DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-PL-14007-01-01 according to DIN EN ISO/IEC 17025:2018

Valid from: **24.11.2023**

Date of issue: 24.11.2023

This annex is a part of the accreditation certificate D-PL-14007-01-00.

Holder of partial accreditation certificate:

Milchwirtschaftliche Lehr- und Untersuchungsanstalt Oranienburg e. V.
Sachsenhausener Straße 7b, 16515 Oranienburg

with the location

Milchwirtschaftliche Lehr- und Untersuchungsanstalt Oranienburg e. V.
Sachsenhausener Straße 7b, 16515 Oranienburg

The testing laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The testing laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and they conform to the principles of DIN EN ISO 9001.

Tests in the fields:

Physical, physico-chemical, chemical, immunological, microbiological and molecular biological analysis of foodstuffs
Sensory analysis of milk and milk products
Microbiological analysis of environmental samples, fitment and utensils in food areas
Molecular biological analysis of environmental samples in food areas
Selected microbiological analysis of the effectiveness of disinfectants in food areas

Within the given testing field marked with */, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following:**

***) the free choice of standard or equivalent testing methods.**
****) the modification, development and refinement of testing methods.**

The test methods listed are given by way of example.

The testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standards or equivalent testing methods listed here with different issue dates.

The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

1 Sensory analysis of milk and dairy products

1.1 Description of appearance, smell, taste and feel by simple descriptive tests

DIN 10964 2014-11	Sensory analysis – Simple descriptive test

1.2 Testing of appearance, smell, taste and feel by special sensory tests in milk and dairy products *

DIN ISO 22935-2 2012-12	Milk and milk products – Sensory analysis – Part 2: Recommended methods for sensory evaluation
ASU L 04.00-12 2019-03	Analysis of foodstuffs – Sensory analysis of butter (adoption of German standard of the same name DIN 10455, April 1989 edition)

2 Selected physical, physico-chemical and chemical analysis of foodstuffs

2.1 Determination of physical, physico-chemical and chemical indicators in milk and milk products

ISO 8156 2005-10	Dried milk and dried milk products – Determination of insolubility index
DIN EN ISO 5764 2009-10	Milk – Determination of freezing point – Thermistor cryoscope method (Reference method) (Modification: *Application also to the matrix cream, determination in low-fat phase*)
ASU L 01.00-28 1988-12 Corrigendum 2002-12	Analysis of foodstuffs – Areometric determination of the density of milk
ASU L 01.00-29 2019-12	Analysis of foodstuffs – Determination of the freezing point of milk – Thermistor cryoscope method (reference method) (adoption of the standard of the same name DIN EN ISO 5764, October 2009)
ASU L 02.04-1 1995-01	Analysis of foodstuffs – Determination of the density of buttermilk serum (adoption of German standard of the same name DIN 10318, 1995 edition)
ASU L 04.00-9 1986-05	Analysis of foodstuffs – Determination of the water dispersion in butter – Indicator paper method
ASU L 04.00-13 2006-12	Analysis of foodstuffs – Determination of pH of butter plasma (adoption of standard of the same name DIN 10349, October 2004 edition)
ASU L 04.00-14 1996-02	Analysis of foodstuffs – Determination of the hardness of butter (adoption of German standard of the same name DIN 10331, March 1996 edition)
VDLUFA Volume VI C 8.2 2000	Determination of the pH-value in milk and milk products
VDLUFA Volume VI C 12.3 2003	Determination of density with the hydrometer (spindle)

VDLUFA Volume VI C 13.2 1985	Evidence of high temperature (Modification: *Traventol replaced by Peroxitesmo MI test*)
VDLUFA Volume VI C 26.2 1995	Determination of the solubility of milk powder (in accordance with ADPI)
VDLUFA Volume VI C 26.3 1995	Determination of the degree of purity of milk powder (in accordance with ADPI) Modification: *Application also to the matrix skimmed milk concentrate*)
VDLUFA Volume VI C 26.7 2020	Physical testing of whipped cream

2.2 Determination of ingredients by gravimetry in milk, milk products and plant-based milk substitute products **

ASU L 01.00-9 2012-01	Analysis of foodstuffs – Determination of fat content in milk – Gravimetric method (reference method) (adoption of standard of the same name DIN EN ISO 1211, November 2010 edition)
ASU L 01.00-20 1988-05	Analysis of foodstuffs – Determination of fat content in milk and milk products – Weibull method (Modification: *Matrix also plant-based milk substitute products*)
ASU L 01.00-38 2009-06	Analysis of foodstuffs – Determination of fat content in skimmed milk, whey and buttermilk – Gravimetric method (reference method) (adoption of standard of the same name DIN EN ISO 7208, March 2009 edition)
ASU L 01.00-77 2002-05	Analysis of foodstuffs – Determination of total ash in milk and milk products (adoption of German standard of the same name DIN 10477, August 2000 edition) (Modification: *Matrix also plant-based milk substitute products*)
ASU L 03.00-8 2007-04	Analysis of foodstuffs – Determination of fat content of cheese and processed cheese – Schmid-Bondzynski-Ratzlaff gravimetric method (reference method) (adoption of standard of the same name DIN EN ISO 1735, May 2005 edition)
ASU L 04.00-8 2019-03	Analysis of foodstuffs – Determination of the water content of butter (Modification: *Matrix also plant-based milk substitute products*)

ASU L 04.00-16 1990-12	Analysis of foodstuffs – Determination of the non-fat dry matter of butter – Routine procedure (adoption of German standard of the same name DIN 10463, November 1990 edition)
ASU L 04.00-22 2002-05	Analysis of foodstuffs – Determination of fat content in butter
VDLUFA Volume VI C 12.2 1985-01	Determination of density using the pycnometer
VDLUFA Volume VI C 15.2.4 1995	Determination of free fat in fatty dried milk products
VDLUFA Volume VI C 35.3 2020	Determination of dry matter – Sea sand method (Modification: *Matrix also plant-based milk substitute products*)
VDLUFA Volume VI C 35.6 1985	Determination of the water content of dried milk products
MLUA-O AV 3-34 2022-11	Determination of the dry matter content of milk, milk products and plant-based milk substitute products by microwave (rapid method)

2.3 Determination of ingredients and parameters by titrimetry in milk, milk products and plant-based milk substitute products *

ASU L 01.00-10/1-5 2016-03	Analysis of foodstuffs – Determination of nitrogen content in milk and milk products – Part 1: Kjeldahl method and calculation of crude protein content (adoption of standard of the same name DIN EN ISO 8968-1 June 2014 edition) (Modification: *Matrix also plant-based milk substitute products*)
ASU L 03.00-11 2007-12	Analysis of foodstuffs – Determination of the chloride content of chees and processed cheese – Potentiometric method (adoption of standard of the same name DIN EN ISO 5943 January 2007 edition) (Modification: *Matrix also plant-based milk substitute products*)
VDLUFA Volume VI C 15.4.3 2000	Determination of free fatty acids (DEETH method)

VDLUFA Volume VI C 16.3 1988	Determination of the iodine value of concentrated butter, Hanus method (Modification: *Solvent chloroform replaced by cyclohexane/glacial acetic acid*)
DGF C-V 11a (02) 2002-05	Determination of the iodine value of concentrated butter, Hanus method

2.4 Determination of ingredients by butyrometry in milk and milk products *

ASU L 01.00-74/1 2002-12	Analysis of foodstuffs – Butyrometric determination of fat content of milk and milk products – Part 1: General guidance on the use of butyrometric methods and technical delivery conditions for amyl alcohol (adoption of German standard of the same name DIN 10479-1, June 2000 edition)
ASU L 01.00-74/2 2002-12	Analysis of foodstuffs – Butyrometric determination of fat content of milk and milk products – Part 2: Requirements specific to products (adoption of German standard of the same name DIN 10479-2, November 2001 edition)

2.5 Determination of ingredients and parameters by photometry in milk and milk products *

ASU L 01.00-36 1990-06	Analysis of foodstuffs – Determination of nitrate content in milk and milk products – Xylenol method
ASU L 01.00-41 1991-12	Analysis of foodstuffs – Determination of phosphatide value in milk, milk products and cheese
ASU L 01.00-58 1995-01	Analysis of foodstuffs – Determination of casein content, casein and whey protein contents in total protein of milk and milk products – Casein-phosphorus method (adoption of German standard of the same name DIN 10464, August 1994 edition)
ASU L 01.00-79/1 2006-12	Analysis of foodstuffs – Determination of nitrate and nitrite content in milk and milk products – Part 1: Method using cadmium reduction and spectrometry (adoption of standard of the same name DIN EN ISO 14673-1, May 2004 edition)
ASU L 01.00-82 2014-08	Analysis of foodstuffs – Determination of alkaline phosphatase activity in milk and liquid milk products – Fluorimetric method (adoption of standard of the same name DIN EN ISO 11816-1, March 2014 edition)

VDLUFA Volume VI C 10.5.3 2000	Determination of phosphorus content – Photometric method
VDLUFA Volume VI C 13.7 1996	Determination of the whey protein index (WPN) of skimmed milk powder in accordance with ADPI

2.6 Atomic absorption spectrometry (AAS)

2.6.1 Sample preparation

ASU L 00.00-19/1 2015-06	Analysis of foodstuffs – Determination of trace elements in foodstuffs – Pressure digestion (adoption of standard of the same name DIN EN 13805, December 2014 edition)

2.6.2 Determination of elements by atomic absorption spectrometry (flame, graphite furnace and cold vapour AAS) / flame photometry) in foodstuffs *

ISO 8070 IDF 119 2007-08	Milk and milk products – Determination of calcium, sodium, potassium and magnesium contents – Atomic absorption spectrometric method (Modification: *Matrix also plant-based milk substitute products*)
ASU L 00.00-19/2 1993-08	Analysis of foodstuffs – Determination of trace elements in foodstuffs – Part 2: Determination of iron, copper, manganese and zinc by atomic absorption spectrometry (AAS) in the flame
ASU L 00.00-19/3 2004-07	Analysis of foodstuffs – Determination of trace elements in foodstuffs – Part 3: Determination of lead, cadmium, chromium and molybdenum by graphite furnace atomic absorption spectrometry (GF-AAS) after pressure digestion (adoption of standard of the same name DIN EN 14083, July 2003 edition) (Restriction: *Not for molybdenum*)
ASU L 00.00-19/4 2003-12	Analysis of foodstuffs – Determination of trace elements in foodstuffs – Part 4: Determination of mercury by cold-vapour atomic absorption spectrometry (CVAAS) after pressure digestion
ASU L 00.00-19/6 2002-07	Analysis of foodstuffs – Determination of trace elements in foodstuffs – Part 6: Determination of total arsenic by hydride generation atomic absorption spectrometry (HGAAS)

2.7 Gas chromatography (GC)

2.7.1 Sample preparation

ISO 15884 2002-11	Milk fat – Preparation of fatty acid methyl esters
DIN EN 1528-2 1997-01	Fatty food – Determination of pesticides and polychlorinated biphenyls (PCBs) – Part 2: Extraction of fat, pesticides and PCBs and determination of fat content
DIN EN 1528-3 1997-01	Fatty food – Determination of pesticides and polychlorinated biphenyls (PCBs) – Part 3: Clean-up methods

2.7.2 Determination of ingredients, plant protection product residues and contaminants in foodstuffs by gas chromatography (GC) with conventional detectors (ECD, FID, PND) *

ISO 15885 2002-11	Milk fat – Determination of the fatty acid composition by gas-liquid chromatography
DIN EN 1528-4 1997-01	Fatty food – Determination of pesticides and polychlorinated biphenyls (PCBs) – Part 4: Determination, confirmatory tests, miscellaneous
ASU L 01.00-35 1990-06	Analysis of foodstuffs – Determination of low-boiling halogenated hydrocarbons in milk
ASU L 01.00-56 2021-03	Analysis of foodstuffs – Determination of chloramphenicol in milk
ASU L 04.04-1 (EG) 1993-08	Analysis of foodstuffs – Determination of sitosterol and stigmasterol in concentrated butter by capillary column gas chromatography (Modification: *Determination of cholesterol in milk fat*)
ASU L 13.04-1 2006-12	Analysis of foodstuffs – Determination of low-boiling halogenated hydrocarbons in edible oils (adoption of standard of the same name DIN EN ISO 16035, November 2005 edition) (Modification: *Also for matrix butter*)
European Commission DOC.CHEM/0659/98 1998	Determination of the milk fat content in mixed fats by quantification of butyric acid
MLUA-O-AV 3-20 2014-02	Determination of diacetyl in butter and starting cultures – Gas chromatography using the headspace method

2.8 Determination of mycotoxins, contaminants, additives and ingredients in foodstuffs by high performance liquid chromatography (HPLC) with conventional detectors (UV, FD, RI) **

Regulation (EC) 273/2008, Annex VI Last amended 30.01.2018	Regulation laying down detailed rules for the application of Council Regulation (EC) No 1255/1999 as regards methods for the analysis and quality evaluation of milk and milk products – Determination of the vanillin content in concentrated butter, butter or cream by HPLC
Regulation (EC) 273/2008, Annex XIV Last amended 30.01.2018	Regulation laying down detailed rules for the application of Council Regulation (EC) No 1255/1999 as regards methods for the analysis and quality evaluation of milk and milk products – Skimmed milk powder: Quantitative determination of phosphatidylserine and phosphatidylethanolamine
ISO 9231 2008-07	Milk and milk products – Determination of the benzoic and sorbic acid contents
DIN EN ISO 9233-2 2018-08	Cheese, cheese rind and processed cheese – Determination of natamycin content – Part 2: High-performance liquid chromatographic method for cheese, cheese rind and processed cheese
DIN EN ISO 14501 2021-08	Milk and milk powder – Determination of aflatoxin M_1 content – Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography
ASU L 00.00-62 2015-06	Analysis of foodstuffs – Determination of vitamin E (alpha, beta, gamma and delta-tocopherol) in foodstuffs by high performance liquid chromatography (adoption of standard of the same name DIN EN 12822, August 2014 edition)
ASU L 01.00-65 1997-09	Analysis of foodstuffs – Determination of acid soluble β-lactoglobulin content of heat-treated milk – Reversed phase high performance liquid chromatographic method (adoption of German standard of the same name DIN 10473, December 1997 edition)
VDLUFA Volume VI C 13.8 2003	Determination of the furosine content in milk and milk products by means of ion-pair reversed phase high performance liquid chromatography

VDLUFA Volume VI C 30.6.1 1995	Determination of whey powder in milk powder via the glycomacropeptide A content by high performance liquid chromatography (HPLC)
MLUA-O-3-10 2021-07	Determination of mono and disaccharides in milk and milk products by HPLC (RI detector)

2.9 Determination of residues and contaminants in milk and milk products by liquid chromatography (LC) with mass selective detector (MS/MS) **

MLUA-O-3-05 2021-06	Determination of chlorate and perchlorate in milk and milk products by LC-MS/MS
MLUA-O-3-14 2018-06	Determination of chloramphenicol and thiamphenicol in milk by LC-MS/MS
MLUA-O-3-24 2019-02	Determination of melamine and cyanuric acid in milk and milk products by LC-MS/MS

2.10 Determination of ingredients in milk, milk products and plant-based milk substitute products by photometry *

ASU L 01.00-17 2016-10	Analysis of foodstuffs – Determination of lactose and galactose content of milk and milk products – Enzymatic method (adoption of standard of the same name DIN 10344, May 2015 edition)
ASU L 01.00-26/1 2011-01	Analysis of foodstuffs – Determination of content of L and D-lactic acid (L and D-lactate) in milk and milk products – Enzymatic method (adoption of German standard of the same name DIN 10335, September 2010 edition)
ASU L 01.00-31 1988-12	Analysis of foodstuffs – Determination of the lactulose content of milk
ASU L 03.00-39 2010-9	Analysis of foodstuffs – Determination of starch in grated cheese – Enzymatic method
ASU L 48.01-3 1985-05 Corrigendum 2002-12	Analysis of foodstuffs – Determination of sucrose, glucose and fructose content in partially adapted milk-based infant formula (Modification: *Matrix also plant-based milk substitute products*)
ASU L 48.01-5 1985-05	Analysis of foodstuffs – Determination of starch in partially adapted milk-based infant formula

VDLUFA Volume VI C 8.7 2000	Enzymatic determination of citric acid content in cheese and processed cheese

2.11 Determination of fat in milk, milk products and plant-based milk substitute products using NMR

MLUA-O AV 3-35 2022-11	Determination of fat content in milk, milk products and plant-based milk substitute products using NMR

3 Microbiological analysis of foodstuffs

3.1 Preparation of samples for microbiological analysis

ASU L 00.00-89 2019-07	Analysis of foodstuffs – Preparation of test samples, initial suspension and decimal dilutions for microbiological examination of foodstuffs – Part 4: Specific rules for the preparation of miscellaneous products (adoption of standard of the same name DIN EN ISO 6887-4, July 2017 edition)
ASU L 01.00-1 2011-06	Analysis of foodstuffs – Preparation of test samples, initial suspension and decimal dilutions for microbiological examination – Part 5: Specific rules for the preparation of milk and milk products (adoption of standard DIN EN ISO 6887-5, January 2011 edition)

3.2 Determination of bacteria, yeasts and moulds using cultural microbiological methods in foodstuffs *

ISO 4831 2006-08	Microbiology – Horizontal method for the detection and enumeration of coliforms – MPN technique
ISO 4832 2006-02	Microbiology – Horizontal method for the enumeration of coliforms – Colony-count technique
ISO 7889 2003-02	Yoghurt – Enumeration of characteristic microorganisms – Colony-count technique at 37 °C
ISO 9232 2003-02	Yogurt – Identification of characteristic microorganisms (Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus thermophilus)

ISO 17792 2006-08	Milk, milk products and mesophilic starter cultures – Enumeration of citrate-fermenting lactic acid bacteria – Colony-count technique at 25 °C
ISO 13559 2002-11	Butter, fermented milks and fresh cheese – Enumeration of contaminating microorganisms – Colony-count technique at 30 °C
ISO 15213 2003-05	Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of sulphite-reducing bacteria growing under anaerobic conditions
ISO 1410 2019-07	Microbiology of the food chain – Horizontal method for the enumeration of psychrotrophic microorganisms
ISO 21527-1 2008-07	Horizontal method for the enumeration of yeasts and moulds – Part 1: Colony-count technique in products with water activity greater than 0.95
ISO 21527-2 2008-07	Horizontal method for the enumeration of yeasts and moulds – Part 2: Colony-count technique in products with water activity equal to or less than 0.95
ISO 27205 2010-02	Fermented milk products – Bacterial starter cultures – Standard of identity
ISO 29981 2010-02	Milk products – Enumeration of presumptive bifidobacteria – Colony count technique at 37 degrees C
DIN EN ISO 6222 1999-07	Water quality – Enumeration of culturable micro-organisms – Colony count by inoculation in a nutrient agar culture medium
DIN EN ISO 7899-2 2000-11	Water quality – Detection and enumeration of intestinal enterococci – Part 2: Membrane filtration method
DIN EN ISO 9308-1 2017-09	Water quality – Enumeration of Escherichia coli and coliform bacteria – Part 1: Membrane filtration method for waters with low bacterial background flora
DIN EN ISO 14189 2016-11	Water quality – Enumeration of Clostridium perfringens – Method using membrane filtration
DIN EN ISO 21528-1 2017-09	Microbiology of the food chain – Horizontal method for the detection and enumeration of Enterobacteriaceae – Part 1: Detection of Enterobacteriaceae

DIN EN ISO 21528-2 2019-05	Microbiology of the food chain – Horizontal method for the detection and enumeration of Enterobacteriaceae – Part 2: Colony-count technique
DIN EN ISO 21871 2006-04	Horizontal method for the determination of low numbers of presumptive Bacillus cereus – Most probable number technique and detection method
DIN EN ISO 21872-1 2017-10	Microbiology of the food chain – Horizontal method for the determination of Vibrio spp. – Part 1: Detection of potentially enteropathogenic Vibrio parahaemolyticus, Vibrio cholerae and Vibrio vulnificus
DIN EN ISO 22964 2017-08	Microbiology of the food chain – Horizontal method for the detection of Cronobacter spp.
DIN EN ISO 11731 2019-03	Water quality – Detection and enumeration of Legionella – Part 2: Direct membrane filtration method with low bacterial counts
DIN EN ISO 16266 2008-05	Water quality – Detection and enumeration of Pseudomonas aeruginosa – Membrane filtration method
DIN ISO 16649-2 2020-12	Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of β-glucuronidase-positive Escherichia coli – Part 2: Colony-count technique at 44 °C using 5-bromo-4-chloro-3-indolyl β-D-glucuronide
ASU L 00.00-20 2021-07	Analysis of foodstuffs – Horizontal method for the detection, enumeration and serotyping of salmonella – Part 1: Detection of Salmonella spp. (adoption of standard DIN EN ISO 6579-1, August 2020)
ASU L 00.00-22 2018-03	Analysis of foodstuffs – Horizontal method for the detection and enumeration of Listeria monocytogenes and of Listeria spp. – Part 2: Enumeration method (adoption of standard of the same name DIN EN ISO 11290-2, September 2017)
ASU L 00.00-32/1 2018-03	Analysis of foodstuffs – Horizontal method for the detection and enumeration of Listeria monocytogenes and of Listeria spp. – Part 1: Detection technique (adoption of standard of the same name DIN EN ISO 11290 Part -1, December 2017)
ASU L 00.00-33 2021-03	Analysis of foodstuffs – Horizontal method for the enumeration of presumptive Bacillus cereus – Colony-count technique at 30 °C (adoption of standard DIN EN ISO 7932, November 2020)

ASU L 00.00-55 2019-12	Analysis of foodstuffs – Method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) in foodstuffs – Part 1: Technique using Baird-Parker agar medium (adoption of standard of the same name DIN EN ISO 6888 Part 1, June 2019)
ASU L 00.00-56 2004-12	Analysis of foodstuffs – Method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) in foodstuffs – Part 2: Technique using rabbit plasma / fibrinogen agar
ASU L 00.00-57 2006-12	Analysis of foodstuffs – Horizontal method for the enumeration of Clostridium perfringens in foodstuffs – Colony-count technique
ASU L 00.00-88/1 2015-06	Analysis of foodstuffs – Horizontal method for the enumeration of microorganisms – Part 1: Colony count at 30 degrees C by the pour plate technique (adoption of standard of the same name DIN EN ISO 4833-1, December 2013 edition)
ASU L 00.00-88/2 2015-06	Analysis of foodstuffs – Horizontal method for the enumeration of microorganisms – Part 2: Colony count at 30 degrees C by the surface plating technique (adoption of standard of the same name DIN EN ISO 4833-2, May 2014 edition)
ASU L 00.00-100 2006-12	Analysis of foodstuffs – Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) in foodstuffs – Detection and MPN method for low bacterial counts (adoption of standard of the same name DIN EN ISO 6888-3, July 2005 edition)
ASU L 00.00-107/1 2018-03	Analysis of foodstuffs – Horizontal method for the detection and enumeration of Campylobacter spp. – Part 1: Detection method
ASU L 01.00-2 1991-12 Corrigendum 2002-12	Analysis of foodstuffs – Determination of coliform bacteria in milk, milk products, butter, cheese and ice cream – Method with liquid culture medium
ASU L 01.00-3 1987-03	Analysis of foodstuffs – Determination of coliform bacteria in milk, milk products, butter, cheese and ice cream – Method with solid culture medium
ASU L 01.00-25 1997-09 Corrigendum 2002-12	Analysis of foodstuffs – Determination of Escherichia coli in milk, milk products, butter, cheese and ice cream – Method with liquid culture medium

ASU L 01.00-37 1991-12	Analysis of foodstuffs – Determination of the number of yeasts and moulds in milk and milk products; reference method
ASU L 01.00-42 (EC) to 52(EC) 2010-09	Analysis of foodstuffs – Methods of analysis and testing of raw milk and heat-treated milk – Commission Annexes I and II of 14 February 1991 laying down certain methods of analysis and testing of raw milk and heat-treated milk V. Determination of the plate count at 21 °C
ASU L 01.00-54 1992-12	Analysis of foodstuffs – Determination of Escherichia coli in milk and milk products – Fluorescence-optical technique with parallel determination of coliform bacteria
ASU L 01.00-57 1995-01	Analysis of foodstuffs – Determination of the plate count in milk and milk products – Spatula method
ASU L 01.00-72 2011-01	Analysis of foodstuffs – Determination of presumptive Bacillus cereus in milk and milk products – Colony-count technique at 37 C (adoption of German standard of the same name DIN 10198, July 2010 edition)
ASU L 48.01-7 1988-12	Analysis of foodstuffs – Determination of acid-forming and non-acid-forming microorganisms in milk-based foods for infants and young children, pour method
VDLUFA Volume VI M 7.2.6 1996	Detection of thermotrophic coliform bacteria with lauryl sulphate tryptose (LST) medium
VDLUFA Volume VI M 7.3.2 1985	Determination of protein decomposers (proteolytes) – Procedure with calcium caseinate agar (for caseolytes)
VDLUFA Volume VI M 7.4.2 2020	Determination of Enterobacteriaceae – Routine procedure with violet red bile dextrose agar (VRBD Agar)
VDLUFA Volume VI M 7.5.2 2000	Detection of gas-forming lactococci – Titer and MPN method
VDLUFA Volume VI M 7.6.2 1985	Determination of fat separators (lipolytes) – Colony-count technique with tributyrin agar

VDLUFA Volume VI M 7.8.2 1993	Determination of enterococci – Colony-count technique with kanamycin aesculin azide agar
VDLUFA Volume VI M 7.9.3 1996	Detection of heterofermentative gas-forming lactic acid bacteria
VDLUFA Volume VI M 7.11.2 1988	Determination of propionic acid bacteria – Colony-count technique with yeast lactate agar
VDLUFA Volume VI M 7.12.2 1993	Determination of pseudomonads – Colony-count technique with CFC selective agar
VDLUFA Volume VI M 7.13 1996	Determination of thermoduric (thermoresistant) microorganisms
VDLUFA Volume VI M 7.14.2 1985	Determination of gram-negative recontamination germs Procedure on VRB agar
VDLUFA Volume VI M 7.16.3 2003	Enumeration and identification of characteristic yoghurt bacteria
VDLUFA Volume VI M 7.17.2 1993	Determination of spores of aerobic spore formers (Bacillus) (Modification: *Here also qualitative detection after non-selective pre-enrichment*)
VDLUFA Volume VI M 7.18.2.1 1996	Detection of anaerobic spore formers (Clostridium) – Procedure with RCM agar (Modification: *Here also qualitative detection after non-selective pre-enrichment*)
VDLUFA Volume VI M 7.18.3.1 1996	Determination of clostridia harmful to cheese production Procedure with pH-modified RCM agar
VDLUFA Volume VI M 7.18.4 1988	Determination of sulphite reducing clostridia

VDLUFA Volume VI M 11.4 2003	Shelf life and sterility controls
MLUA-O-AV 5-9 1995-11	Detection of gas formation (CO2 formation) by lactic acid bacteria – Determination and titration method
MLUA-O-AV 5-47 1996-02	Determination of lactococci with M 17 agar according to TERZAGHI (colony-count technique)
MLUA-O-AV 5-33 1996-01	Shelf life test
MLUA-O-V-04-85 2021-02	Qualitative detection of coagulase-positive staphylococci (Staphylococcus aureus and other species) in foodstuffs after non-selective pre-enrichment
MLUA-O-V-04-86 2021-02	Detection of microorganisms growing aerobically or anaerobically at 30 °C in foodstuffs and feedstuffs after pre-enrichment using the pour plate method; anaerobic incubation for anaerobic germs
MLUA-O-V-04-87 2021-02	Detection of microorganisms growing aerobically or anaerobically at 30 °C in foodstuffs and feedstuffs after pre-enrichment using the surface plating technique; anaerobic incubation for anaerobic germs
MLUA-O-V-04-88 2021-02	Determination of the bacterial count of thermoresistant streptococci on PCM agar with increased skimmed milk content in milk and milk products
MLUA-O-V-04-89 2021-02	Qualitative detection of yeasts and moulds in foodstuffs after pre-enrichment

3.3 Identification of bacteria using differentiation in milk and milk products *

ASU L 00.00-20a 2004-12	Analysis of foodstuffs – Final confirmation of salmonellae
VDLUFA Volume VI M 7.1.1 2000	Rough differentiation of bacteria relevant to the dairy industry
VDLUFA Volume VI M 10.3.6 1988	Gram staining

BBL Crystal Enteric/nonfermenter ID kit Ref no.: 245000 2018-04	Identification of microorganisms using commercial test systems
bioMérieux API 20 NE Ref. no.: 20050 2015-04	Identification of gram-negative bacteria using commercial test systems
bioMérieux API 20 Strep Ref. no.: 20600 2018-05	Identification of streptococci using commercial test systems
MLUA-O-AV 5-45 1996-02	Brief differentiation of lactic acid bacteria up to genus

3.4 Detection of inhibitors using microbiological test systems (agar diffusion) in milk and milk products *

Regulation (EC) 273/2008, Annex XV Last amended 30.01.2018	Regulation laying down detailed rules for the application of Council Regulation (EC) No 1255/1999 as regards methods for the analysis and quality evaluation of milk and milk products – Detection of antibiotic residues in skimmed milk powder (Modification: *Here use of the test system Delvotest® T and BRT hi-sense*)
ASU L 01.00-11 1996-02 Corrigendum 2002-12	Analysis of foodstuffs – Search method for the presence of anti-infective agents in milk – Agar diffusion method with Bacillus stearothermophilus (brilliant black reduction test) (Modification: *Here use of the test system Delvotest® T and BRT hi-sense*)
ASU L 01.01-5 2012-01	Analysis of foodstuffs – Detection of inhibitors in bulk milk – Agar diffusion method (brilliant black reduction test) (Modification: *Here use of the test system Delvotest® T and BRT hi-sense*)
VDLUFA Volume VI M 8.6.1 2003	Detection of inhibitors – Confirmation and identification of ß-lactam antibiotics and sulfonamides

4 Immunological analysis of foodstuffs

4.1 Immunological analysis for the determination of antibiotic residues, bacteria and mycotoxins by ELISA in milk and milk products *

ASU L 01.00-68 1998-09	Analysis of foodstuffs – Search method for the presence of chloramphenicol residues in milk – Screening method using ELISA in the microtiter system *(Here use of the test kit: RIDASCREEN® Chloramphenicol, R1511:2021-02)*
ASU L 01.00-70 2002-05	Analysis of foodstuffs – Search method for the presence of streptomycin and dihydrostreptomycin residues in milk – Screening method using ELISA in the microtiter system (*Here: Use of the test kit: RIDASCREEN® Streptomycin, R3104:2016-01*)
r-biopharm AG RIDASCREEN® Aflatoxin M1 Ref no.: R1121 2021-02	Enzyme immunoassay for the quantitative determination of aflatoxin M_1 in milk and milk powder
r-biopharm AG RIDASCREEN® Chinolone/ Quinolones Ref no.: R3113 2021-02	Enzyme immunoassay for quantitative determination of quinolones in milk and milk products
r-biopharm AG RIDASCREEN®SET Total Ref no.: R4105 2020-10	Enzyme immunoassay for the joint detection of staphylococcal enterotoxins (A - E) in milk and milk products
r-biopharm AG RIDASCREEN® Tetracyclin Ref no.: R3505 2015-10	Enzyme immunoassay for quantitative determination of tetracycline in milk and milk products

4.2 Immunological analysis for the determination of allergens in foodstuffs using ELISA

r-biopharm AG RIDASCREEN®FAST Casein Ref. no.: R4612 2021-06	Enzyme immunoassay for quantitative determination of casein in non-dairy raw materials, semi-finished and finished products and rinsing water

4.3 Immunological analysis for the determination of antibiotic residues using lateral flow tests in milk and milk powder *

Chr. Hansen GmbH MilkSafe™ 3BTS Ref no.: 724225 2020-02	Rapid test for the detection of antibiotic residues of beta-lactams, tetracyclines and sulphonamides in milk based on immunochromatography technology
Chr. Hansen GmbH MilkSafe™ 4BTSC Ref no.: 719864 2021-05	Rapid test for the detection of antibiotic residues of beta-lactams, tetracyclines, streptomycins and chloramphenicol in milk based on immunochromatography technology
Chr. Hansen GmbH MilkSafe™ 4BTSQ Ref no.: 723473 2022-02	Rapid test for the detection of antibiotic residues of beta-lactams, sulphonamides, tetracyclines and quinolones in milk based on immunochromatography technology
IDEXX GmbH SNAPduo ST Plus Ref no.: 99-0009837 2019	Detection of antibiotics (beta-lactam, tetracyclines), lateral flow method
NEOGEN BetaStar® S Combo Ref no.: BCS050 2019-10	Detection of antibiotics (beta-lactam, tetracyclines), lateral flow method
Packhaus Rockmann GmbH Milchtest Duplex BT 2020	Detection of antibiotics (beta-lactam, tetracyclines), lateral flow method

5 Determination of bacteria by cultural microbiological analysis of environmental samples, fitment and utensils in food areas *

DIN 10113-2 1997-07	Determination of surface colony count on fitment and utensils in food areas – Part 2: Semiquantitative swab method
DIN 10113-3 1997-07	Determination of surface colony count on fitment and utensils in food areas – Part 3: Semiquantitative method with culture media laminated taking up equipment (squeeze method)
MLUA-O-AV 5-69 2014-03	Determination of the airborne germ content using an airborne germ collection device (Restriction: *Here only in food areas)*

6 Microbiological analysis of the effectiveness of disinfectants in food areas

DIN EN 1276 2019-11	Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of bactericidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic and institutional areas – Test method and requirements (phase 2, step 1) (Restriction: *Here disinfectants for food areas*)
DIN EN 1656 2019-12	Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of fungicidal or yeasticidal activity of chemical disinfectants and antiseptics used in the veterinary area – Test method and requirements (phase 2, step 1) (Restriction: *Here only testing of teat disinfectants*)

7 Molecular biological analysis of foodstuffs and environmental samples in food areas

7.1 Identification of bacteria and fungi in milk and milk products and in environmental samples in food areas using conventional polymerase chain reaction (PCR) *

ASU G 21.40-1 2010-08	Amplification of partial sequences of the bacterial 16S rRNA gene for genus and species identification of bacteria (Restriction: *No sequencing*)
ASU G 25.40-1 2013-01	PCR amplification and DNA sequence analysis of the 5.8S rRNA-ITS gene region for taxonomic classification of fungi (Restriction: *No sequencing*)

MLUA-O-V-04-08 2013-01	PCR amplification of partial sequences for genus and species identification of fungi to confirm P. camemberti by PCR in milk and milk products

7.2 Qualitative detection of animal species in milk and milk products by multiplex RT-PCR

7.2.1 Sample preparation

Biotecon, foodproof® Sample Preparation Kit III Ref: S 400 06 2015-06	Isolation of genomic DNA for animal species detection using foodproof sample preparation kit III

7.2.2 Qualitative detection of animal species in milk and milk products by multiplex RT-PCR (real-time) *

CONGEN GmbH SureFood® ANIMAL ID 4plex Beef/Sheep/Goat + IAAC Ref no.: S6121 2021-06	Qualitative determination of animal species-specific DNA (bovine, ovine, caprine) in milk and milk products by multiplex RT-PCR
CONGEN GmbH SureFood® ANIMAL ID 3plex Water Buffalo + IAAC Ref no.: S6117 2019-01	Qualitative determination of water buffalo DNA in milk and milk products by multiplex RT-PCR

7.3 Qualitative detection of bacteria in foodstuffs and environmental samples in food areas by multiplex RT-PCR (real-time) *

DIN CEN ISO/TS 13136 2013-04	Microbiology of food and animal feed – Real-time polymerase chain reaction (PCR)-based method for the detection of food-borne pathogens – Horizontal method for the detection of Shiga toxin-producing Escherichia coli (STEC) and the determination of O157, O111, O26, O103 and O145 serogroups (Here: *stx screening by multiplex RT-PCR, use of the multiplex RT-PCR kits*: *Biotecon foodproof® STEC Screening Lyo Kit, R 602 11-1:2020-10, Biotecon foodproof® STEC Identification LyoKit, R 602 12-1:2020-10*) (Modification: *Application for foodstuffs and environmental samples in food areas*)
ASU L 00.00-95(V) 2006-12	Analysis of foodstuffs – Qualitative detection of Listeria monocytogenes in foodstuffs – PCR method (Here: *Use of the multiplex RT-PCR kits: Biotecon foodproof®Listeria Genus Detection Kit, R 302 20:2017-05; Biotecon foodproof® Listeria monocytogenes Detection Kit, R 302 23:2017-03; Biotecon foodproof® Listeria monocytogenes Detection LyoKit - LP, R 602 23-1:2019-12; Biotecon foodproof® Listeria plus L. monocytogenes Detection LyoKit-LP, R 602 51-1:2019-04*) (Modification: *Here also for environmental samples in food areas*)
ASU L 00.00-96(V) 2006-12	Analysis of foodstuffs – Qualitative detection of Campylobacter jejuni and Campylobacter coli in food by amplification of specific gene sequences with PCR (Here: *Use of the multiplex RT-PCR kit: Biotecon foodproof® Campylobacter Detection Kit, R 310-05:2017-09*)
ASU L 00.00-98 2007-04	Analysis of foodstuffs – Qualitative detection of salmonella in foodstuffs – PCR method (Here: *Use of the multiplex RT-PCR kit: Biotecon foodproof® Salmonella Detection LyoKit, R 602 27-1:2019-11*) (Modification: *Here also for environmental samples in food areas*)
BIOTECON Diagnostic GmbH foodproof® Cronobacter Detection LyoKit Ref no.: R 602 13-1 2017-05	Qualitative detection of Cronobacter spp. in milk and milk products by multiplex RT-PCR (Modification: *Here also for environmental samples in food areas*)

BIOTECON Diagnostic GmbH foodproof® SL Staphylococcus aureus Detection Kit Ref no. Z 700 05 2014-10	Qualitative detection of Staphylococcus aureus in milk and milk products after selective enrichment by RT-PCR

7.4 Detection of genetically modified organisms (GMOs) in foodstuffs

7.4.1 Sample preparation

ASU L 00.00-119 2014-02	Analysis of foodstuffs – Method for detection of genetically modified organisms and their products in foodstuffs – Nucleic acid extraction

7.4.2 Detection of genetically modified organisms (GMOs) in foodstuffs by multiplex RT-PCR (real-time) *

ASU L 00.00-105 2014-02	Analysis of foodstuffs – Methods of analysis for the detection of genetically modified organisms and derived products in foodstuffs– Quantitative nucleic acid based methods (Restriction: *Here only construct-specific method for the quantitative determination of DNA of the soybean line GTS 40-3-2, detection using the multiplex RT-PCR kit: Biotecon foodproof® GMO RR Soya Quantification Kit, R 302 19:2017-03*)
ASU L 00.00-118 2014-02	Analysis of foodstuffs – Methods of analysis for the detection of genetically modified organisms and derived products in foodstuffs– Qualitative nucleic acid based methods (Here: *Detection using the multiplex RT-PCR kit: Biotecon foodproof® GMO Screening Kit (35S, NOS, bar, FMV), R 302 17:2017-03*)

8 Microbial identification using MALDI-TOF mass spectrometry

MLUA-O-V-04-74 2017-04	Identification of bacteria, yeasts and moulds using Maldi-TOF mass spectrometry from milk and milk products, foodstuffs and environmental samples in food areas (Use of the Bruker databases: BDAL, Version 12-03-2022; Filamentous Fungi Version 5-04-2022; SR Library BBFV Version 1-03-2021)

Abbreviations used:

ASU	Amtliche Sammlung von Untersuchungsverfahren (Official Collection of Test Methods) on the basis of Section 64 LFGB (German Food and Feed Act) Volume I (L)
DIN	Deutsches Institut für Normung e. V. (German Institute for Standardization)
EN	European standard
IDF	International Dairy Federation
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
LFGB	Lebensmittel- und Futtermittelgesetzbuch (German Food and Feed Act)
MALDI-TOF	Matrix-assisted Laser Desorption/Ionization – Time of Flight Mass Spectrometry
MLUA-O-AV X-XX	In-house method of MLUA Oranienburg e. V.
VDLUFA	Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten (Association of German Agricultural Testing and Research Institutions)