



**The power of grape extracts:
antimicrobial and antioxidant properties
to prevent the use of antibiotics in farmed
animals: 101036768**

D9.5

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PROJECT INFORMATION

Project full title: The power of grape extracts: antimicrobial and antioxidant properties to prevent the use of antibiotics in farmed animals

Acronym: NeoGiANT

Call: H2020-LC-GD-2020-4

Topic: LC-GD-6-1-2020

Start date: 1st October 2021

Duration: 48 months

List of participants:

No.	Acronym	Participant organisation name	Country
1 (Coord)	USC	Universidade de Santiago de Compostela	Spain
2	MRI	Moredun Research Institute	United Kingdom
3	IBPRS	Instytut Biotechnologii Przemysłu Rolno-Spożywczego im. prof. Wacława Dąbrowskiego	Poland
4	VRI	Veterinary Research Institute	Czech Republic
5	MATE	Nemzeti Agrárkutatási és Innovációs Központ	Hungary
6	FUB	Freie Universität Berlin	Germany
7	FCUP	Universidade do Porto – Faculdade de Ciências	Portugal
8	ULL	Universidad de La Laguna	Spain
9	UNE	Asociación Española de normalización	Spain
10	JU	Jihočeská Univerzita	Czech Republic
11	CONICET	Consejo Nacional de Investigaciones Científicas y Técnicas	Argentina
12	ASAJA	Asociación Agraria de Jóvenes Agricultores	Spain
13	ATM	Anitom S.L	Belgium
14	i-GRAPE	i-GRAPE	Spain
15	CTA	Contactica S.L	Spain
16	NUS	Nutrition Science	Belgium
17	CZV	CZ VACCINES	Spain
18	LBE	LIFEBIOENCAPSULATION SL	Spain
19	BIAN	BIANOR BIOTECH	Spain
20	MAGA	MAGAPOR S.L.	Spain

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DELIVERABLE DETAILS

Document Number:	D9.5
Document Title:	Report of the standardization landscape and applicable standards
Dissemination level	PU – Public
Period:	PR1
WP:	WP9
Task:	Task 9.4
Author:	<p>UNE, Spanish Association for Standardization</p> 
Abstract:	<p>D9.5 is the first deliverable for subtask 9.4.1 “Analysis of the applicable standardization landscape”, within task T9.4 “Standardization activities” inside WP9 “Market, Exploitation & Legal requirements”. It collects information on the standardization landscape starting from needs of other WPs about existing standards that can be related with the sources, the processes and the expected products of NeoGiANT developments, to enhance the compatibility and interoperability and thus facilitate the acceptance and utilization by the market of the developed solutions. This deliverable is also the basis for the planning of the subsequent activities of task 9.4.</p>

Version	Date	Change
V1	03/03/2022	Initial version

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1 EXECUTIVE SUMMARY

D9.5 is the first deliverable for subtask 9.4.1 “Analysis of the applicable standardization landscape”, within task T9.4 “Standardization activities” inside WP9 “Market, Exploitation & Legal requirements”. It collects information on the standardization landscape starting from needs of other WPs about existing standards that can be related with the sources, the processes and the expected products of NeoGiANT developments, to enhance the compatibility and interoperability and thus facilitate the acceptance and utilization by the market of the developed solutions. This deliverable is also the basis for the planning of the subsequent activities of task 9.4.

It includes information about the European standardization Technical Committees (TCs) related with the topics handled by the project: the main topic, the power of grape extracts to prevent the use of antibiotics in farmed animals, but also those related with the final applications: animal health, reducing environmental impacts and contributing to the circular economy. A selection of their published standards and standards under development that can be of interest for the project activities is also detailed in the deliverable. This will facilitate to identify the standardization framework of the project and the needs for further contribution to standardization actions to be performed after in the task.

The Spanish Association for Standardization, UNE, as National Standardization Body (NSB) member of CEN and CENELEC, is a partner of the NeoGiANT project and responsible of this deliverable.

2 INTRODUCTION ABOUT STANDARDIZATION

2.1 General

Standards are at the core of the EU single market. They foster EU values, policy objectives and regulatory implementation as standards support a resilient, green and digital EU single market¹. It is also recognised that EU’s ambitions towards a climate neutral, resilient and circular economy cannot be delivered without European standards on testing methods, management systems or interoperability solutions.

EU standardisation leadership depends on the innovation capacity of its industrial ecosystems and the European Commission looks for the valorisation of research and innovation through standardisation and pre-normative research. EU research, development and innovation (R&D&I) projects allow new technologies to enter into a more mature phase, favouring their applicability on a larger scale and promoting their market uptake. Therefore, Europe’s R&I base, including via Horizon Europe and its predecessor programmes, needs to be exploited more in identifying and transferring relevant research for new standards.

Research results are likely to lead to the revision or creation of a standard, to test the relevance of their results for standardisation. For this, researchers and innovators participating in EU funded R&D&I projects need to be aware of the benefits of standardization. In addition, the research and

¹ COM(2023) 31 final, An EU Strategy on Standardisation - Setting global standards in support of a resilient, green and digital EU single market. Document date: 02/02/2022. Available at <https://ec.europa.eu/docsroom/documents/48598>

innovation community is encouraged to take part in relevant standardisation activities to engage early on in standards development, as this provides an opportunity to build expertise and skills in standardisation.

2.2 Standards

Standards are voluntary technical documents that set out requirements for a specific item, material, component, system or service, or describes in detail a particular method, procedure or best practice.

Standards are developed and defined through a process of sharing knowledge and building consensus among technical experts nominated by interested parties and other stakeholders - including businesses, consumers and environmental groups, among others. These experts are organized in Technical Committees (TCs), which are subdivided in Subcommittees (SCs) or Working Groups (WGs). These TCs are included in the structure of the Standardization Organizations (National, European and International, with the respective mirror committees) and work following their internal regulations.

2.3 Standardization bodies

The standardization bodies operate at National (UNE, AFNOR, BSI, DIN, etc.), European (CEN, CENELEC, ETSI) or International (ISO, IEC, ITU) level. Sometimes there are different standardization bodies at the same level, but covering different fields. This is the case of ISO (general), IEC (electrotechnical) and ITU (telecommunications) at international level, or CEN, CENELEC and ETSI at European level in the same way.

Regarding participation of UK in European Standardization, a vote took place on 25 November 2021 at the CEN and CENELEC General Assemblies that confirmed BSI's continued membership of the two associations. BSI is now classed as a non-European Economic Area member of CEN and CENELEC, which affects a few specific voting situations.

2.4 Standardization documents

There are also different kinds of standardization documents. The most widespread is the standard, which has a different code depending on the organization under it was developed, e.g. EN for European Standards, ISO for International standards. Other types of documents are Technical Specifications (TS), Technical Reports (TR) and Workshop Agreements (CWA). Further Amendments to the standards are identified by adding A1, A2, etc. at the end of the standard code.

The formal definition of a standard is a “document, established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context”. These include requirements and/or recommendations in relation to products, systems, processes or services. European Standards (ENs) are documents that have been ratified by one of the three European Standardization Organizations (ESOs), CEN, CENELEC or ETSI; recognized as competent in the area of voluntary technical standardization as for the EU Regulation 1025/2012.

At European level, all the members of CEN shall adopt EN standards as national standards and have to withdraw any existing national standard which could conflict with them. A summary of the characteristics of the different standardization documents can be found in **Table D9.5.1**.

Table D9.5.1. Characteristics of different standardization documents

Type	International code	European code	National code	Main characteristics
Standard	ISO IEC	EN	UNE, NF, BS, DIN, etc. When adopting: UNE-EN, NF-EN, UNE-ISO, NF-ISO, etc.	Elaboration: 3 years 2 steps of member approval European: compulsory national adoption Revision: every 5 years
Technical Specification	ISO/TS IEC/TS	CEN/TS CLC/TS	When adopting: UNE-CEN/TS, NF-CEN/TS, UNE-ISO/TS, NF-ISO/TS, etc.	Elaboration: 21 months 1 step of member approval or internal approval in TC European: optional national adoption Revision: at 3 years (upgrading to EN or deletion)
Technical Report	ISO/TR IEC/TR	CEN/TR CLC/TR	When adopting: UNE-CEN/TR, NF-CEN/TR, UNE-ISO/TR, NF-ISO/TR, etc.	Elaboration: free timeframe Internal approval in TC European: optional national adoption No revision required
Workshop Agreement	IWA	CWA	Variable	Elaboration: free timeframe (usually few months) Internal approval in the Workshop European: optional national adoption Revision: at 3 years (upgrading to EN or deletion)

European and International Standardization Organizations (e.g. CEN and ISO) have signed formal agreements in order to avoid duplication of efforts and promote global relevance of standards, which allows to adopt or develop in parallel each other's standards with the same content and code. Consequently, European standards (EN) developed in cooperation with ISO are identified using the 'EN ISO' codification.

National standards could also be proposed as a base for new European or International standards.

Figure D9.5.1 shows the possible tracks of the standards.

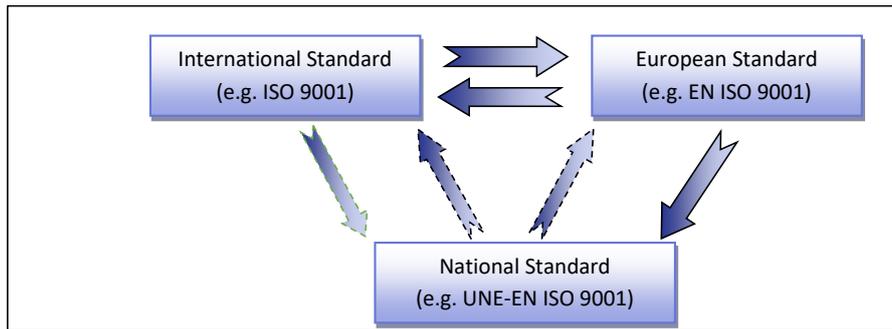


Figure D9.5.1. Possible tracks of standards adoption

Therefore, the code of any standard is the combination of the above-mentioned issues and could be explained as shown in Figure D9.5.2.

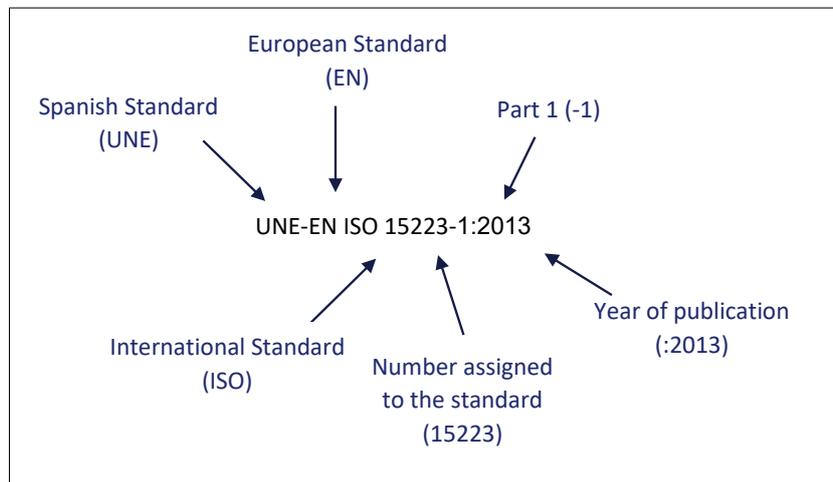


Figure D9.5.1. Example of code in a Standard

3 ABBREVIATIONS AND ACRONYMS

This Deliverable uses the following abbreviations and acronyms related to standardization:

- ➔ European UNE Spanish Association for Standardization
- ➔ CEN European Committee for Standardization
- ➔ CENELEC (CLC) European Committee for Standardization in the Electrical field
- ➔ CWA CEN or CENELEC Workshop Agreement
- ➔ EN European Standard
- ➔ ESO European Standardisation Organisation
- ➔ hEN Harmonised European Standard
- ➔ ISO International Organization for Standardization; International Standard
- ➔ IEC International Electrotechnical Commission

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- ⇒ NMC National Mirror Committee
- ⇒ NSB National Standardization Body
- ⇒ SC Subcommittee
- ⇒ TC Technical Committee
- ⇒ TR Technical Report
- ⇒ TS Technical Specification
- ⇒ WG Working Group
- ⇒ WI Work Item
- ⇒ ISO/WD ISO Working Draft of a document under development (ISO stage)
- ⇒ ISO/CD ISO Committee Draft of a document under development (ISO stage)
- ⇒ ISO/DIS ISO Draft International Standard of a document under development (ISO stage)

4 METHODOLOGY AND APPROACH

For the identification of technical committees that have a related standardization scope, published standards or standards under development that are considered by UNE relevant for NeoGiANT project, the following considerations have been taken into account:

- ⇒ A list of key areas has been taken as starting point for the search, considering the products covered by the project: new solutions based on the antimicrobial and antioxidant activities of grape marc extracts, to produce enhanced feed, treatment products and natural sperm preservatives for livestock and aquaculture. In order to structure the research, key areas were identified taking as a basis the 3 pillars in which NeoGiANT products are based on:

Pillar 1: the use of local biomass sources

- Biomass; Grape extracts (grape marc extracts); Natural extracts
- Bio-based products
- Chemical characterization of bioactive compounds
- Microbiology; Antimicrobial and antioxidant properties
- Phytochemicals; phenolic compounds content

Pillar 2: cost-effective, efficient, sustainable production

- Food & feed products
- Animal feeding stuffs
- Aquafeed in fish
- Artificial insemination
- Health and welfare of the animals

Pillar 3: functional ingredients obtained in sustainable circular economy production systems:

- Sustainable production
 - Ecodesign
 - Life Cycle Sustainability Assessment; LCA, S-LCA, LCC
 - Environmentally friendly products
 - Circular economy
- ➔ NeoGiANT is a sustainable project at environmental, social and economic levels, so the standardization study also covers the following general areas:
- Quality management
 - Good manufacturing practices; Hazard Analysis and Critical Control Point (HACCP)
 - Customer satisfaction
 - carbon footprint
 - water footprint
 - modelling and simulation in Python frameworks
 - Process modelling; machine learning techniques
 - Project Management
 - Innovation
- ➔ The standardization study covers European standards developed by the European Committee for Standardization (CEN) and International standards developed by the International Organisation for Standardization (ISO), but some of them are developed jointly with the International Electrotechnical Commission (IEC).
- ➔ Information on other technical committees considered relevant for NeoGiANT project in some respect is provided, although non exhaustive details on standards and works under development has been included.
- ➔ Recognising that not all of the key areas identified above have an associated technical committee or standard, the study has also been complemented by the identification of committees with potential for future work.

5 RELEVANT TECHNICAL COMMITTEES FOR NEOGIANT PROJECT

The following standardization Technical Committees are identified as relevant for the study within NeoGiANT project, as they address some of the key areas exposed in Clause 4:

- ➔ Characterization of Food & Feed product:
 - CEN/TC 327 Animal feeding stuffs - Methods of sampling and analysis
 - ISO/TC 34 'Food products'

CEN/TC 411 Bio-based products

➔ Assessment of the antimicrobial activity:

CEN/TC 275 Food analysis - Horizontal methods

ISO/TC 212 'Clinical laboratory testing and in vitro diagnostic test systems'

Other, like ISO/TC 147/SC 5 Water quality. Biological methods

➔ Production: Semen and artificial insemination of animals:

Various: ISO/TC 34 & ISO/TC 212/WG 1

➔ Environmental sustainability:

ISO/TC 207 Environmental management

Life Cycle Assessment: ISO/TC 207/SC 5; ISO/TC 59/SC 14 'Buildings and civil engineering works. Design life'

➔ Other technical committees with specific standards:

ISO/TC 184 Automation systems and integration

ISO/IEC JTC 1/SC 7/ Software and systems engineering

ISO/TC 23 Tractors and machinery for agriculture and forestry

➔ Management in organizations:

ISO/TC 176 Quality management and quality assurance

ISO/TC 258 Project, programme and portfolio management

ISO/TC 262 Risk management

ISO/TC 279 Innovation management & CEN/TC 389 Innovation management

ISO/TC 309 Governance of organizations

ISO/TC 323 Circular economy

ISO/TC 331 Biodiversity

CEN/TC 467 Climate change

The following Clauses 6 to 11 show the activity of the relevant Technical Committee.

Because only a few particular standards have been identified as relevant to NeoGiANT's work, the scope, structure and an example of the most abundant and relevant type of standards are detailed, showing the potential for developing new standards with content more relevant to the project.

When listing standards, corrigendums and amendments have been deleted to lighten the tables.

6 CHARACTERIZATION OF FOOD & FEED PRODUCT

6.1 CEN/TC 327 'Animal feeding stuffs - Methods of sampling and analysis'

Scope: Standardization of methods of sampling and analysis for animal feeding stuffs, including chemical, biochemical, microbiological, physical and microscopical methods

Technical body substructure:

Reference	Technical body title
CEN/TC 327/WG 1	Organic contaminants
CEN/TC 327/WG 2	Composition
CEN/TC 327/WG 3	Feed additives and drugs
CEN/TC 327/WG 4	Elements and their chemical species
CEN/TC 327/WG 5	Natural toxins
CEN/TC 327/WG 6	Radioactivity measurements

It has 82 published standards and 5 standards under development. Some standards are developed jointly with ISO/TC 34.

Reference	Title
EN ISO 5983-1:2005	Animal feeding stuffs - Determination of nitrogen content and calculation of crude protein content - Part 1: Kjeldahl method (ISO 5983-1:2005)
EN ISO 5983-2:2009	Animal feeding stuffs - Determination of nitrogen content and calculation of crude protein content - Part 2: Block digestion and steam distillation method (ISO 5983-2:2009)
EN ISO 6497:2005	Animal feeding stuffs - Sampling (ISO 6497:2002)
EN ISO 6498:2012	Animal feeding stuffs - Guidelines for sample preparation (ISO 6498:2012)
EN ISO 6865:2000	Animal feeding stuffs - Determination of crude fibre content - Method with intermediate filtration (ISO 6865:2000)
EN ISO 6867:2000	Animal feeding stuffs. Determination of vitamin E content. Method using high-performance liquid chromatography (ISO 6867:2000)
EN ISO 6869:2000	Animal feeding stuffs - Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc. Method using atomic absorption spectrometry (ISO 6869:2000)
EN ISO 7088:2005	Fish-meal - Vocabulary (ISO 7088:1981)
prEN ISO 7088 rev	Fish-meal - Vocabulary
EN ISO 9831:2003	Animal feeding stuffs, animal products, and faeces or urine - Determination of gross calorific value - Bomb calorimeter method (ISO 9831:1998)
EN ISO 12099:2017	Animal feeding stuffs, cereals and milled cereal products - Guidelines for the application of near infrared spectrometry (ISO 12099:2017)
EN ISO 13903:2005	Animal feeding stuffs - Determination of amino acids content (ISO 13903:2005)
EN ISO 13904:2016	Animal feeding stuffs - Determination of tryptophan content (ISO 13904:2016)
EN ISO 13906:2008	Animal feeding stuffs - Determination of acid detergent fibre (ADF) and acid detergent lignin (ADL) contents (ISO 13906:2008)
EN ISO 14181:2000	Animal feeding stuffs - Determination of residues of organochlorine pesticides - Gas chromatographic method (ISO 14181:2000)
EN ISO 14182:1999	Animal feeding stuffs. Determination of residues of organophosphate pesticide. Gas chromatographic method (ISO 14182:1999)
EN ISO 14183:2008	Animal feeding stuffs - Determination of monensin, narasin and salinomycin contents - Liquid chromatographic method using post-column derivatization (ISO 14183:2005)

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EN ISO 14565:2000	Animal feeding stuffs - Determination of vitamin A content - Method using high-performance liquid chromatography (ISO 14565:2000)
EN ISO 14902:2001	Animal feeding stuffs - Determination of trypsin inhibitor activity of soya products (ISO 14902:2001)
EN ISO 14939:2001	Animal feeding stuffs - Determination of carbadox content - Method using high-performance liquid chromatography (ISO 14939:2001)
EN 15510:2017	Animal feeding stuffs: Methods of sampling and analysis - Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum and lead by ICP-AES
EN 15550:2017	Animal feeding stuffs: Methods of sampling and analysis - Determination of cadmium and lead by graphite furnace atomic absorption spectrometry (GF-AAS) after pressure digestion
EN 15621:2017	Animal feeding stuffs: Methods of sampling and analysis - Determination of calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and cobalt after pressure digestion by ICP-AES
EN 15741:2020	Animal feeding stuffs: Methods of sampling and analysis - Determination of OCPs and PCBs by GC-MS
EN 15742:2020	Animal feeding stuffs: Methods of sampling and analysis - Determination of OCPs by GC-ECD
CEN/TS 15754:2008	Animal feeding stuffs - Determination of sugar content - High performance exchange chromatographic method (HPAEC-PAD)
EN 15781:2009	Animal feeding stuffs - Determination of maduramicin-ammonium by reversed-phase HPLC using post-column derivatisation
EN 15782:2009	Animal feeding stuffs - Determination of nicarbazin - High-performance liquid chromatographic method
EN 15784:2021	Animal feeding stuffs: Methods of sampling and analysis - Detection and enumeration of Bacillus spp. used as feed additive
EN 15785:2009	Animal feeding stuffs - Isolation and enumeration of Bifidobacterium spp.
EN 15786:2021	Animal feeding stuffs: Methods of sampling and analysis - Detection and enumeration of Pediococcus spp. used as feed additive
EN 15787:2021	Animal feeding stuffs: Methods of sampling and analysis - Detection and enumeration of Lactobacillus spp. used as feed additive
EN 15788:2021	Animal feeding stuffs: Methods of sampling and analysis - Detection and enumeration of Enterococcus (E. faecium) spp. used as feed additive
EN 15789:2021	Animal feeding stuffs: Methods of sampling and analysis - Detection and enumeration of Saccharomyces cerevisiae used as feed additive
CEN/TS 15790:2008	Animal feeding stuffs - PCR typing of probiotic strains of Saccharomyces cerevisiae (yeast)
EN 15791:2009	Animal feeding stuffs - Determination of Deoxynivalenol in animal feed - HPLC method with UV detection and immunoaffinity column clean-up
EN 15792:2009	Animal feeding stuffs - Determination of zearalenone in animal feed - High performance liquid chromatographic method with fluorescence detection and immunoaffinity column clean-up
EN ISO 15914:2005	Animal feeding stuffs - Enzymatic determination of total starch content (ISO 15914:2004)
EN 16006:2011	Animal feeding stuffs - Determination of the Sum of Fumonisin B1 & B2 in compound animal feed with immunoaffinity clean-up and RP-HPLC with fluorescence detection after pre- or post-column derivatisation
EN 16007:2011	Animal feeding stuffs - Determination of Ochratoxin A in animal feed by immunoaffinity column clean-up and High Performance Liquid Chromatography with fluorescence detection
EN 16158:2012	Animal feeding stuffs - Determination of semduramicin content - Liquid chromatographic method using a "tree" analytical approach

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EN 16159:2012	Animal feeding stuffs - Determination of selenium by hydride generation atomic absorption spectrometry (HGAAS) after microwave digestion (digestion with 65 % nitric acid and 30 % hydrogen peroxide)
EN 16160:2012	Animal feeding stuffs - Determination of Hydrocyanic acid by HPLC
EN 16162:2012	Animal feeding stuffs - Determination of decoquinatate by HPLC with fluorescence detection
EN 16206:2012	Animal feeding stuffs - Determination of arsenic by hydride generation atomic absorption spectrometry (HGAAS) after microwave pressure digestion (digestion with 65 % nitric acid and 30 % hydrogen peroxide)
EN 16215:2020	Animal feeding stuffs: Methods of sampling and analysis - Determination of dioxins and dioxin-like PCBs and of indicator PCBs by GC/HRMS
EN 16277:2012	Animal feeding stuffs - Determination of mercury by cold-vapour atomic absorption spectrometry (CVAAS) after microwave pressure digestion (extraction with 65 % nitric acid and 30 % hydrogen peroxide)
EN 16278:2012	Animal feeding stuffs - Determination of inorganic arsenic by hydride generation atomic absorption spectrometry (HG-AAS) after microwave extraction and separation by solid phase extraction (SPE)
EN 16279:2012	Animal feeding stuffs - Determination of fluoride content after hydrochloric acid treatment by ion-sensitive electrode method (ISE)
EN ISO 16472:2006	Animal feeding stuffs - Determination of amylase-treated neutral detergent fibre content (aNDF) (ISO 16472:2006)
EN ISO 16634-1:2008	Food products - Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content - Part 1: Oilseeds and animal feeding stuffs (ISO 16634-1:2008)
EN 16877:2016	Animal feeding stuffs: Methods of sampling and analysis - Determination of T-2 and HT-2 toxins, Deoxynivalenol and Zearalenone, in feed materials and compound feed by LC-MS
EN 16930:2017	Animal feeding stuffs: Methods of sampling and analysis - Determination of carbadox and olaquinox by HPLC/UV
EN 16936:2017	Animal feeding stuffs: Methods of sampling and analysis - Screening on the antibiotics tylosin, virginiamycin, spiramycin, bacitracin-zinc and avoparcin at sub-additive levels in compound feed by a microbiological plate test
EN 16939:2017	Animal feeding stuffs: Methods of sampling and analysis - Detection of tylosin, spiramycin and virginiamycin - Thin Layer Chromatography and bioautography
EN 16967:2017	Animal feeding stuffs: Methods of sampling and analysis - Predictive equations for metabolizable energy in feed materials and compound feed (pet food) for cats and dogs including dietetic food
EN 17049:2018	Animal feeding stuffs: Methods of sampling and analysis - Identification of tylosin, spiramycin, virginiamycin, carbadox and olaquinox at sub-additive levels in compound feed - Confirmatory analysis by LC-MS
EN 17050:2017	Animal feeding stuffs: Methods of sampling and analysis - Determination of iodine in animal feed by ICP-MS
EN 17053:2018	Animal feeding stuffs: Methods of sampling and analysis - Determination of trace elements, heavy metals and other elements in feed by ICP-MS (multi-method)
CEN/TS 17174:2018	Animal feeding stuffs: Methods of sampling and analysis - Performance criteria for single laboratory validated and ring-trial validated methods of analysis for the determination of heavy metals
EN ISO 17180:2013	Animal feeding stuffs - Determination of lysine, methionine and threonine in commercial amino acid products and premixtures (ISO 17180:2013)
EN 17194:2019	Animal feeding stuffs: Methods of sampling and analysis - Determination of Deoxynivalenol, Aflatoxin B1, Fumonisin B1 & B2, T-2 & HT-2 toxins, Zearalenone and Ochratoxin A in feed materials and compound feed by LC-MS/MS

EN 17212:2019	Animal Feeding stuffs - Methods of sampling and analysis - Determination of melamine and cyanuric acid content by liquid chromatographic method with mass spectrometric detection (LC-MS/MS)
EN 17256:2019	Animal feeding stuffs: Methods of sampling and analysis - Determination of ergot alkaloids and tropane alkaloids in feed materials and compound feeds by LC-MS/MS
EN 17270:2019	Animal feeding stuffs: Methods of sampling and analysis - Determination of theobromine in feed materials and compound feed, including cocoa derived ingredients, by liquid chromatography
EN 17294:2019	Animal feeding stuffs - Methods of sampling and analysis - Determination of organic acids by Ion Chromatography with Conductivity Detection (IC-CD)
EN 17298:2019	Animal feeding stuffs - Methods of sampling and analysis - Determination of benzoic and sorbic acid by High Performance Liquid Chromatography (HPLC)
EN 17299:2019	Animal feeding stuffs: Methods of sampling and analysis - Screening and determination of authorized coccidiostats at additive and 1 % and 3 % cross-contamination level, and of non-registered coccidiostats and of one antibiotic at sub-additive levels, in compound feed with High Performance Liquid Chromatography - Tandem Mass Spectrometry detection (LC-MS/MS)
EN 17362:2020	Animal feeding stuffs: Methods of sampling and analysis - Determination of pentachlorophenol (PCP) in feed materials and compound feed by LC-MS/MS
EN 17374:2020	Animal feeding stuffs: Methods of sampling and analysis - Determination of inorganic arsenic in animal feed by anion-exchange HPLC-ICP-MS
EN ISO 17375:2006	Animal feeding stuffs - Determination of aflatoxin B1 (ISO 17375:2006)
CEN/TR 17421:2019	Animal feeding stuffs: Methods of sampling and analysis - Recommendations for the organization and evaluation of collaborative studies for multi-analyte methods of analysis
CEN/TS 17455:2020	Animal feeding stuffs - Methods of sampling and analysis - Performance criteria for single laboratory validated and ring-trial validated methods of analysis for the determination of mycotoxins
EN 17462:2021	Animal feeding stuffs: Methods of sampling and analysis - Determination of the radionuclides Iodine-131, Caesium-134 and Caesium-137 in feed
EN 17504:2022	Animal feeding stuffs: Methods of sampling and analysis - Determination of gossypol in cotton seed and feeding stuff by LC-MS/MS
EN 17517:2021	Animal feeding stuffs: Methods of sampling and analysis - Determination of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) with on-line HPLC-GC-FID analysis
EN 17547:2021	Animal feeding stuffs: Methods of sampling and analysis - Determination of vitamin A, E and D content - Method using solid phase extraction (SPE) clean-up and high-performance liquid chromatography (HPLC)
EN 17550:2021	Animal feeding stuffs: Methods of sampling and analysis - Determination of carotenoids in animal compound feed and premixtures by high performance liquid chromatography - UV detection (HPLC-UV)
prEN 17683	Animal feeding stuffs- Methods of sampling and analysis - Determination of pyrrolizidine alkaloids in animal feeding stuff by LCMS/MS
prEN 17697	Animal feeding stuffs: Methods of analysis - PFGE typing of Lactobacilli, Pediococci, Enterococci and Bacilli in animal feeds
CEN ISO/TS 17764-1:2006	Animal feeding stuffs - Determination of the content of fatty acids - Part 1: Preparation of methyl esters (ISO/TS 17764-1:2002)
CEN ISO/TS 17764-2:2006	Animal feeding stuffs - Determination of the content of fatty acids - Part 2: Gas chromatographic method (ISO/TS 17764-2:2002)
prEN 17853	Animal feeding stuffs: Methods of sampling and analysis - Determination of intact glucosinolates in rapeseed by LC-MS/MS
EN ISO 30024:2009	Animal feeding stuffs - Determination of phytase activity (ISO 30024:2009)
prEN ISO 30024 rev	Animal feeding stuffs - Determination of phytase activity

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6.2 ISO/TC 34 'Food products'

Scope: Standardization in the field of human and animal foodstuffs, covering the food chain from primary production to consumption, as well as animal and vegetable propagation materials, in particular, but not limited to, terminology, sampling, methods of test and analysis, product specifications, food and feed safety and quality management and requirements for packaging, storage and transportation. Excluded products covered by ISO/TC 54 'Essential oils' and ISO/TC 93 'Starch' (including derivatives and by-products).

Technical body substructure:

Reference	Technical body title
ISO/TC 34/SC 2	Oleaginous seeds and fruits and oilseed meals
ISO/TC 34/SC 3	Fruits and vegetables and their derived products
ISO/TC 34/SC 4	Cereals and pulses
ISO/TC 34/SC 5	Milk and milk products
ISO/TC 34/SC 6	Meat, poultry, fish, eggs and their products
ISO/TC 34/SC 7	Spices, culinary herbs and condiments
ISO/TC 34/SC 8	Tea
ISO/TC 34/SC 9	Microbiology
ISO/TC 34/SC 10	Animal feeding stuffs
ISO/TC 34/SC 11	Animal and vegetable fats and oils
ISO/TC 34/SC 12	Sensory analysis
ISO/TC 34/SC 15	Coffee
ISO/TC 34/SC 16	Horizontal methods for molecular biomarker analysis
ISO/TC 34/SC 17	Management systems for food safety
ISO/TC 34/SC 18	Cocoa
ISO/TC 34/SC 19	Bee products
ISO/TC 34/WG 14	Vitamins, carotenoids and other nutrients
ISO/TC 34/WG 16	Animal welfare
ISO/TC 34/WG 20	Aflatoxins
ISO/TC 34/WG 21	Social responsibility/sustainability
ISO/TC 34/WG 22	Natural antimicrobial
ISO/TC 34/WG 23	Food suitable for vegetarians/vegans

ISO/TC 34 "Food products" has 914 published standards and 89 standards are under development. Examples:

Reference	Title
ISO 16050:2003 (CEN)	Foodstuffs — Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products — High-performance liquid chromatographic method
ISO 5558:1982	Animal and vegetable fats and oils — Detection and identification of antioxidants — Thin-layer chromatographic method

6.2.1 ISO/TC 34/SC 2 ‘Oleaginous seeds and fruits and oilseed meals’

Scope: Standardization in the field of oilseeds and oilseed residues in particular sampling, methods of test and analysis including physical, physical-chemical and biochemical methods.

30 Published standards and under development. Examples:

Reference	Title
ISO 5507:2002	Oilseeds, vegetable oils and fats — Nomenclature
ISO 17059:2019	Oilseeds — Extraction of oil and preparation of methyl esters of triglyceride fatty acids for analysis by gas chromatography (rapid method)
ISO 5500:1986	Oilseed residues — Sampling
ISO 10632:2000	Oilseed residues — Simultaneous determination of oil and water contents — Method using pulsed nuclear magnetic resonance spectroscopy
ISO 729:1988	Oilseeds — Determination of acidity of oils
ISO 658:2002	Oilseeds — Determination of content of impurities
ISO 665:2020	Oilseeds — Determination of moisture and volatile matter content
ISO 659:2009	Oilseeds — Determination of oil content (Reference method)

6.2.2 ISO/TC 34/SC 3 Fruits and vegetables and their derived products

Scope: Standardization in the field of fruit and vegetable and their derived products, in particular, terminology, sampling, product specifications, requirements for packaging, storage, transportation, methods of tests and analysis.

Published standards and standards under development

Reference	Title
ISO 2168:1974	Table grapes — Guide to cold storage (International Standard confirmed since 2019-07-29)
ISO 1990-1:1982	Fruits — Nomenclature — First list
ISO 1990-2:1985	Fruits — Nomenclature — Second list
ISO 1956-1:1982	Fruits and vegetables — Morphological and structural terminology
ISO 17239:2004	Fruits, vegetables and derived products — Determination of arsenic content — Method using hydride generation atomic absorption spectrometry
ISO 17240:2004	Fruit and vegetable products — Determination of tin content — Method using flame atomic absorption spectrometry
ISO 1842:1991	Fruit and vegetable products — Determination of pH

ISO 2173:2003	Fruit and vegetable products — Determination of soluble solids — Refractometric method
ISO 22855:2008	Fruit and vegetable products — Determination of benzoic acid and sorbic acid concentrations — High performance liquid chromatography method
ISO 2447:1998	Fruit and vegetable products — Determination of tin content
ISO 2448:1998	Fruit and vegetable products — Determination of ethanol content
ISO 2169:1981	Fruits and vegetables — Physical conditions in cold stores — Definitions and measurement
ISO 3659:1977	Fruits and vegetables — Ripening after cold storage
ISO 2172:1983	Fruit juice — Determination of soluble solids content — Pycnometric method
ISO 5515:1979	Fruits, vegetables and derived products — Decomposition of organic matter prior to analysis — Wet method
ISO 5516:1978	Fruits, vegetables and derived products — Decomposition of organic matter prior to analysis — Ashing method
ISO 5517:1978	Fruits, vegetables and derived products — Determination of iron content — 1,10-Phenanthroline photometric method
ISO 5518:2007	Fruits, vegetables and derived products — Determination of benzoic acid content — Spectrophotometric method
ISO 5519:2008	Fruits, vegetables and derived products — Determination of sorbic acid content
ISO 5520:1981	Fruits, vegetables and derived products — Determination of alkalinity of total ash and of water-soluble ash
ISO 5521:1981	Fruits, vegetables and derived products — Qualitative method for the detection of sulphur dioxide
ISO 5522:1981	Fruits, vegetables and derived products — Determination of total sulphur dioxide content
ISO 6557-1:1986	Fruits, vegetables and derived products — Determination of ascorbic acid — Part 1: Reference method
ISO 6557-2:1984	Fruits, vegetables and derived products — Determination of ascorbic acid content — Part 2: Routine methods
ISO 6558-2:1992	Fruits, vegetables and derived products — Determination of carotene content — Part 2: Routine methods
ISO 6560:1983	Fruit and vegetable products — Determination of benzoic acid content (benzoic acid contents greater than 200 mg per litre or per kilogram) — Molecular absorption spectrometric method
ISO 6561-1:2005	Fruits, vegetables and derived products — Determination of cadmium content — Part 1: Method using graphite furnace atomic absorption spectrometry
ISO 6561-2:2005	Fruits, vegetables and derived products — Determination of cadmium content — Part 2: Method using flame atomic absorption spectrometry
ISO 6632:1981	Fruits, vegetables and derived products — Determination of volatile acidity
ISO 6633:1984	Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method
ISO 6634:1982	Fruits, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method
ISO 6635:1984	Fruits, vegetables and derived products — Determination of nitrite and nitrate content — Molecular absorption spectrometric method
ISO 6636-1:1986	Fruits, vegetables and derived products — Determination of zinc content — Part 1: Polarographic method
ISO 6636-2:1981	Fruits, vegetables and derived products — Determination of zinc content — Part 2: Atomic absorption spectrometric method

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ISO 6636-3:1983	Fruit and vegetable products — Determination of zinc content — Part 3: Dithizone spectrometric method
ISO 6637:1984	Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method
ISO 6638-1:1985	Fruit and vegetable products — Determination of formic acid content — Part 1: Gravimetric method
ISO 6638-2:1984	Fruit and vegetable products — Determination of formic acid content — Part 2: Routine method
ISO 6949:1988	Fruits and vegetables — Principles and techniques of the controlled atmosphere method of storage
ISO 7466:1986	Fruit and vegetable products — Determination of 5-hydroxymethylfurfural (5-HMF) content
ISO 750:1998	Fruit and vegetable products — Determination of titratable acidity
ISO 751:1998	Fruit and vegetable products — Determination of water-insoluble solids
ISO 762:2003	Fruit and vegetable products — Determination of mineral impurities content
ISO 763:2003	Fruit and vegetable products — Determination of ash insoluble in hydrochloric acid
ISO 7952:1994	Fruits, vegetables and derived products — Determination of copper content — Method using flame atomic absorption spectrometry
ISO 9526:1990	Fruits, vegetables and derived products — Determination of iron content by flame atomic absorption spectrometry

6.2.3 Subcommittee ISO/TC 34/SC 9 'Microbiology'

Scope: Horizontal methods in the field of microbiological analysis of the food chain from primary production stage to food and animal feed products, including the environment of food production and handling

Structure of ISO/TC 34/SC 9 'Microbiology':

Reference	Technical body title
ISO/TC 34/SC 9/WG 2	Statistics
ISO/TC 34/SC 9/WG 3	Method validation
ISO/TC 34/SC 9/WG 5	Food microbiology - Culture media (JWG between ISO/TC 34/SC 9 and ISO/TC 147/SC 4)
ISO/TC 34/SC 9/WG 6	Food-borne parasites
ISO/TC 34/SC 9/WG 7	General requirements and guidance for microbiological examinations
ISO/TC 34/SC 9/WG 8	Preparation of test samples, initial suspension and decimal dilutions
ISO/TC 34/SC 9/WG 10	Typing of Salmonella
ISO/TC 34/SC 9/WG 11	Detection of microbial contaminants in starter cultures and probiotics
ISO/TC 34/SC 9/WG 12	Detection of spoilage thermo-acidophilic sporeforming bacteria
ISO/TC 34/SC 9/WG 13	Coagulase positive staphylococci
ISO/TC 34/SC 9/WG 16	Yeasts and moulds
ISO/TC 34/SC 9/WG 18	Enumeration of beta-glucuronidase-positive Escherichia coli
ISO/TC 34/SC 9/WG 19	Guidelines for conducting challenge tests
ISO/TC 34/SC 9/WG 20	Enumeration and confirmation of Bacillus cereus group bacteria
ISO/TC 34/SC 9/WG 21	Enumeration of Enterococci
ISO/TC 34/SC 9/WG 23	Sulfite reducing clostridia and C. perfringens

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ISO/TC 34/SC 9/WG 24	Detection of Shigella
ISO/TC 34/SC 9/WG 25	Whole-genome sequencing for typing and genomic characterization
ISO/TC 34/SC 9/WG 26	Detection of Clostridium botulinum toxins
ISO/TC 34/SC 9/WG 27	Vibrios
ISO/TC 34/SC 9/WG 28	Enumeration of micro-organisms at 30 degrees C
ISO/TC 34/SC 9/WG 29	Enumeration of spores
ISO/TC 34/SC 9/WG 30	Quantitative determination of staphylococcal enterotoxins
ISO/TC 34/SC 9/WG 31	Hepatitis E Virus
ISO/TC 34/SC 9/WG 32	Improvement of pre-enrichment step in ISO 11290-1

There are 88 ISO standards published under the direct responsibility of ISO/TC 34/SC 9. Selection

Reference	Title
ISO 7218:2007 (also CEN)	Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations
ISO/DIS 7218 ed.4 (also CEN)	Microbiology of the food chain — General requirements and guidance for microbiological examinations
ISO 11133:2014	Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media
ISO 6887-1:2017	Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 1: General rules for the preparation of the initial suspension and decimal dilutions
ISO 6887-2:2017	Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 2: Specific rules for the preparation of meat and meat products
ISO 6887-3:2017	Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 3: Specific rules for the preparation of fish and fishery products
ISO 6887-4:2017	Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 4: Specific rules for the preparation of miscellaneous products
ISO 6887-5:2020	Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 5: Specific rules for the preparation of milk and milk products
ISO 6887-6:2013	Microbiology of food and animal feed — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 6: Specific rules for the preparation of samples taken at the primary production stage
ISO 13307:2013	Microbiology of food and animal feed — Primary production stage — Sampling techniques
ISO/TS 17728:2015	Microbiology of the food chain — Sampling techniques for microbiological analysis of food and feed samples
ISO 19343:2017	Microbiology of the food chain — Detection and quantification of histamine in fish and fishery products — HPLC method
ISO/DTS 6579-4	Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 4: Identification of monophasic Salmonella Typhimurium (1,4,[5],12:i:-) by polymerase chain reaction (PCR)

6.2.4 Subcommittee ISO/TC 34/SC 10 'Animal feeding stuffs'

Scope: Standardization in the field of animal feeding stuffs including: terminology, sampling, methods of test and analysis in quality control, specifications of raw material & finished product, guidelines and requirements for packaging, storage and transportation.

Structure of ISO/TC 34/SC 10 'Animal feeding stuffs'

Reference	Title
ISO/TC 34/SC 10/WG 11	Feed grade maize
ISO/TC 34/SC 10/WG 12	Phytase activity
ISO/TC 34/SC 10/WG 13	Fish meal

There are 52 ISO standards published under the direct responsibility of ISO/TC 34/SC 10.

Selection:

Reference	Title
ISO/WD 30024	Animal feeding stuffs — Determination of phytase activity
ISO/AWI 7088	Fish-meal — Vocabulary
ISO 30024:2009	Animal feeding stuffs — Determination of phytase activity
ISO 20588:2019	Animal feeding stuffs — Vocabulary
ISO/TS 17764-1:2002	Animal feeding stuffs — Determination of the content of fatty acids — Part 1: Preparation of methyl esters
ISO/TS 17764-2:2002	Animal feeding stuffs — Determination of the content of fatty acids — Part 2: Gas chromatographic method
ISO 17375:2006	Animal feeding stuffs — Determination of aflatoxin B1
ISO 17372:2008	Animal feeding stuffs — Determination of zearalenone by immunoaffinity column chromatography and high performance liquid chromatography
ISO 17372:2008/Amd 1:2013	Animal feeding stuffs — Determination of zearalenone by immunoaffinity column chromatography and high performance liquid chromatography — Amendment 1: Limitation of the scope
ISO 17180:2013	Animal feeding stuffs — Determination of lysine, methionine and threonine in commercial amino acid products and premixtures
ISO 16472:2006	Animal feeding stuffs — Determination of amylase-treated neutral detergent fibre content (aNDF)
ISO 15914:2004	Animal feeding stuffs — Enzymatic determination of total starch content
ISO/NP 15914-2	Animal feeding stuffs — Enzymatic determination of starch — Part 2: Method by enzymatic determination with a hexokinase system and potassium hydroxide dispersion
ISO 14939:2001	Animal feeding stuffs — Determination of carbadox content — Method using high-performance liquid chromatography
ISO 14902:2001	Animal feeding stuffs — Determination of trypsin inhibitor activity of soya products
ISO 14797:1999	Animal feeding stuffs — Determination of furazolidone content — Method using high-performance liquid chromatography
ISO 14718:1998	Animal feeding stuffs — Determination of aflatoxin B1 content of mixed feeding stuffs — Method using high-performance liquid chromatography
ISO 14565:2000	Animal feeding stuffs — Determination of vitamin A content — Method using high-performance liquid chromatography
ISO 14183:2005	Animal feeding stuffs — Determination of monensin, narasin and salinomycin contents — Liquid chromatographic method using post-column derivatization

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ISO 14182:1999	Animal feeding stuffs — Determination of residues of organophosphorus pesticides — Gas chromatographic method
ISO 14181:2000	Animal feeding stuffs — Determination of residues of organochlorine pesticides — Gas chromatographic method
ISO 13906:2008	Animal feeding stuffs — Determination of acid detergent fibre (ADF) and acid detergent lignin (ADL) contents
ISO 13904:2016	Animal feeding stuffs — Determination of tryptophan content
ISO 13903:2005	Animal feeding stuffs — Determination of amino acids content
ISO 12099:2017	Animal feeding stuffs, cereals and milled cereal products — Guidelines for the application of near infrared spectrometry
ISO 9831:1998	Animal feeding stuffs, animal products, and faeces or urine — Determination of gross calorific value — Bomb calorimeter method
ISO 7485:2000	Animal feeding stuffs — Determination of potassium and sodium contents — Methods using flame-emission spectrometry
ISO 7088:1981	Fish-meal — Vocabulary
ISO 6870:2002	Animal feeding stuffs — Qualitative determination of zearalenone
ISO 6869:2000	Animal feeding stuffs — Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc — Method using atomic absorption spectrometry
ISO 6867:2000	Animal feeding stuffs — Determination of vitamin E content — Method using high-performance liquid chromatography
ISO 6866:1985	Animal feeding stuffs — Determination of free and total gossypol
ISO 6865:2000	Animal feeding stuffs — Determination of crude fibre content — Method with intermediate filtration
ISO 6655:1997	Animal feeding stuffs — Determination of soluble nitrogen content after treatment with pepsin in dilute hydrochloric acid
ISO 6654:1991	Animal feeding stuffs — Determination of urea content
ISO 6498:2012	Animal feeding stuffs — Guidelines for sample preparation
ISO 6497:2002	Animal feeding stuffs — Sampling
ISO 6496:1999	Animal feeding stuffs — Determination of moisture and other volatile matter content
ISO 6495-1:2015	Animal feeding stuffs — Determination of water-soluble chlorides content — Part 1: Titrimetric method
ISO 6493:2000	Animal feeding stuffs — Determination of starch content — Polarimetric method
ISO 6492:1999	Animal feeding stuffs — Determination of fat content
ISO 6491:1998	Animal feeding stuffs — Determination of phosphorus content — Spectrometric method
ISO 6490-1:1985	Animal feeding stuffs — Determination of calcium content — Part 1: Titrimetric method
ISO 5985:2002	Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid
ISO 5984:2002	Animal feeding stuffs — Determination of crude ash
ISO 5983-1:2005	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content — Part 1: Kjeldahl method
ISO 5983-2:2009	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content — Part 2: Block digestion and steam distillation method
ISO 5510:1984	Animal feeding stuffs — Determination of available lysine
ISO 5061:2002	Animal feeding stuffs — Determination of castor oil seed husks — Microscope method

6.2.5 Subcommittee ISO/TC 34/SC 17 'Management systems for food safety'

Scope: Standardization in the field of food safety management systems, covering the food supply chain from primary production to consumption, human and animal foodstuffs as well as animal and vegetable propagation materials.

Published standards and standards under development:

Reference	Title
ISO 22005:2007	Traceability in the feed and food chain — General principles and basic requirements for system design and implementation
ISO/TS 22002-1:2009	Prerequisite programmes on food safety — Part 1: Food manufacturing
ISO/TS 22002-2:2013	Prerequisite programmes on food safety — Part 2: Catering
ISO/TS 22002-4:2013	Prerequisite programmes on food safety — Part 4: Food packaging manufacturing
ISO/TS 22002-6:2016	Prerequisite programmes on food safety — Part 6: Feed and animal food production
ISO/TS 22003:2013	Food safety management systems — Requirements for bodies providing audit and certification of food safety management systems
ISO/TS 22002-3:2011	Prerequisite programmes on food safety — Part 3: Farming
ISO/TS 22002-5:2019	Prerequisite programmes on food safety — Part 5: Transport and storage
ISO 22000:2018	Food safety management systems — Requirements for any organization in the food chain
ISO/PRF 22003-1	Food safety — Part 1: Requirements for bodies providing audit and certification of food safety management systems
ISO/PRF 22003-2	Food safety — Part 2: Requirements for bodies providing evaluation and certification of products, processes and services, including an audit of the food safety system
ISO/PWI TS 22002-1	Prerequisite programmes on food safety — Part 1: Food manufacturing
ISO/PWI TS 22002-2	Prerequisite programmes on food safety — Part 2: Catering
ISO/PWI TS 22002-4	Prerequisite programmes on food safety — Part 4: Food packaging manufacturing
ISO/PWI TS 22002-5	Prerequisite programmes on food safety — Part 5: Transport and storage
ISO/PWI TS 22002-6	Prerequisite programmes on food safety — Part 6: Feed and animal food production
ISO/PWI TS 22002-7	Prerequisite programmes on food safety — Part 7: Retail
ISO/PWI TS 22002-100	Prerequisite programmes on food safety — Part 100: Common requirements
ISO 22006:2009	Quality management systems — Guidelines for the application of ISO 9001:2008 to crop production

6.2.6 Other relevant standards from ISO/TC 34 subcommittees

a) ISO/TC 34/WG 16 'Animal welfare'

Reference	Title
ISO/TS 34700:2016	Animal welfare management — General requirements and guidance for organizations in the food supply chain

b) ISO/TC 34/WG 21 'Social responsibility/sustainability'

Reference	Title
ISO/TS 26030:2019	Social responsibility and sustainable development — Guidance on using ISO 26000:2010 in the food chain

c) ISO/TC 34/WG 22 'Natural antimicrobial'

Reference	Title
ISO/TS 19657:2017	Definitions and technical criteria for food ingredients to be considered as natural

6.3 CEN/TC 411 'Bio-based products'

Scope: In the first place, development of standards for bio-based products covering horizontal aspects. This includes consistent terminology, sampling, certification tools, bio-based content, application of and correlation towards life cycle analysis, sustainability criteria for biomass used and for final products, and aspects where further harmonization is needed on horizontal level. In the second place, development of standards for bio-solvents, covering product functionality, biodegradability and, if necessary, product specific aspects not covered under the first scope.

Technical body substructure:

Reference	Technical body title
CEN/TC 411/WG 1	Terminology
CEN/TC 411/WG 3	Bio-based content
CEN/TC 411/WG 4	Sustainability criteria, life cycle analysis and related issues
CEN/TC 411/WG 5	Certification and declaration tools

Published standards and standards under development

Reference	Title
EN 16575:2014	Bio-based products - Vocabulary
EN 16640:2017/AC:2017	Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method
EN 16640:2017	Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method
CEN/TR 16721:2014	Bio-based products - Overview of methods to determine the bio-based content
EN 16751:2016	Bio-based products - Sustainability criteria
EN 16760:2015	Bio-based products - Life Cycle Assessment
EN 16766:2017	Bio-based solvents - Requirements and test methods
EN 16785-1:2015	Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis
EN 16785-2:2018	Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method
EN 16848:2016	Bio-based products - Requirements for Business to Business communication of characteristics using a Data Sheet
EN 16935:2017	Bio-based products - Requirements for Business-to-Consumer communication and claims
CEN/TR 16957:2016	Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase
CEN/TR 17341:2019	Bio-based products - Examples of reporting on sustainability criteria
EN 17351:2020	Bio-based products - Determination of the oxygen content using an elemental analyser
CEN/TR 17674:2021	Bio-based products- Use of stable isotope ratios of Carbon, Hydrogen, Oxygen and Nitrogen as tools for verification of the origin of bio-based feedstock and characteristics of production processes - overview of relevant existing applications

7 ASSESSMENT OF THE ANTIMICROBIAL ACTIVITY

7.1 CEN/TC 275 'Food analysis - Horizontal methods'

Scope: Standardization of methods of analysis for the detection and/or determination of additives, residues, biotoxins and contaminants in food; nutrients in food and food supplements; irradiated foodstuffs; food allergens and food substances causing intolerances; genetically modified foodstuffs.

In general, CEN/TC 275 does not elaborate standards on terminology, but sometimes on requirements/criteria for methods.

Structure of Working groups:

Reference	Title
CEN/TC 275/WG 1	Sulfites
CEN/TC 275/WG 10	Elements and their chemical species
CEN/TC 275/WG 11	Genetically modified foodstuffs
CEN/TC 275/WG 12	Food allergens
CEN/TC 275/WG 13	Process contaminants
CEN/TC 275/WG 14	Marine Biotoxins
CEN/TC 275/WG 2	Sweeteners
CEN/TC 275/WG 3	Pesticides
CEN/TC 275/WG 5	Biotoxins
CEN/TC 275/WG 7	Nitrate, nitrite
CEN/TC 275/WG 8	Irradiated foodstuffs
CEN/TC 275/WG 9	Vitamins and Carotenoids

It has 159 published standards. Examples:

Reference	Title
CEN/TR 15298:2006	Foodstuffs - Sample comminution for mycotoxins analysis - Comparison between dry milling and slurry mixing
CEN/TS 16233-1:2011	Foodstuffs - HPLC method for the determination of xanthophylls in fish flesh - Part 1: Determination of astaxanthin and canthaxanthin
CEN/TS 16233-2:2011	Foodstuffs - HPLC method for the determination of xanthophylls in fish flesh - Part 2: Identification of the enantiomer ratio of astaxanthin
CEN/TR 16468:2013	Food analysis - Determination of pesticide residues by GC-MS - Retention times, mass spectrometric parameters and detector response information
EN 16995:2017	Foodstuffs - Vegetable oils and foodstuff on basis of vegetable oils - Determination of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) with on-line HPLC-GC-FID analysis
CEN/TS 17329-2:2019	Foodstuffs - General guidelines for the validation of qualitative real-time PCR methods - Part 2: Collaborative study

7.2 ISO/TC 212 ‘Clinical laboratory testing and in vitro diagnostic test systems’

Scope: Standardization and guidance in the field of laboratory medicine and in vitro diagnostic test systems. This includes, for example, quality management, pre- and post-analytical procedures, analytical performance, laboratory safety, reference systems and quality assurance. Excluded: generic quality management standards dealt with by ISO / TC 176; quality management standards for medical devices dealt with by ISO / TC 210; reference materials guidelines dealt with by the ISO Committee on Reference Materials (REMCO); conformity assessment guidelines dealt with by the ISO Committee on Conformity assessment (CASCO).

Structure of ISO/TC 212:

Reference	Title
CEN/TC 411/WG 1	Terminology
ISO/TC 212/JWG 6	Joint ISO/TC 212 - ISO/TC 276 WG: Quality practice for detection of SARS-CoV-2
ISO/TC 212/WG 1	Quality and competence in the medical laboratory
ISO/TC 212/WG 2	Reference systems
ISO/TC 212/WG 3	In vitro diagnostic products
ISO/TC 212/WG 4	Microbiology and molecular diagnostics
ISO/TC 212/WG 5	Laboratory biorisk management

Published standards and standards under development:

Reference	Title
ISO 20776-1:2019 (CEN)	Susceptibility testing of infectious agents and evaluation of performance of antimicrobial susceptibility test devices — Part 1: Broth micro-dilution reference method for testing the in vitro activity of antimicrobial agents against rapidly growing aerobic bacteria involved in infectious diseases
ISO 20776-2:2021 (CEN)	Clinical laboratory testing and in vitro diagnostic test systems — Susceptibility testing of infectious agents and evaluation of performance of antimicrobial susceptibility test devices — Part 2: Evaluation of performance of antimicrobial susceptibility test devices against reference broth micro-dilution
ISO/AWI 20776-3 (CEN)	Clinical laboratory testing and in vitro diagnostic test systems — Susceptibility testing of infectious agents and evaluation of performance of antimicrobial susceptibility test devices — Part 3: Disc-diffusion agar reference method for testing the in vitro activity of antimicrobial agents against rapidly growing aerobic bacteria involved in infectious diseases
ISO/TS 16782:2016	Clinical laboratory testing — Criteria for acceptable lots of dehydrated Mueller-Hinton agar and broth for antimicrobial susceptibility testing
ISO 16256:2021 (CEN)	Clinical laboratory testing and in vitro diagnostic test systems — Broth micro-dilution reference method for testing the in vitro activity of antimicrobial agents against yeast fungi involved in infectious diseases
ISO/AWI 20776-3	Clinical laboratory testing and in vitro diagnostic test systems — Susceptibility testing of infectious agents and evaluation of performance of antimicrobial susceptibility test devices — Part 3: Disc-diffusion agar reference method for testing the in vitro activity of antimicrobial agents against rapidly growing aerobic bacteria involved in infectious diseases

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7.3 Other relevant standards for assessing the antimicrobial activity

Reference	Title	
ISO/CD 24190	Biotechnology — Analytical Methods — Risk-based approach for method selection and validation for rapid microbial detection in bioprocesses	ISO/TC 276/WG 3
ISO 18362:2016 (CEN)	Manufacture of cell-based health care products — Control of microbial risks during processing	ISO/TC 198
ISO 17822:2020	In vitro diagnostic test systems — Nucleic acid amplification-based examination procedures for detection and identification of microbial pathogens — Laboratory quality practice guide	ISO/TC 212/WG 4
ISO 13969:2003 (CEN)	Milk and milk products — Guidelines for a standardized description of microbial inhibitor tests	ISO/TC 34/SC 5
ISO 7346-2:1996 (CEN)	Water quality — Determination of the acute lethal toxicity of substances to a freshwater fish [Brachydanio rerio Hamilton-Buchanan (Teleostei, Cyprinidae)] — Part 2: Semi-static method	ISO/TC 147/SC 5

8 SEMEN AND ARTIFICIAL INSEMINATION OF ANIMALS

The following standards from the relevant TC are published:

Reference	Title	
ISO 8607:2003	Artificial insemination of animals — Frozen semen of breeding bulls — Enumeration of living aerobic microorganisms	ISO/TC 34
ISO 8607:2003/Amd 1:2011	Artificial insemination of animals — Frozen semen of breeding bulls — Enumeration of living aerobic microorganisms — Amendment 1	ISO/TC 34
ISO 23162:2021 (CEN)	Basic semen examination — Specification and test methods	ISO/TC 212/WG 1

9 ECONOMIC AND ENVIRONMENTAL FEASIBILITY

9.1 ISO/TC 207 'Environmental management'

Scope: Standardization in the field of environmental management to address environmental and climate impacts, including related social and economic aspects, in support of sustainable development. Excluded: test methods of pollutants, setting limit values and levels of environmental performance, and standardization of products.

Structure:

Reference	Title
ISO/TC 207/SC 1	Environmental management systems
ISO/TC 207/SC 2	Environmental auditing and related environmental investigations
ISO/TC 207/SC 3	Environmental labelling

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ISO/TC 207/SC 4	Environmental performance evaluation
ISO/TC 207/SC 5	Life cycle assessment
ISO/TC 207/SC 7	Greenhouse gas management and related activities
ISO/TC 207/TCG	Terminology Coordination Group
ISO/TC 207/TG 1	Sustainable Finance Coordination
ISO/TC 207/TG 2	Circular economy coordination

It has 58 ISO standards published and 20 under development

Reference	Title
ISO 14051:2011	Environmental management — Material flow cost accounting — General framework
ISO 14053:2021	Environmental management — Material flow cost accounting — Guidance for phased implementation in organizations
ISO 14052:2017	Environmental management — Material flow cost accounting — Guidance for practical implementation in a supply chain
ISO 14009:2020	Environmental management systems — Guidelines for incorporating material circulation in design and development
ISO 14008:2019	Monetary valuation of environmental impacts and related environmental aspects
ISO 14007:2019	Environmental management — Guidelines for determining environmental costs and benefits
ISO 14006:2020	Environmental management systems — Guidelines for incorporating ecodesign
ISO 14001:2015	Environmental management systems — Requirements with guidance for use
ISO/DIS 14002-2	Environmental management systems — Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area — Part 2: Water
ISO 14016:2020	Environmental management — Guidelines on the assurance of environmental reports
ISO 14015:2001	Environmental management — Environmental assessment of sites and organizations (EASO)
ISO/FDIS 14015	Environmental management — Guidelines for environmental due diligence assessment
ISO/FDIS 14017	Environmental management — Requirements with guidance for verification and validation of water statements
ISO/TS 14027:2017	Environmental labels and declarations — Development of product category rules
ISO 14026:2017	Environmental labels and declarations — Principles, requirements and guidelines for communication of footprint information
ISO 14025:2006	Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14024:2018	Environmental labels and declarations — Type I environmental labelling — Principles and procedures

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ISO 14021:2016	Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)
ISO 14021:2016/Amd 1:2021	Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling) — Amendment 1: Carbon footprint, carbon neutral
ISO 14020:2000	Environmental labels and declarations — General principles
ISO/DIS 14020	Environmental statements and programmes for products - Principles and general requirements
ISO/TS 14029	Environmental statements and programmes for products — Mutual recognition of environmental product declarations (EPDs) and footprint communication programmes
ISO 14063:2020	Environmental management — Environmental communication — Guidelines and examples
ISO 14033:2019	Environmental management — Quantitative environmental information — Guidelines and examples
ISO 14031:2021	Environmental management — Environmental performance evaluation — Guidelines
ISO 14030-1:2021	Environmental performance evaluation — Green debt instruments — Part 1: Process for green bonds
ISO 14030-2:2021	Environmental performance evaluation — Green debt instruments — Part 2: Process for green loans
ISO/FDIS 14030-3	Environmental performance evaluation — Green debt instruments — Part 3: Taxonomy
ISO 14030-4:2021	Environmental performance evaluation — Green debt instruments — Part 4: Verification programme requirements
ISO/DIS 14100	Guidance on environmental criteria for projects, assets and activities to support the development of green finance
ISO/CD TR 14035	Environmental technology verification — ETV - Guidance to implement ISO 14034
ISO 14034:2016	Environmental management — Environmental technology verification (ETV)
ISO/WD TS 14076	Eco-Technoeconomic Analyses: Principles, requirements and guidelines
ISO 14046:2014	Environmental management — Water footprint — Principles, requirements and guidelines
ISO/TR 14073:2017	Environmental management — Water footprint — Illustrative examples on how to apply ISO 14046
ISO 14045:2012	Environmental management — Eco-efficiency assessment of product systems — Principles, requirements and guidelines
ISO/AWI 59014	Secondary materials — Principles, sustainability and traceability requirements
ISO/DTS 14074	Environmental management — Life cycle assessment — Principles, requirements and guidelines for normalization, weighting and interpretation

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ISO/TS 14092:2020	Adaptation to climate change — Requirements and guidance on adaptation planning for local governments and communities
ISO 14091:2021	Adaptation to climate change — Guidelines on vulnerability, impacts and risk assessment
ISO 14090:2019	Adaptation to climate change — Principles, requirements and guidelines
ISO 14080:2018	Greenhouse gas management and related activities — Framework and principles for methodologies on climate actions
ISO/TR 14069:2013	Greenhouse gases — Quantification and reporting of greenhouse gas emissions for organizations — Guidance for the application of ISO 14064-1
ISO 14067:2018	Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
ISO 14066:2011	Greenhouse gases — Competence requirements for greenhouse gas validation teams and verification teams
ISO 14064-1:2018	Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals
ISO 14064-2:2019	Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements
ISO 14064-3:2019	Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements
ISO 14065:2020	General principles and requirements for bodies validating and verifying environmental information
ISO 14097:2021	Greenhouse gas management and related activities — Framework including principles and requirements for assessing and reporting investments and financing activities related to climate change
ISO/DIS 14083	Greenhouse gases — Quantification and reporting of greenhouse gas emissions arising from transport chain operations
ISO/WD 14068	Greenhouse gas management and related activities — Carbon neutrality
ISO/DIS 14093	Mechanism for financing local adaptation to climate change — Performance-based climate resilience grants — Requirements and guidelines
ISO/DTR 14069	Greenhouse gases — Quantification and reporting of greenhouse gas emissions for organizations — Guidance for the application of ISO 14064-1

9.2 Life Cycle Assessment

9.2.1 Developed under ISO/TC 207/SC 5:

Reference	Title
ISO 14040:2006	Environmental management — Life cycle assessment — Principles and framework

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ISO 14044:2006	Environmental management — Life cycle assessment — Requirements and guidelines
ISO/TR 14047:2012	Environmental management — Life cycle assessment — Illustrative examples on how to apply ISO 14044 to impact assessment situations
ISO/TS 14048:2002	Environmental management — Life cycle assessment — Data documentation format
ISO/TR 14049:2012	Environmental management — Life cycle assessment — Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis
ISO/TS 14071:2014	Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006
ISO/TS 14072:2014	Environmental management — Life cycle assessment — Requirements and guidelines for organizational life cycle assessment
ISO/AWI 14075	Principles and framework for social life cycle assessment

The future standard ISO 14075 may be of particular interest. It will describe a framework that includes assessment systems for social impacts and their possible link and interaction with environmental impacts and costs effects, advancing the field of sustainability assessments. It will guide practitioners from industries, SME, government, universities and NGO in the efficient and credible development and implementation of practices of the assessment of social impacts.

9.2.2 Developed under ISO/TC 59/SC 14 'Buildings and civil engineering works. Design life'

Reference	Title	
ISO 15686-5:2017	Buildings and constructed assets — Service life planning — Part 5: Life-cycle costing	ISO/TC 59/SC 14

10 OTHER TECHNICAL COMMITTEES WITH SPECIFIC STANDARDS

10.1 ISO/TC 184 'Automation systems and integration'

Reference	Title	
IEC/DTR 63319	A meta-modelling analysis approach to smart manufacturing reference models	ISO/TC 184/JWG 21 IEC

10.2 ISO/IEC JTC 1/SC 7 'Software and systems engineering'

Reference	Title	
ISO/IEC 26558:2017 (IEC)	Software and systems engineering — Methods and tools for variability modelling in software and systems product line	ISO/IEC JTC 1/SC 7/WG

10.3 ISO/TC 23 ‘Tractors and machinery for agriculture and forestry’

Reference	Title
ISO/CD 4254 (CEN)	Agricultural machinery — Safety — Part 20: Grape, olives and coffee harvesters
ISO 5704:1980	Equipment for vine cultivation and wine making — Grape-harvesting machinery — Test methods
ISO 5703:1979	Equipment for vine cultivation and wine making — Grape presses — Methods of test

10.4 ISO/TC 276 ‘Biotechnology’

Scope: Standardization in the field of biotechnology processes that includes the following topics: Terms and definitions; biobanks and bioresources; analytical methods; bioprocessing; data processing including annotation, analysis, validation, comparability and integration; and metrology.

Structure:

Reference	Title
ISO/TC 276/WG 1	Terminology
ISO/TC 276/WG 2	Biobanks and bioresources
ISO/TC 276/WG 3	Analytical methods
ISO/TC 276/WG 4	Bioprocessing
ISO/TC 276/WG 5	Data processing and integration

It has 22 published standards and 24 under development:

Reference	Title	
ISO/PWI 20397-3	Biotechnology — Massively parallel sequencing — Part 3: General requirements and guidance for metagenomic	ISO/TC 276
ISO/PWI 16944	Biotechnology — Guidance and requirements for assays used in the detection of anti-adenovirus-associated virus (AAV) antibodies when evaluating preexisting immunity to AAV	ISO/TC 276
ISO/PWI 16921	Biotechnology — Guide for methods for the assessment and quantification of viral vector titer	ISO/TC 276
ISO/PWI 8934	Biotechnology — General requirements and considerations for cell viability measurements – Part 1: Mammalian cells	ISO/TC 276
ISO 5058-1:2021	Biotechnology — Genome editing — Part 1: Vocabulary	ISO/TC 276/WG 1
ISO/DTS 22859	Biotechnology — Biobanking — Requirements for human mesenchymal stromal cells derived from umbilical cord tissue	ISO/TC 276/WG 2
ISO/FDIS 24651	Biotechnology — Biobanking — Requirements for human mesenchymal stromal cells derived from bone marrow	ISO/TC 276/WG 2

ISO/FDIS 24603	Biotechnology — Biobanking — Requirements for human and mouse pluripotent stem cells	ISO/TC 276/WG 2
ISO/FDIS 24088-1	Biotechnology — Biobanking of microorganisms — Part 1: Bacteria and archaea	ISO/TC 276/WG 2
ISO/TS 23105:2021	Biotechnology — Biobanking — Requirements for the biobanking of plant biological material for research and development	ISO/TC 276/WG 2
ISO/TR 22758:2020	Biotechnology — Biobanking — Implementation guide for ISO 20387	ISO/TC 276/WG 2
ISO 21899:2020	Biotechnology — Biobanking — General requirements for the validation and verification of processing methods for biological material in biobanks	ISO/TC 276/WG 2
ISO 21709:2020	Biotechnology — Biobanking — Process and quality requirements for establishment, maintenance and characterization of mammalian cell lines	ISO/TC 276/WG 2
ISO/TS 20388:2021	Biotechnology — Biobanking — Requirements for animal biological material	ISO/TC 276/WG 2
ISO 20387:2018	Biotechnology — Biobanking — General requirements for biobanking	ISO/TC 276/WG 2
ISO/CD 24421	Biotechnology — Minimum requirements for optical signal measurements in photometric methods for biological samples	ISO/TC 276/WG 3
ISO/CD 24190	Biotechnology — Analytical Methods — Risk-based approach for method selection and validation for rapid microbial detection in bioprocesses	ISO/TC 276/WG 3
ISO/DTS 23511	Biotechnology — General requirements and considerations for cell line authentication	ISO/TC 276/WG 3
ISO/CD 20688-2	Biotechnology — Nucleic acid synthesis — Part 2: General definitions and requirements for the production and quality control of synthesized gene fragment, gene, and genome	ISO/TC 276/WG 3
ISO/AWI 24479	Biotechnology — Minimum requirements for cellular morphological analysis — Image capture, image processing, and morphometry	ISO/TC 276/WG 3
ISO 23033:2021	Biotechnology — Analytical methods — General requirements and considerations for the testing and characterization of cellular therapeutic products	ISO/TC 276/WG 3
ISO 20688-1:2020	Biotechnology — Nucleic acid synthesis — Part 1: Requirements for the production and quality control of synthesized oligonucleotides	ISO/TC 276/WG 3
ISO 20397-1:2022	Biotechnology — Massively parallel sequencing — Part 1: Nucleic acid and library preparation	ISO/TC 276/WG 3

ISO 20397-2:2021	Biotechnology — Massively parallel sequencing — Part 2: Quality evaluation of sequencing data	ISO/TC 276/WG 3
ISO 20395:2019	Biotechnology — Requirements for evaluating the performance of quantification methods for nucleic acid target sequences — qPCR and dPCR	ISO/TC 276/WG 3
ISO 20391-1:2018	Biotechnology — Cell counting — Part 1: General guidance on cell counting methods	ISO/TC 276/WG 3
ISO 20391-2:2019	Biotechnology — Cell counting — Part 2: Experimental design and statistical analysis to quantify counting method performance	ISO/TC 276/WG 3
ISO/PWI 4752	Biotechnology — Analytical methods — Considerations for development of approach and selection of methods for detection of microbiological contamination in mammalian cell cultures	ISO/TC 276/WG 3
ISO/TS 23565:2021	Biotechnology — Bioprocessing — General requirements and considerations for equipment systems used in the manufacturing of cells for therapeutic use	ISO/TC 276/WG 4
ISO 21973:2020	Biotechnology — General requirements for transportation of cells for therapeutic use	ISO/TC 276/WG 4
ISO/CD 20404	Biotechnology — Bioprocessing — General requirements for the design of packaging to contain cells for therapeutic use	ISO/TC 276/WG 4
ISO/DIS 20399	Biotechnology — Ancillary materials present during the production of cellular therapeutic products and gene therapy products	ISO/TC 276/WG 4
ISO/TS 20399-1:2018	Biotechnology — Ancillary materials present during the production of cellular therapeutic products — Part 1: General requirements	ISO/TC 276/WG 4
ISO/TS 20399-2:2018	Biotechnology — Ancillary materials present during the production of cellular therapeutic products — Part 2: Best practice guidance for ancillary material suppliers	ISO/TC 276/WG 4
ISO/TS 20399-3:2018	Biotechnology — Ancillary materials present during the production of cellular therapeutic products — Part 3: Best practice guidance for ancillary material users	ISO/TC 276/WG 4
ISO/DIS 20691	Biotechnology — Requirements for data formatting and description in the life sciences	ISO/TC 276/WG 5
ISO/NP 24480	Biotechnology — Validation of Database used for nucleotide sequence evaluation	ISO/TC 276/WG 5
ISO/DTS 24420	Biotechnology — Massively parallel DNA sequencing — General requirements for data processing of shotgun metagenomics	ISO/TC 276/WG 5

ISO/DTS 23494-1	Biotechnology — Provenance information model for biological material and data — Part 1: Design concepts and general requirements	ISO/TC 276/WG 5
ISO/PWI TS 23494-2	Biotechnology — Provenance information model for biological material and data — Part 2: Common provenance model	ISO/TC 276/WG 5
ISO 21710:2020	Biotechnology — Specification on data management and publication in microbial resource centers	ISO/TC 276/WG 5
ISO/AWI TS 9491-1	Biotechnology — Recommendations and requirements for predictive computational models in personalized medicine research — Part 1: Guidelines for constructing, verifying and validating models	ISO/TC 276/WG 5
ISO/AWI 8472-1	Biotechnology — Data interoperability for Stem Cell — Part 1: Framework	ISO/TC 276/WG 5
ISO/TR 3985:2021	Biotechnology — Data publication — Preliminary considerations and concepts	ISO/TC 276/WG 5

11 ORGANIZATIONAL MANAGEMENT

The following technical committees develop management systems standards and related standards that may be relevant for NeoGiANT partners as organizations providing a product or service.

11.1 ISO/TC 176 ‘Quality management and quality assurance’

Reference	Title
ISO 9000:2015 (CEN)	Quality management systems — Fundamentals and vocabulary
ISO 9001:2015 (CEN)	Quality management systems — Requirements
ISO/TS 9002:2016	Quality management systems — Guidelines for the application of ISO 9001:2015
ISO 9004:2018 (CEN)	Quality management — Quality of an organization — Guidance to achieve sustained success
ISO 10005:2018	Quality management — Guidelines for quality plans
ISO 10006:2017	Quality management — Guidelines for quality management in projects
ISO 10007:2017	Quality management — Guidelines for configuration management
ISO 10004:2018	Quality management — Customer satisfaction — Guidelines for monitoring and measuring
ISO 10001:2018	Quality management — Customer satisfaction — Guidelines for codes of conduct for organizations
ISO 10002:2018	Quality management — Customer satisfaction — Guidelines for complaints handling in organizations
ISO 10003:2018	Quality management — Customer satisfaction — Guidelines for dispute resolution external to organizations
ISO 10008:2013	Quality management — Customer satisfaction — Guidelines for business-to-consumer electronic commerce transactions
ISO 10012:2003	Measurement management systems — Requirements for measurement processes and measuring equipment
ISO 10013:2021	Quality management systems — Guidance for documented information
ISO 10014:2021	Quality management systems — Managing an organization for quality results — Guidance for realizing financial and economic benefits

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ISO 10015:2019	Quality management — Guidelines for competence management and people development
ISO 10017:2021	Quality management — Guidance on statistical techniques for ISO 9001:2015
ISO 10018:2020	Quality management — Guidance for people engagement

11.2 ISO/TC 258 ‘Project, programme and portfolio management’

Reference	Title
ISO 21500:2021	Project, programme and portfolio management — Context and concepts
ISO 21502:2020	Project, programme and portfolio management — Guidance on project management
ISO 21503:2022	Project, programme and portfolio management — Guidance on programme management
ISO 21504:2022	Project, programme and portfolio management — Guidance on portfolio management
ISO 21505:2017	Project, programme and portfolio management — Guidance on governance
ISO 21508:2018	Earned value management in project and programme management
ISO 21511:2018	Work breakdown structures for project and programme management
ISO/AWI TS 21512	Earned Value Management (EVM) in Project and Programme Management — Implementation Guide
ISO/TR 21506:2018	Project, programme and portfolio management — Vocabulary

11.3 ISO/TC 262 ‘Risk management’

Reference	Title
IEC 31010:2019	Risk management — Risk assessment techniques
ISO 31000:2018	Risk management — Guidelines
ISO 31022:2020	Risk management — Guidelines for the management of legal risk
ISO 31073:2022	Risk management — Vocabulary
ISO/CD 31050	Guidance for managing emerging risks to enhance resilience
ISO/PWI 31073	Risk management — Vocabulary
ISO/TR 31004:2013	Risk management — Guidance for the implementation of ISO 31000
IWA 31:2020	Risk management — Guidelines on using ISO 31000 in management systems

11.4 ISO/TC 279 ‘Innovation management’

Reference	Title
ISO 56000:2020	Innovation management — Fundamentals and vocabulary
ISO/DTS 56010	Innovation management - Illustrative examples of ISO 56000
ISO/AWI 56001	Innovation management — Innovation management system — Requirements
ISO 56002:2019	Innovation management — Innovation management system — Guidance
ISO 56003:2019	Innovation management — Tools and methods for innovation partnership — Guidance
ISO/TR 56004:2019	Innovation Management Assessment — Guidance
ISO 56005:2020	Innovation management — Tools and methods for intellectual property management — Guidance
ISO 56006:2021	Innovation management — Tools and methods for strategic intelligence management — Guidance

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ISO/DIS 56007	Innovation management — Tools and methods for idea management — Guidance
ISO/CD 56008	Innovation management — Tools and methods for innovation operation measurements — Guidance

11.5 CEN/TC 389 ‘Innovation management’ (Europe)

Reference	Title
CEN/TS 16555-2:2014	Innovation management - Part 2: Strategic intelligence management
CEN/TS 16555-3:2014	Innovation management - Part 3: Innovation thinking
CEN/TS 16555-4:2014	Innovation management - Part 4: Intellectual property management
CEN/TS 16555-6:2014	Innovation management - Part 6: Creativity management
prEN ISO 56000 rev	Innovation management - Fundamentals and vocabulary (ISO 56000:2020)
prEN ISO 56001	Innovation management — Innovation management system — Requirements (ISO/AWI 56001)
prEN ISO 56007	Innovation management -idea management (ISO/AWI 56007)
prEN ISO 56008	Innovation management — tools and methods for innovation operation measurements — Guidance (ISO/AWI 56008)

11.6 ISO/TC 309 ‘Governance of organizations’

Reference	Title
ISO 37000:2021	Governance of organizations — Guidance
ISO 37001:2016	Anti-bribery management systems — Requirements with guidance for use
ISO 37002:2021	Whistleblowing management systems — Guidelines
ISO/NP 37003	Fraud Control Management Systems — Guidance for organizations responding to the risk of fraud
ISO/WD 37004	Governance of organizations — Governance maturity model
ISO/AWI 37005	Governance of organizations — Selecting, Creating and Using Indicators: Guidance for Governing Bodies
ISO/AWI 37006	Indicators of Effective Organizational Governance: Guidance
ISO/AWI 37007	Corporate Governance — guidelines for efficiency measurement
ISO/AWI TS 37008	Internal Investigations of Organizations — Guidance
ISO/PWI 37009	Conflicts of interest - Guidelines
ISO 37301:2021	Compliance management systems — Requirements with guidance for use

11.7 ISO/TC 323 ‘Circular economy’

Reference	Title
ISO/WD 59004	Circular economy — Framework and principles for implementation
ISO/WD 59010.2	Circular economy — Guidelines on business models and value chains
ISO/WD 59020.2	Circular economy — Measuring circularity framework
ISO/CD TR 59031	Circular economy – Performance-based approach – Analysis of cases studies
ISO/DTR 59032.2	Circular economy - Review of business model implementation
ISO/PWI TR 59033	Efficient use and management of resources in the circular economy - Good practices for replicability
ISO/AWI 59040	Circular Economy — Product Circularity Data Sheet

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11.8 ISO/TC 331 'Biodiversity'

Reference	Title
ISO/NP TS 13208-1	Biodiversity — Vocabulary — Part 1: General terms

11.9 CEN/TC 467 'Climate change'

Reference	Title
WI=00467001	Greenhouse gases: requirements and guidelines for the quantification of GHG emission reduction and removal enhancements from land agronomic management practices

12 CONCLUSIONS

This report is a first approach to the situation of the standardization environment at the European and International levels of NeoGiANT project activities and objectives. The following conclusions can be drawn

- There are no standards on grapes quality or winemaking process addressing grape marc.
- There are no standards on antioxidant properties
- There are standards on antibacterial properties, but related to dentistry materials, footwear, textiles, etc.
- Medicinal products, neither for human or animal use are not covered by the ISO or CEN standardisation activity (as this is exclusive competence of the relevant healthcare authorities). Only medical devices are standardized.
- There are very few standards related to the final products of NeoGiANT (intramammary injections, diseases prevention, sperm preservation and feed products).
- There are many European and International technical committees and standards related to the NeoGiANT project which may be useful for the partners, particularly in the area of characterization of food & feeding analysis.
- There are no specific standards available for sperm preservatives or the other products expected from NeoGiANT project. This provides an opportunity for the relevant outputs of the project to be the reference for new standardization developments.

The Technical Committees included in this study are primarily the main recipients for the later stages of interaction and contribution to standardization which are planned in Subtask 9.4.2. Depending on the ongoing works of the standardisation sectors at the moment, this interaction can involve participation in ongoing standard developments, proposals for new standards in existing TCs, proposals of new standards out of the TCs structure, setting recommendations for future standardisation fields, etc.

In order to be able to use the standardization system as a tool for dissemination of the project results to the market stakeholders, it will be necessary assessing to what extent the relationship with the TCs should be established (monitoring their information, attending to TC meetings, establishing formal liaisons, organizing joint events, etc.). UNE would provide with the necessary technical support required for that interaction.

The scope of the contribution from the project to standardization shall be decided after this first stage, and will depend on the response received from the Technical Committees to be contacted, the level of development of the results obtained in the project and the interests of the partners. Since many external and internal factors affect this contribution and there are a wide range of standardization options to develop them, decision should be taken by the consortium in the second half of the project, with the advice and support from UNE.

Therefore NeoGiANT partners' are encouraged to give their feedback on D9.6 and to express their interest in any specific standard or Technical Committee, based on their experience gained in the project. Also UNE will analyse the different outcomes of the project to help identify potential elements for standardization and select the most suitable options.