16	FC 146	22070170	23030052	6012200	93%	92%	769	25	6	516							133	4,7	100%	353	3,0	95%				2,66
17	FC 34	21080214		6012126	93%	86%	1030	26	6	552	142	4,5	98%	402	4,0	97%	127	5,8	96%	363	2,1	98%	160	3,9	105%	2,86
18	FC 12	22070170	22080201	6012108	100%	95%	633	26	7	570	142	2,1	97%	394	1,9	95%	129	4,9	98%	366	1,9	98%	157	4,8	103%	2,84
19	FC 33	21080214		6012126	93%	88%	852	26	6	502	140	5,7	96%	408	2,4	99%	131	4,6	100%	354	2,4	95%	149	4,5	98%	2,69
20	FC 11	22070170	22080201	6012108	100%	87%	792	76	8	596	137	4,0	94%	403	3,2	98%	128	6,7	97%	376	2,1	101%	158	4,1	104%	2,94
21	FC 68	22100252	22090223	6011099		96%					142	5,6	97%	392	2,9	95%	134	5,5	102%	362	3,4	97%	163	3,9	107%	2,70
22	FC 136	2207170	21120319	60119883	95%	102%	762	25	6	520	137	5,3	94%	403	2,1	98%	132	9,7	100%	372	2,2	100%	148	3,7	97%	2,81
23	BC 162										186	3,30	103%	466	1,40	92%	180	2,30	111%	455	1,70	99%	200	2,40	100%	2,54
24	FC 18	23021044	23010004	6011471	100%	96%	930	30	6	567	139	5,3	95%	394	1,9	95%	132	6,0	100%	379	2,7	102%	121	3,7	80%	2,87
25	FC 152/3A	22020044	23010004	6010758	95%	97%	900	26	6	510	135	3,4	93%	410	1,8	99%	132	5,5	100%	377	6,0	101%	163	2,0	107%	2,86
26	FC 90	22010003	22120308	6010934	97%	93%	736	25	7	566	140	6,1	96%	409	2,6	99%	133	4,5	101%	364	3,0	98%	155	4,8	102%	2,73
27	FC 131	22120297	22120308	6011717	100%	101%	570	28	10	567	139	2,9	95%	400	2,1	97%	132	3,2	100%	380	1,8	102%	152	4,2	100%	2,87
28	FC 32	22070170	23010004	6010722	103%	97%	800	27	10	634	147	4,4	101%	399	2,9	97%	129	2,2	98%	369	2,5	99%	152	5,2	99%	2,86
29	FC 5	22120297	22120308	6011717	100%	98%	740	27	7	581	150	3,9	103%	409	2,2	99%	127	4,1	96%	360	2,3	97%	160	4,1	105%	2,84
30	FC 85	22120297	23050104	6011497	98%	92%	1120	28	7	552	144	4,4	98%	413	2,9	100%	131	3,2	99%	363	1,4	98%	156	4,6	102%	2,78
31	FC 14	22100252	22090223	6011571	90%	91%	805	25	9	569	146	2,9	100%	416	2,2	101%	124	2,8	94%	377	2,7	101%	157	3,7	103%	3,04
32	FC 30	22020046	23030052	6011983	102%	103%	640	30	5		141	4,2	97%	389	3,2	94%	134	3,7	102%	387	3,3	104%	147	7,1	96%	2,89
33	BC 109/II	03724-F-35	03771-2-35	0822A							190	5,80	106%	512	4,70	101%	170	6,20	105%	466	2,95	102%	208	5,94	104%	2,74
34	FC 37	22120297	22120308	6012108	102%	91%					141	5,8	97%	401	4,4	97%	135	5,3	102%	377	2,9	101%				2,79
35	FC 35	21080214		6012126	95%	92%	1109	25	6	451	149	3,7	102%	410	3,5	99%	132	4,8	100%	357	3,5	96%	166	4,8	109%	2,69
36	FC 63	22120297	23050097	6012126	100%	99%	783	27	7	638	144	2,5	99%	413	1,4	100%	133	5,0	101%	371	2,1	100%	136	1,7	89%	2,79
37	FC 65	22120297	23050097	6012126	110%	100%	998	25	11	584	146	2,3	100%	410	1,3	99%	132	1,5	100%	371	1,7	100%	142	4,3	94%	2,82
38	FC 1	22120297	23010004	6012275	100%	99%	797	27	9	578	145	4,8	99%	410	2,7	99%	133	5,3	101%	373	2,6	100%	154	5,8	101%	2,80
39	FC 166	21010016	21010010	6010722	103%	90%	730	28	6	528	145	4,7	99%	417	3,4	101%	134	5,2	102%	365	5,2	98%	162	3,3	106%	2,73
40	FC 16	21100266	22060152	6010790	108%	96%	825	27	7	634	140	4,7	96%	422	2,7	102%	136	3,3	103%	371	3,0	100%	161	4,7	106%	2,73

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	instr. No.	Stain Batch-No.	Enzym Batch-No.	BZ Batch-No.	BCS-Standard % sign.	BCS-Standard % Imp.	LED Set-Point	Signal-width	Noise level	PMT level	MS 09A Imp.	MS 09A VK% `r	MS 09A % calc.	MS 09 B/C Imp.	MS 09 B/C VK% `r	MS 09 B/C % calc.	MS 10A Imp.	MS 10A VK% `r	MS 10A % calc.	MS 10 B/C Imp.	MS 10 B/C VK% `r	MS 10 B/C % calc.	Controlmilk CM I Imp.	Controlmilk CM I VK% `r	Controlmilk CM I % mean	Rel. MS10 B/MS10A
		Microsph	Enzyme	IBC-Std																						
41	FC 13	22100252	23010004	6011983	95%	89%	800	27	6	493	143	4,1	98%	414	2,0	100%	135	5,0	102%	376	3,8	101%	144	5,6	94%	2,79
42	FC 19	23020044	23020045	6012226	100%	90%	680	29	6	576	144	6,4	99%	419	1,9	101%	136	3,7	103%	367	3,3	99%	157	5,7	103%	2,70
43	FC 120	22040107	22120308	6011717	95%	97%	894	28	6	530	142	4,6	97%	399	2,7	97%	136	2,6	103%	395	3,9	106%	161	2,6	106%	2,91
44	FC 17	22100252	22040083	6011100	105%	98%	845	26	7	528	141	4,3	97%	424	1,8	103%	131	2,6	99%	388	2,4	104%	165	2,4	108%	2,96
45	FC 151	556688	556746	557058	100%	99%	547	30	6	513	143	4,1	98%	435	1,8	105%	133	4,8	101%	369	2,2	99%	143	4,3	94%	2,77
46	BS 147	22120300		6012052	98%	94%		10	30								137	2,1	104%	372	0,8	100%	162	1,8	106%	2,71
47	FC 84	22120297	23050104	6011497	93%	106%	938	29	5	544	144	5,7	98%	408	4,1	99%	139	4,1	105%	385	2,6	104%	156	4,6	102%	2,78
48	BC 109/I	03724-F-35	03771-2-35	0822A							184	0,80	102%	534	2,70	105%	179	2,20	110%	491	2,54	107%	207	3,10	103%	2,74
49	FC 152/2A	23020044	23010004	6010758	97%	101%	712	25	5	533	149	6,5	102%	430	3,1	104%	135	8,1	103%	378	2,2	101%	156	4,0	103%	2,79
50	FC 59	22120297	23030052	6012126	90%	94%	899	25	5	540							137	5,7	104%	389	4,7	105%	137	3,8	90%	2,84
51	FC 149	23020044	23050104	6012226	105%	94%	753	28	6	520	149	4,8	102%	428	5,7	104%	135	5,6	102%	392	1,5	105%	140	3,8	92%	2,91
52	FC 21	22100252	22120308	6012226	100%	92%	726	27	7	638	165	4,1	113%	440	3,2	106%	132	3,3	100%	371	2,0	100%	167	3,0	110%	2,81
53	FC 115	556688	556746	557058	100%	107%	787	27	6	527	155	4,2	106%	450	3,8	109%	146	4,6	110%	408	2,1	110%	161	5,9	106%	2,80
54	BS 148	23050103	23050107	6011743	103%	94%	887	30	6	491							150	3,6	113%	412	2,3	111%	146	3,2	96%	2,75
55	FC 152/2B	22020044	23010004	6010758	97%	101%	712	25	5	533										"937	2,3	99%				
56	FC 152/3B	22020044	23010004	6010758	95%	97%	901	26	5	510										"941	2,2	100%				
57	BS 02-BB	23030068	23030074	6010971	93%	106%		16	9					"1081	1,1	94%				"872	4,9	93%				
58	BS 02-BC	23030068	23030074	6010971	98%	106%		16	9		"145	4,2	88%	"403	1,8	95%				"1064	2,1	93%				
59	FC 41	23020044	23020045	6012137	98%	93%	750	29	8	572													145	4,1	95%	
60	FC 42	23020044	23020045	6012137	98%	105%	740	28	6	559													165	5,3	108%	
61	FC 43	23020044	23020045	6012137	95%	93%	740	30	10	724													150	5,2	98%	
62	FC 44	23020044	23020045	6012137	95%	93%	745	26	6	645													151	5,8	99%	
	Mean	BSC-FC			98%	98%	763	25	8	570	143		98%	405		98%	131		100%	369		99%	152			
	Median										*142*			*403*			*132*			*366*			*154*			
	VK(%)'r'										4,5%			2,9%			4,6%			2,9%			4,3%			
	s-R										*5,9*			*17,0*			*5,5*			*15,8*			*10,2*			
	VK(%)'R'										4,1%			4,2%			4,2%			4,3%			6,7%			
	mean	BC -									183		102%	504		99%	172		106%	469		102%	200			
	VK(%)'r'										3,2%			2,6%			4,0%			2,3%			3,6%			
	VK(%)'R'										4,3%			5,7%			5,8%			3,3%						

VK(%)`r` : Repeatability (Standard deviation of repeatability/arithm mean *100)
s-R : Standard deviation of reproducibility
VK(%)`R`: Reproducibility (Standard deviation of reproducibility/arithm. mean*100)
KM (CM) : "Controlmilk" (Raw milk; enriched with definite Bacteria cultures)
% signal = deviation to the BCS - Signal Mean Average
% imp. = deviation to the BCS - Standard count average

calc.values	FC-imp		BC-IBC	
MS 09A	146	±10%	180	+/-15%
Rel.09B/09B	2,83	*413*	2,83	*508*
MS 09C	1150	±12%		
MS 10A	132	±10%	162	+/-15%
Rel.10B/10B	2,82	*372*	2,82	*458*
MS 10C	942	±12%		
,				

G	Germany	EST	Estonia	H	Hungary
A	Austria	Cz	Czechia	Cy	Cyprus
S	Sweden	L	Luxembourg	B	Belgium
Fin	Finland	DK	Denmark	Slo	Slovenia
NL	Netherlands	E	Spain	SK	Slowakia
CH	Switzerland	I	Italy	Hr	Croatia
FR	France	Lv	Lettland	Ro	Romania
UK	United Kingt.	Lt	Litauen	Irl	Ireland
No	Norway	P	Portugal	MK	Macedonia

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	instr. No.	Stain Batch-No.	Enzym Batch-No.	BZ Batch-No.	BCS-Standard % sign.	BCS-Standard % Imp.	LED Set-Point	Signal-width	Noise level	PMT level	MS 09A Imp.	MS 09A VK% `r	MS 09A % calc.	MS 09 B/C Imp.	MS 09 B/C VK% `r	MS 09 B/C % calc.	MS 10A Imp.	MS 10A VK% `r	MS 10A % calc.	MS 10 B/C Imp.	MS 10 B/C VK% `r	MS 10 B/C % calc.	Controlmilk CM I Imp.	Controlmilk CM I VK% `r	Controlmilk CM I % mean	Rel. MS10 B/MS10A
		Microsph	Enzyme	IBC-Std																						
Staining solution	FC 2207170		n =	1	95%	102%	762	25	6	520	137		94%	403		98%	132		100%	372		100%	148		97%	
Staining solution	FC 21010016		n =	1	103%	90%	730	28	6	528	145		99%	417		101%	134		102%	365		98%	162		106%	
Staining solution	FC 21080214		n =	3	93%	89%	997	26	6	502	144		98%	407		98%	130		99%	358		96%	158		104%	
Staining solution	FC 21100266		n =	1	108%	96%	825	27	7	634	140		96%	422		102%	136		103%	371		100%	161		106%	
Staining solution	FC 22010003		n =	1	97%	93%	736	25	7	566	140		96%	409		99%	133		101%	364		98%	155		102%	
Staining solution	FC 22020044		n =	3	96%	98%	838	26	5	518	135		93%	410		99%	132		100%	377		100%	163		107%	
Staining solution	FC 22020046		n =	3	98%	103%	645	28	6	544	138		95%	392		95%	131		99%	368		99%	138		90%	
Staining solution	FC 22040107		n =	2	99%	104%	757	29	6	540	140		96%	398		96%	132		100%	376		101%	157		103%	
Staining solution	FC 22070170		n =	6	99%	93%	759	36	8	580	142		98%	399		97%	128		97%	359		96%	155		102%	
Staining solution	FC 22100252		n =	6	98%	94%	794	26	7	557	147		101%	417		101%	130		99%	372		100%	160		105%	
Staining solution	FC 22120297		n =	13	99%	95%	806	28	7	571	141		96%	397		96%	129		98%	364		98%	150		99%	
Staining solution	FC 23020044		n =	9	99%	96%	754	28	7	580	144		99%	413		100%	133		101%	376		101%	148		97%	
Staining solution	FC 23030068		n =	3	96%	106%	#DIV/0!	16	9	#DIV/0!	137		91%	374		93%	128		97%	364		94%	142		93%	
Staining solution	FC 23050103		n =	1	103%	94%	887	30	6	491	0		0%	0		0%	150		113%	412		111%	146		96%	
Staining solution	FC 556689		n =	2	100%	103%	667	29	6	520	149		102%	442		107%	139		106%	389		105%	152		100%	
Enzym-Charge	FC 556746		n =	2	100%	103%	667	29	6	520	149		102%	442		107%	139		106%	389		105%	152		100%	
Enzym-Charge	FC 21010010		n =	1	103%	90%	730	28	6	528	145		99%	417		101%	134		102%	365		98%	162		106%	
Enzym-Charge	FC 21120319		n =	1	95%	102%	762	25	6	520	137		94%	403		98%	132		100%	372		100%	148		97%	
Enzym-Charge	FC22040083		n =	2	104%	105%	733	28	6	539	139		95%	410		99%	129		98%	372		100%	159		104%	
Enzym-Charge	FC 22060152		n =	1	108%	96%	825	27	7	634	140		96%	422		102%	136		103%	371		100%	161		106%	
Enzym-Charge	FC22080201		n =	2	100%	91%	713	51	8	583	140		96%	399		96%	129		97%	371		100%	158		103%	
Enzym-Charge	FC22090223		n =	3	98%	96%	783	28	9	593	144		99%	404		98%	128		97%	360		97%	164		107%	
Enzym-Charge	FC22100264		n =	1	98%	92%	735	28	7	544	134		92%	404		98%	128		97%	355		95%	130		85%	
Enzym-Charge	FC22120308		n =	12	99%	94%	747	28	7	580	142		97%	398		96%	128		97%	362		97%	153		101%	
Enzym-Charge	FC23010004		n =	8	98%	97%	819	27	7	545	143		98%	409		99%	133		101%	375		101%	148		97%	
Enzym-Charge	FC23010052		n =	1	93%	90%	800	30	6	548	143		98%	400		97%	126		96%	350		94%	138		91%	
Enzym-Charge	FC23020045		n =	7	96%	98%	703	28	7	615	142		97%	401		97%	133		100%	365		98%	151		99%	
Enzym-Charge	FC2303052		n =	4	95%	98%	769	27	5	528	141		97%	389		94%	132		100%	372		100%	148		97%	
Enzym-Charge	FC23030074		n =	3	96%	106%	#DIV/0!	16	9	#DIV/0!	137		91%	374		93%	128		97%	364		94%	142		93%	
Enzym-Charge	FC23050164		n =	4	99%	97%	887	28	6	536	144		98%	411		99%	133		101%	376		101%	150		99%	
Enzym-Charge	FC23050107		n =	1	103%	94%	887	30	6	491	0		0%	0		0%	150		113%	412		111%	146		96%	
BZ-Charge	FC6010722		n =	2	103%	93%	765	28	8	581	146		100%	408		99%	132		100%	367		99%	157		103%	
BZ-Charge	FC6010758		n =	4	98%	96%	782	27	7	558	157		97%	363		98%	125		100%	349		99%	147		100%	
BZ-Charge	FC6010790		n =	1	108%	96%	825	27	7	634	140		96%	422		102%	136		103%	371		100%	161		106%	
BZ-Charge	FC6010934		n =	1	97%	93%	736	25	7	566	140		96%	409		99%	133		101%	364		98%	155		102%	
BZ-Charge	FC6010971		n =	3	96%	106%	#DIV/0!	16	9	#DIV/0!	137		91%	374		93%	128		97%	364		94%	142		93%	
BZ-Charge	FC6011099		n =	1	0%	96%	0	0	0	0	142		97%	392		95%	134		102%	362		97%	163		107%	
BZ-Charge	FC6011100		n =	2	99%	107%	703	26	6	528	140		96%	404		98%	130		99%	376		101%	151		99%	
BZ-Charge	FC6011471		n =	1	100%	96%	930	30	6	567	139		95%	394		95%	132		100%	379		102%	121		80%	
BZ-Charge	FC6011497		n =	2	95%	99%	1029	29	6	548	144		98%	410		99%	135		102%	374		101%	156		102%	
BZ-Charge	FC6011571		n =	1	90%	91%	805	25	9	569	146		100%	416		101%	124		94%	377		101%	157		103%	
BZ-Charge	FC6011717		n =	9	98%	94%	790	29	8	560	143		98%	404		98%	132		100%	368		99%	152		100%	
BZ-Charge	FC6011743		n =	1	103%	94%	887	30	6	491	0		0%	0		0%	150		113%	412		111%	146		96%	
BZ-Charge	FC6011983		n =	4	97%	93%	744	29	6	528	140		96%	402		97%	131		99%	367		99%	140		92%	
BZ-Charge	FC6012052		n =	1	98%	94%	0	10	30	0	0		0%	0		0%	137		104%	372		100%	162		106%	
BZ-Charge	FC6012108		n =	4	102%	90%	713	51	8	583	139		95%	396		96%	129		98%	369		99%	158		103%	
BZ-Charge	FC6012137		n =	4	96%	96%	744	28	8	625													153		100%	
BZ-Charge	FC6012137		n =	4	96%	96%	744	28	8	625													153		100%	
BZ-Charge	FC6012200		n =	1	93%	92%	769	25	6	516	0		0%	0		0%	133		100%	353		95%				
BZ-Charge	FC6012225		n =	2	102%	107%	620	29	5	550	137		94%	397		96%	127		96%	358		96%	157		103%	
BZ-Charge	FC6012226		n =	3	102%	92%	720	28	6	578	153		105%	429		104%	134		102%	377		101%	155		102%	
BZ-Charge	FC6012228		n =	1	100%	98%	738	26	6	528	138		95%	394		95%	127		96%	365		98%	149		98%	
BZ-Charge	FC6012275		n =	1	100%	99%	797	27	9	578	145		99%	410		99%	133		101%	373		100%	154		101%	
BZ-Charge	FC60109883		n =	1	95%	102%	762	25	6	520	137		94%	403		98%	132		100%	372		100%	148		97%	
BZ-Charge	FC557058		n =	2	100%	103%	667	29	6	520	149		102%	442		107%	139		106%	389		105%	152		100%	