

# Deliverable Report

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*Report on the standardization landscape and applicable standards*

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<sup>1)</sup> PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

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## Summary

The Spanish Association for Standardization, UNE, a European Standardization Body, is a partner in the SALEMA project to provide support regarding the standardization tasks included in the project.

This document is providing the answer to Task 8.2 Standardization activities, and is the result of Subtask 8.2.1, "*Analysis of the applicable standardization landscape*". To fulfil this commitment, this deliverable 8.4 '*Report on the standardization landscape and applicable standards*' has been prepared to provide the partners with information about the relevant state-of-the-art in standardization, including related standardization technical committees, published standards and standards under development, which can be of interest for the SALEMA project objectives and development.

This deliverable contains the fields of interest related to SALEMA, given by its consortium, and, from this starting point, the identification and analysis of the standardization Technical Committees (TCs) related to the project as well as of the published standards and standards under development that can be useful and relevant for the project activities. Furthermore, it can help in the future to identify standardization gaps that might be addressed – wholly or partially – by the results of the project.

## Disclaimer

This publication reflects only the author's view. The Agency and the European Commission are not responsible for any use that may be made of the information it contains.

## Abbreviations

Abbreviation / Acronyms	Description
(A)MGA	(Annotated) Model Grant Agreement
CA	Consortium Agreement
CFS	Certificate of Financial Statement
EAB	External Advisory Board
EC	European Commission
EU	European Union
FP	Framework Programme



Abbreviation / Acronyms	Description
GA	Grant Agreement
PSB	Project Steering Board
PMT	Project Management Team
PC	Project Consortium
WP	Work Package
WPL	Work Package Leader
AMD	Amendment
AWI	Approved Work Item
CD	Committee Draft
CEN	European Committee for Standardization
CENELEC	European Committee for Standardization in the Electrical Field
CWA	CEN or CENELEC Workshop Agreement
DIS	Draft International Standard
EN	European Standard
EOTA	European Organisation for Technical Assessment
ESO	European Standardisation Organisation
ETAG	European Technical Approval Guideline
ETSI	European Telecommunications Standards Institute
EU	European Union
FDIS	Final Draft International Standard
hEN	Harmonised European Standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization; International Standard
NMC	National Mirror Committee
NSB	National Standardization Body
NWIP	New Work Item Proposal
PWI	Preliminary Work Item
SC	Subcommittee
TC	Technical Committee
TR	Technical Report
TS	Technical Specification
UNE	Spanish Association For Standardization
WD	Working Draft



Abbreviation / Acronyms	Description
WG	Working Group
WI	Work Item
WP	Work Package



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## 1. Introduction

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) and/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.

The standardization bodies operate at different levels:

- National (UNE, AFNOR, BSI, DIN, etc.)
- Regional (CEN, CENELEC, ETSI). For the scope of SALEMA PROJECT it is European level.
- International (ISO, IEC)

Sometimes there are different standardization bodies at the same level but covering different fields. This is the case of ISO (general) and IEC (electrical) at International level, or CEN, CENELEC and ETSI at European level in the same way.

In the next subclauses, more detailed information is provided.

### 1.1. National Standardization Organizations

The National Standardization Organizations (UNE, AFNOR, BSI, DIN, etc.) are the organizations officially recognized at national level as being able to represent all standardization interests in their country. They are responsible for developing national standards in their countries and they are the members of ISO, IEC, CEN and CENELEC (note that ITU and ETSI have a different membership policy). National stakeholders interested in standardization activities can take part in the process at European or International level through their national standardization organization.

The legal status of National Standardization Organizations varies from one country to another. The most typical status is a private non-profit organization whose members are national business associations and companies, but sometimes the National Standardization Organization is a part of the Public Administration.

As stated in subclause 2.2, the European Standardization System guarantees that European Standards are identically adopted by all the National Standardization Organizations and any national conflicting standard is withdrawn, through the commitment of the Standstill Agreement. This means the national catalogues of standards have a big level of coherence across Europe and that the European Standardization System helps to achieve the goal of the single market objective.






## 1.2. European Standardization Organizations

The European Standardization system plays a major role in the EU Single Market, enabling the free circulation of goods among 33 countries. The European standardization system relies on a single standard model. European standards are identically adopted by all the National Members and any national conflicting standard is withdrawn. European standards facilitate compliance with EU harmonization legislation, hence the entry and free circulation of goods in the EU Single Market, based on a set of requirements equally applicable in all Member States of the European Union.

European Standardization Organizations work closely with their international level counterparts, to avoid duplication of efforts and promote global relevance of standards. As a result of this, 31% of CEN standards are identical to ISO standards and 72% of CENELEC standards are identical to IEC standards.

CEN, CENELEC and ETSI have been officially recognized by the European Union (EU) and by the European Free Trade Association (EFTA) as European Standardization Bodies responsible for developing standards at European level (see Table 1).

**Table 1. European Standardization Organizations**



 <p><b>European Committee for Standardization</b></p>	<p>CEN is a non-profit association whose members are the national standards bodies of 33 European countries. It develops standards in fields not related to electrotechnology nor telecommunications. It is the counterpart at European level of ISO.</p>
 <p><b>European Committee for Electrotechnical Standardization</b></p>	<p>CENELEC is a non-profit association whose members are the national standards bodies of 33 European countries. It develops standards in fields related to electrotechnology. It is the counterpart at European level of IEC.</p>
 <p><b>European Telecommunications Standards Institute</b></p>	<p>ETSI is a non-profit organization with more than 800 member organizations worldwide. It develops standards for Information and Communications Technologies (ICT).</p>



### 1.3. International Standardization Organizations

International Standardization Organizations develop worldwide applicable, market-driven standards, in a multi-stakeholder environment which ensures that a wide range of technical views are represented, including those relating to social and economic interests. While not subjected to a specific jurisdiction, International Standards have an important contribution to facilitating international trade. This contribution has been recognized by the World Trade Organization (WTO) and the organizations cited below follow the Code of Good Practice for the Preparation, Adoption and Application of Standards of the WTO Agreement on Technical Barriers to Trade. International Standards are based in the Global Relevance principle, the standards are useful through all the world. Table 2 shows the International Standardization Organizations.

**Table 2. International Standardization Organizations**

 <p><b>International Standardization Organization</b></p>	<p>ISO is an independent, non-governmental international organization with a membership of 163 national standards bodies. ISO develops standards mainly in fields not related to electrotechnology nor telecommunications.</p>
 <p><b>International Electrotechnical Commission</b></p>	<p>IEC is a not-for-profit, non-governmental organization with a membership of 84 national standards bodies. IEC develops standards in fields related to electrotechnology.</p>

### 1.4. Standardization documents

Standardization activities are relevant in many projects funded by the H2020 Programme for various reasons, but mainly because standards help to increase the impact of the project and to establish a baseline of existing standards in the initial steps to consider interoperability and industry recognised state of the art. Standards are documents developed in an open and regulated process involving relevant stakeholders. Therefore, standards provide confidence and are often a requirement for trading goods and services, especially in sectors like construction and information and communications technology. Standards also aim to ensure compatibility and interoperability with products and services that already exist in the market.

The use of standards and standardization is encouraged and is widely accepted, especially at the European level. More details can be found in the European Commission webpage devoted to standardization policy, included as a reference.



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 are documents that have been ratified by one of the three European Standardization Organizations, CEN, CENELEC or ETSI; recognized as competent in voluntary technical standardization as for the EU Regulation 1025/2012. As mentioned, the principle is one standard for all Europe. Their application is voluntary, but the adoption at national level as standard is mandatory.
- International Standards are documents that have been ratified by one of the two International Standardization Organizations, ISO, or IEC. Their application is voluntary, and the adoption at national level is also voluntary.

All the standards, independently of their origin (national, European, or international) are developed under the basis of consensus and approved by the members of the organization according to strict, defined procedures and strict drafting timeframes. Other types of documents are Technical Specifications (TS), Technical Reports (TR) and Workshop Agreements (WA), which have lower level of consensus and a faster drafting timeframe. A summary of the characteristics of the different standardization documents can be found in Table 3.

**Table 3. Characteristics of the 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.	<ul style="list-style-type: none"> <li>• Elaboration: 3 years</li> <li>• 2 steps of member approval</li> <li>• European: compulsory national adoption</li> <li>• Revision: every 5 years</li> </ul>
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.	<ul style="list-style-type: none"> <li>• Elaboration: 21 months</li> <li>• 1 step of member approval or internal approval in TC</li> <li>• European: optional national adoption</li> <li>• Revision: at 3 years (upgrading to EN or deletion)</li> </ul>



Type	International code	European code	National code	Main characteristics
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.	<ul style="list-style-type: none"> <li>• Elaboration: free timeframe</li> <li>• Internal approval in TC</li> <li>• European: optional national adoption</li> <li>• No revision required</li> </ul>
Workshop Agreement	IWA	CWA	Variable	<ul style="list-style-type: none"> <li>• Elaboration: free timeframe (usually few months)</li> <li>• Internal approval in the Workshop</li> <li>• European: optional national adoption</li> <li>• Revision: at 3 years (upgrading to EN or deletion)</li> </ul>

There are also agreements established between European and International Organizations 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. National standards could also be proposed as a base for new European or International standards. The following Figure 1 shows the possible tracks of the standards.

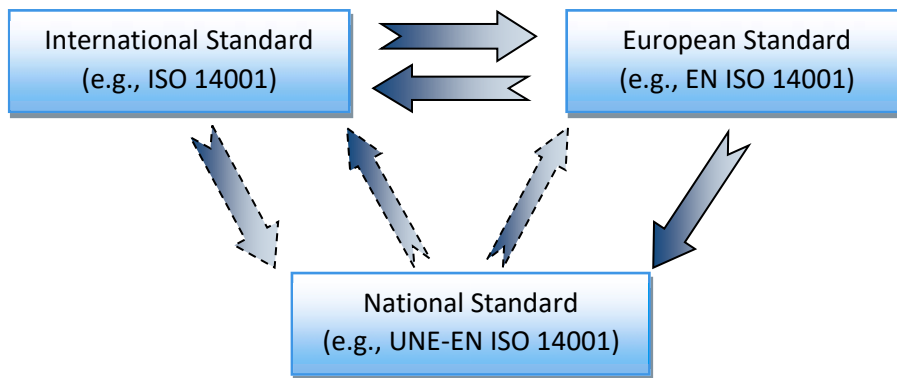


Figure 1. Possible tracks of standards adoption

Therefore, the code of any standard is the combination of the above-mentioned issues and could be explained as shown in Figure 2.

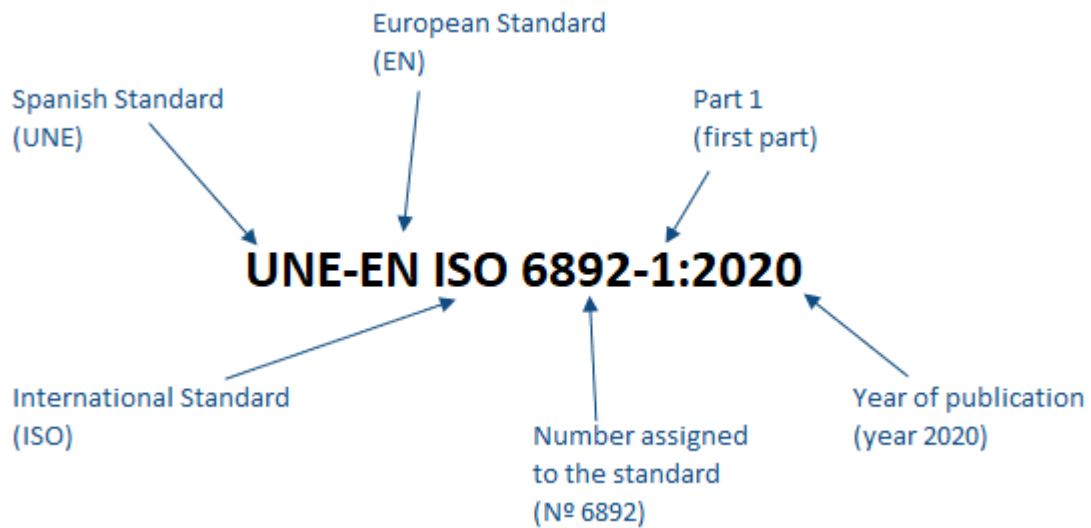


Figure 2. Example of identification of elements in the code of a standard

## 2. Methodology used to prepare the report

The methodology used for the identification of standards and standards under development relevant for the SALEMA project is described as follows. In order to structure the search, two kinds of searches have been made: key concepts and International Classification of Standards (ICS).

### 2.1. Product description

Many strategically important industrial ecosystems in the European Union depend on a reliable supply of sustainable raw materials. Raw Materials and advanced materials in the context of the Circular Economy are vital for European competitiveness and innovation capacity.

The European Green Deal poses a two-pronged challenge for the automotive industry: migrating to solutions based in light structures, requiring lightweight concepts and light materials, while at the same time avoiding dependence towards the importation of these advanced materials. Answering this double challenge with a single solution is the key to consolidating the future of a sector generating 7% of the EUs GDP.

As defined in the SALEMA Project, the outputs will be new tailored-made Aluminium alloys with a higher amount of recycled material and consuming greatly reduced CRM levels, conceived from the ground up to be transformed using a minimum adaptation of existing installations and to cover the ever-increasing requirements of the high added value European vehicle industry.

Therefore, the primary objective of SALEMA is to demonstrate a non-CRM dependent aluminium industrial ecosystem. This is to be accomplished by substituting primary CRMs with alternative and commonly available elements, and with resources embedded in domestic scrap. Involving all steps from alloy design, production, and transformation to scrap disposal, SALEMA will demonstrate, by validating and implementing a circular economy model, the feasibility of the proposed solutions in one of Europe's crucial economic sectors: the automotive industry at large and the electric vehicle (EV) in particular.

### 2.2. Key concepts

The first search has been made looking for key concepts in the title and scope of the documents. A list of key concepts was elaborated by UNE to act as a starting point for the identification of standardization areas, selecting key concepts related to the aims and goals of the project. This initial list was shared with SALEMA project partners, who were asked to provide their feedback.

The list was completed taking into consideration the comments and the suggestions received from partners, resulting in the following key concept collection. See Table 4.

**Table 4. List of key concepts acting as starting point for the identification of standardization areas**

Key concepts
aluminium alloys
automation processes
automotive sector
chemical analysis
circular economy



Key concepts
corrosion testing
electric vehicle
environment management
industrial processes
Life Cycle Assessment (LCA)
light metals
mechanical testing
methods of testing
raw materials
recyclability

A search using the aforementioned key concepts yielded a substantial number of hits. The detection of these standards made the identification of the relevant technical bodies (TC, SC and WG) responsible for their drafting possible. After that, a search was made within the work program of each technical body to find standards not discovered in the initial search. Using multiple search engines gave enhanced coverage of the search space.

### 2.3. International Classification for Standards (ICS)

The second search has been made looking for documents with defined ICS (International Classification for Standards) which is “intended to serve as a structure for catalogues of international, regional and national standards and other normative documents, and as a basis for standing-order systems for international, regional and national standards. It may also be used for classifying standards and normative documents in databases, libraries, etc.”

Therefore, the relation between the ICS and the respective key concepts has helped on the searching of the standards that could be references for the overall scope of the project.

The ICS is a hierarchical classification which consists of three levels. Level 1 covers 40 fields of activity in standardization, e.g., road vehicle engineering, agriculture, metallurgy. Each field has a two-digit notation, e.g.

#### *43 Road Vehicle Engineering*

The fields are subdivided into 392 groups (level 2). The notation of a group consists of the field notation and a three-digit group number, separated by a point, e.g.

#### *43.040 Road vehicle systems*

144 of the 392 groups are further divided into 909 sub-groups (level 3). The notation of a sub-group consists of the group notation and a two-digit number, separated by a point, e.g.



*43.040.20 Lighting, signalling, and warning devices*

The searching of ICS is based in the relevant key concepts given in Table 5.

**Table 5. List of ICS acting as starting point for the identification of standardization areas**

ICS	Description
13.020.60	Product life cycles
13.030.50	Recycling
25.020	Manufacturing Forming Processes
25.040.01	Industrial automation systems in general
25.040.40	Industrial process measurement and control
43.020	Road vehicles in general
43.020	Motor vehicle recycling
43.120	Electric road vehicles
77.040	Testing of metals
77.060	Corrosion of metals
77.120.10	Aluminium and aluminium alloys
91.080.17	Aluminium structures



### 3. Standardization related to SALEMA project

#### 3.1. General

The most relevant aspect for SALEMA is the technical body within CEN or ISO responsible for the standards. This is because a new deliverable with recommendations on how to link the results of SALEMA with standardization is foreseen in the future (M36) and is most efficiently conducted by linking to the work of active technical bodies. For obvious reasons, the evolution of an existing standard requires cooperation with the technical body responsible for it.

Once the relevant technical bodies were identified, they were included in a summary table. The report is structured in standardization areas for which relevant standardization technical committees (TCs) and other technical bodies within them were found. Published standards and standards under development were identified for each standardization area, together with the technical committee responsible for the respective standards. They are included in this deliverable (See Clause 3.2 and 3.3).

As explained before, ISO and CEN can publish the same standards under the Vienna Agreement. In such cases, CEN standards and TCs have been prioritized in the categorization, as CEN offers the possibility of establishing a “liaison” with a TC to facilitate the collaboration between European standardization and the research and innovation community, but ISO does not offer this option. Thanks to the liaison, a project representative may participate in the meetings of the TC and the WGs as an observer, ensuring synergies between the project and the world of standardization, even proposing the drafting of new standards.

#### 3.2. Technical Committees identification

Table 6 includes a list of the European and international committees, subcommittees and working groups that have been identified as technical bodies working on issues relevant to the SALEMA project.

To facilitate the activity, the key concepts have been grouped into three large areas, namely:

- 1- Materials and Tests. It includes aluminium alloys, light metals, raw materials, methods of testing, mechanical testing, chemical analysis, and corrosion testing,
- 2- Automotive sector and Industrial process. It includes automotive sector, electric vehicle, recyclability, industrial processes, and automation processes.
- 3- Horizontal topics. It includes Life Cycle Assessment (LCA), environment management, and circular economy.





Table 6. List of European and international committees related to SALEMA project

Subject (Key concepts)	European TC	Title	
<b>MATERIALS AND TESTS:</b>  aluminium alloys light metals raw materials methods of testing mechanical testing chemical analysis corrosion testing	CEN/TC 121	Welding and allied processes	
	CEN/TC 132	Aluminium and aluminium alloys	
	CEN/TC 138	Non-destructive testing (NDT)	
	CEN/TC 250/SC 9	Eurocode 9: Design of aluminium structures	
	CEN/TC 262	Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys	
	CEN/TC 459/SC 1	ECISS. Test methods for steel (other than chemical analysis)	
		<b>International TC</b>	<b>Title</b>
		ISO/TC 79	Light metals and their alloys
		ISO/TC 135	Non-destructive testing (NDT)
		ISO/TC 156	Corrosion of metals and alloys
	ISO/TC 164	Mechanical testing of metals	
Subject (Key concepts)	European TC	Title	
<b>AUTOMOTIVE SECTOR AND INDUSTRIAL PROCESS:</b>  automotive sector electric vehicle recyclability automation processes industrial processes	CEN/WS 113	Framework linking dismantled parts with new design components for the automotive industry in a circular economy model	
	CLC/TC 65X	Industrial-process measurement, control and automation	
	CEN/TC 310	Road vehicles	
		<b>International TC</b>	<b>Title</b>
		ISO/TC 22	Road vehicles
		ISO/TC 22/SC 37	Electrically propelled vehicles
Subject (Key concepts)	European TC	Title	
<b>HORIZONTAL TOPICS:</b>  Life Cycle Assessment (LCA) circular economy environment management	CEN/SS S26	Environmental management	
	CEN/CLC/JTC 10	Material efficiency aspects for products in scope of Ecodesign legislation	
		<b>International TC</b>	<b>Title</b>
		ISO/TC 207	Environmental management
		ISO/TC 323	Circular economy

### 3.3. Identified Standards sorted by Technical Committee

Subsequent to the application of the previous methodology explained in clause 2.2 and 2.3, a list of relevant standards has been obtained.

In order to present the list in a coherent and understandable way, the list of relevant standards has been grouped by the responsible Technical Committee.

#### CEN/TC 121. Welding and allied processes

##### Scope

Standardization of welding by all processes, as well as allied processes; these standards include terminology, definitions, and the symbolic representation of welds on drawings, apparatus and equipment for welding, raw materials (gas, parent, and filler metals) welding processes and rules, methods of test and control, design of welded joints, qualification and/or education of welding



personnel, as well as safety and health. Excluded are electrical arc welding equipment and electrical safety matters related to welding which are the responsibility of CENELEC/TC 26.

**Table 7. List of CEN/TC 121 standards and standards under development**

Standard reference	Title	Status
EN 1011-4:2000	Welding - Recommendations for welding of metallic materials - Part 4: Arc welding of aluminium and aluminium alloys	
EN 1011-4:2000/A1:2003	Welding - Recommendations for welding of metallic materials - Part 4: Arc welding of aluminium and aluminium alloys	
EN 14532-3:2004	Welding consumables - Test methods and quality requirements - Part 3: Conformity assessment of wire electrodes, wires and rods for welding of aluminium alloys	
EN ISO 9606-2:2004	Qualification test of welders - Fusion welding - Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)	Revision under development prA11
EN ISO 10675-2:2017	Non-destructive testing of welds - Acceptance levels for radiographic testing - Part 2: Aluminium and its alloys (ISO 10675-2:2017)	

## CEN/TC 132. Aluminium and aluminium alloys

### Scope

Standardization in the field of unwrought, wrought and cast products made from aluminium and aluminium alloys, particularly: - designations; - terms and definitions; - material specifications; - technical conditions of delivery; - dimensions and tolerances; - methods of testing specific to aluminium.

**Table 8. List of CEN/TC 132 standards and standards under development**

Standard reference	Title	Status
CEN/TR 16748:2014	Aluminium and aluminium alloys - Mechanical potential of Al-Si alloys for high pressure, low pressure and gravity die casting	
CEN/TR 16749:2014	Aluminium and aluminium alloys - Classification of Defects and Imperfections in High Pressure, Low Pressure and Gravity Die Cast Products	
EN 485-3:2003	Aluminium and aluminium alloys - Sheet, strip and plate - Part 3: Tolerances on dimensions and form for hot-rolled products	
EN 485-4:1993	Aluminium and aluminium alloys - Sheet, strip and plate - Part 4: Tolerances on shape and dimensions for cold-rolled products	
EN 486:2009	Aluminium and aluminium alloys - Extrusion ingots - Specifications	
EN 487:2009	Aluminium and aluminium alloys - Rolling ingots - Specifications	
EN 515:2017	Aluminium and aluminium alloys - Wrought products - Temper designations	
EN 570:2007	Aluminium and aluminium alloys - Impact extrusion slugs obtained from wrought products - Specification	



Standard reference	Title	Status
EN 573-1:2004	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 1: Numerical designation system	
EN 573-2:1994	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 2: Chemical symbol based designation system	
EN 573-3:2019	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition and form of products	Revision under development prA1
EN 573-5:2007	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 5: Codification of standardized wrought products	
EN 575:1995	Aluminium and aluminium alloys - Master alloys produced by melting - Specifications	
EN 576:2003	Aluminium and aluminium alloys - Unalloyed aluminium ingots for remelting - Specifications	
EN 577:1995	Aluminium and aluminium alloys - Liquid metal - Specifications	
EN 683-1:2006	Aluminium and aluminium alloys - Finstock - Part 1: Technical conditions for inspection and delivery	
EN 683-2:2006	Aluminium and aluminium alloys - Finstock - Part 2: Mechanical properties	
EN 683-3:2006	Aluminium and aluminium alloys - Finstock - Part 3: Tolerances on dimensions and form	
EN 755-1:2016	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 1: Technical conditions for inspection and delivery	
EN 755-2:2016	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties	
EN 755-3:2008	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 3: Round bars, tolerances on dimensions and form	
EN 755-4:2008	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 4: Square bars, tolerances on dimensions and form	
EN 755-5:2008	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 5: Rectangular bars, tolerances on dimensions and form	
EN 755-6:2008	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 6: Hexagonal bars, tolerances on dimensions and form	
EN 941:2014	Aluminium and aluminium alloys - Circle and circle stock for the production of general applications - Specifications	
EN 1386:2007	Aluminium and aluminium alloys - Tread plate - Specifications	
EN 1592-1:1997	Aluminium and aluminium alloys - HF seam welded tubes - Part 1: Technical conditions for inspection and delivery	
EN 1592-2:1997	Aluminium and aluminium alloys - HF seam welded tubes - Part 2: Mechanical properties	



Standard reference	Title	Status
EN 1592-3:1997	Aluminium and aluminium alloys - HF seam welded tubes - Part 3: Tolerances on dimensions and form for circular tubes	
EN 1592-4:1997	Aluminium and aluminium alloys - HF seam welded tubes - Part 4: Tolerances on dimensions and form for square, rectangular and shaped tubes	
EN 1669:1996	Aluminium and aluminium alloys - Test methods - Earing test for sheet and strip	
EN 1780-1:200	Aluminium and aluminium alloys - Designation of alloyed aluminium ingots for remelting, master alloys and castings - Part 1: Numerical designation system	
EN 1780-2:2002	Aluminium and aluminium alloys - Designation of alloyed aluminium ingots for remelting, master alloys and castings - Part 2: Chemical symbol-based designation system	
EN 1780-3:2002	Aluminium and aluminium alloys - Designation of alloyed aluminium ingots for remelting, master alloys and castings - Part 3: Writing rules for chemical composition	
EN 12020-1:2008	Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 - Part 1: Technical conditions for inspection and delivery	Revision under development prEN 12020-1
EN 12020-2:2016	Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 - Part 2: Tolerances on dimensions and form	Revision under development prEN 12020-2
EN 12258-1:2012	Aluminium and aluminium alloys - Terms and definitions - Part 1: General terms	
EN 12258-2:2004	Aluminium and aluminium alloys - Terms and definitions - Part 2: Chemical analysis	
EN 12258-3:2003	Aluminium and aluminium alloys - Terms and definitions - Part 3: Scrap	
EN 12258-4:2004	Aluminium and aluminium alloys - Terms and definitions - Part 4: Residues of the aluminium industry	
EN 12482-1:1998	Aluminium and aluminium alloys - Reroll stock for general applications - Part 1: Specifications for hot rolled reroll stock	
EN 12482-2:1998	Aluminium and aluminium alloys - Reroll stock for general applications - Part 2: Specifications for cold rolled reroll stock	
EN 12487:2007	Corrosion protection of metals - Rinsed and non-rinsed chromate conversion coatings on aluminium and aluminium alloys	Corrigendum AC:2008
EN 13920-1:2003	Aluminium and aluminium alloys - Scrap - Part 1: General requirements, sampling and tests	
EN 13920-11:2003	Aluminium and aluminium alloys - Scrap - Part 11: Scrap consisting of aluminium-copper radiators	
EN 13920-4:2003	Aluminium and aluminium alloys - Scrap - Part 4: Scrap consisting of one single wrought alloy	
EN 13920-5:2003	Aluminium and aluminium alloys - Scrap - Part 5: Scrap consisting of two or more wrought alloys of the same series	



Standard reference	Title	Status
EN 13920-6:2003	Aluminium and aluminium alloys - Scrap - Part 6: Scrap consisting of two or more wrought alloys	
EN 13920-7:2003	Aluminium and aluminium alloys - Scrap - Part 7: Scrap consisting of castings	
EN 13920-8:2003	Aluminium and aluminium alloys - Scrap - Part 8: Scrap consisting of non-ferrous materials from shredding processes destined to aluminium separation processes	
EN 13920-9:2003	Aluminium and aluminium alloys - Scrap - Part 9: Scrap from aluminium separation processes of non-ferrous shredded materials	
EN 13957:2008	Aluminium and aluminium alloys - Extruded round, coiled tube for general applications - Specification	
EN 13958:2008	Aluminium and aluminium alloys - Cold drawn, round, coiled tube for general applications - Specification	
EN 14242:2004	Aluminium and aluminium alloys - Chemical analysis - Inductively coupled plasma optical emission spectral analysis	Revision under development prEN 14242 rev
EN 14361:2004	Aluminium and aluminium alloys - Chemical analysis - Sampling from metal melts	Revision under development prEN 14361 rev
EN 15530:2008	Aluminium and aluminium alloys - Environmental aspects of aluminium products - General guidelines for their inclusion in standards	

## CEN/TC 138. Non-destructive testing (NDT)

### Scope

Standardization of the terminology, equipment and general principles of all recognised methods for non-destructive testing including: radiographic testing; ultrasonic testing; eddy current testing; penetrant testing; magnetic particle testing; acoustic emission testing; visual testing; thermographic testing; leak testing; X-ray diffraction methods; as well as standardization of the principles of qualification and certification of non-destructive testing personnel and methodology for qualification of non-destructive testing.

Table 9. List of CEN/TC 138 standards and standards under development

Standard reference	Title	Status
EN 15317:2013	Non-destructive testing. Ultrasonic testing. Characterization and verification of ultrasonic thickness measuring equipment	
EN ISO 12706:2009	Non-destructive testing - Penetrant testing - Vocabulary (ISO 12706:2009)	
EN ISO 16810:2014	Non-destructive testing. Ultrasonic testing. General principles (ISO 16810:2012)	
EN ISO 16811:2014	Non-destructive testing - Ultrasonic testing - Sensitivity and range setting (ISO 16811:2012)	



Standard reference	Title	Status
EN ISO 16826:2014	Non-destructive testing - Ultrasonic testing - Examination for discontinuities perpendicular to the surface (ISO 16826:2012)	
EN ISO 16827:2014	Non-destructive testing - Ultrasonic testing - Characterization and sizing of discontinuities (ISO 16827:2012)	
EN ISO 23243:2020	Non-destructive testing - Ultrasonic testing with arrays - Vocabulary (ISO 23243:2020)	
EN ISO 3452-1:2021	Non-destructive testing - Penetrant testing - Part 1: General principles (ISO 3452-1:2021)	
EN ISO 3452-2:2021	Non-destructive testing - Penetrant testing - Part 2: Testing of penetrant materials (ISO 3452-2:2021)	
EN ISO 3452-3:2013	Non-destructive testing - Penetrant testing - Part 3: Reference test blocks (ISO 3452-3:2013)	
EN ISO 3452-4:1998	Non-destructive testing - Penetrant testing - Part 4: Equipment (ISO 3452-4:1998)	
EN ISO 3452-5:2008	Non-destructive testing - Penetrant testing - Part 5: Penetrant testing at temperatures higher than 50 degrees C (ISO 3452-5:2008)	
EN ISO 3452-6:2008	Non-destructive testing - Penetrant testing - Part 6: Penetrant testing at temperatures lower than 10 degrees C (ISO 3452-6:2008)	
EN ISO 5577:2017	Non-destructive testing. Ultrasonic testing. Vocabulary (ISO 5577:2017)	

## CEN/TC 250/SC 9- Eurocode 9: Design of aluminium structures

### Scope

Standardization of structural and geotechnical design rules for building and civil engineering works taking into account the relationship between design rules and the assumptions to be made for materials, execution and control. SC 9: Design of aluminium structures.

Table 10. List of CEN/TC 250/SC 9 standards and standards under development

Standard reference	Title	Status
EN 1999-1-1:2007	Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules	
EN 1999-1-2:2007	Eurocode 9 - Design of aluminium structures - Part 1-2: Structural fire design	
EN 1999-1-1:2007/A1:2009	Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules	Revision under development prEN 1999-1-1
EN 1999-1-1:2007/A2:2013	Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules	Revision under development prEN 1999-1-1
EN 1992-1-2:2004/AC:2008	Eurocode 2: Design of concrete structures - Part 1-2: General rules - Structural fire design	Revision under development prEN 1999-1-2



Standard reference	Title	Status
EN 1999-1-3:2007/A1:2011	Eurocode 9: Design of aluminium structures - Part 1-3: Structures susceptible to fatigue	Revision under development prEN 1999-1-3
EN 1999-1-4:2007/A1:2011	Eurocode 9: Design of aluminium structures - Part 1-4: Cold-formed structural sheeting	Revision under development prEN 1999-1-4
Pending to publish	Eurocode 9 - Design of aluminium structures - Part 1-5: Shell structures	prEN 1999-1-5

## CEN/TC 262. Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys

### Scope

Standardization in the field of metallic and other inorganic coatings, for corrosion protection of metals and for decorative and engineering purposes.

**Table 101. List of CEN/TC 262 standards and standards under development**

Standard reference	Title	Status
EN ISO 7539-1:2012	Corrosion of metals and alloys - Stress corrosion testing - Part 1: General guidance on testing procedures (ISO 7539-1:2012)	
EN ISO 7539-10:2020	Corrosion of metals and alloys - Stress corrosion testing - Part 10: Reverse U-bend method (ISO 7539-10:2020)	
EN ISO 7539-11:2014	Corrosion of metals and alloys - Stress corrosion testing - Part 11: Guidelines for testing the resistance of metals and alloys to hydrogen embrittlement and hydrogen-assisted cracking (ISO 7539-11:2013)	
EN ISO 7539-2:1995	Corrosion of metals and alloys - Stress corrosion testing - Part 2: Preparation and use of bent-beam specimen (ISO 7539-2:1989)	
EN ISO 7539-3:1995	Corrosion of metals and alloys - Stress corrosion testing - Part 3: Preparation and use of U-bend specimens (ISO 7539-3:1989)	
EN ISO 7539-4:1995	Corrosion of metals and alloys - Stress corrosion testing - Part 4: Preparation and use of uniaxially loaded tension specimens (ISO 7539-4:1989)	
EN ISO 7539-5:1995	Corrosion of metals and alloys - Stress corrosion testing - Part 5: Preparation and use of C-ring specimens (ISO 7539-5:1989)	
EN ISO 7539-6:2018	Corrosion of metals and alloys - Stress corrosion testing - Part 6: Preparation and use of precracked specimens for tests under constant load or constant displacement (ISO 7539-6:2018, Corrected version 2018-11)	
EN ISO 7539-7:2005	Corrosion of metals and alloys - Stress corrosion testing - Part 7: Method for slow strain rate testing (ISO 7539-7:2005)	



Standard reference	Title	Status
EN ISO 7539-8:2008	Corrosion of metals and alloys - Stress corrosion testing - Part 8: Preparation and use of specimens to evaluate weldments (ISO 7539-8:2000)	
EN ISO 7539-9:2021	Corrosion of metals and alloys - Stress corrosion testing - Part 9: Preparation and use of pre-cracked specimens for tests under rising load or rising displacement (ISO 7539-9:2021)	
EN ISO 8565:2011	Metals and alloys - Atmospheric corrosion testing - General requirements (ISO 8565:2011)	
EN ISO 11846:2008	Corrosion of metals and alloys - Determination of resistance to intergranular corrosion of solution heat-treatable aluminium alloys (ISO 11846:1995)	
EN ISO 15329:2008	Corrosion of metals and alloys - Anodic test for evaluation of intergranular corrosion susceptibility of heat-treatable aluminium alloys (ISO 15329:2006)	

## CEN/TC 310. Road vehicles

### Scope

Preparation of road vehicle European Standards answering essentially to European mandates.

*Since the automotive industry is acting globally, the international level (ISO/TC 22 Road vehicles) shall have top priority for any other standardization projects.*

## CEN/TC 459. ECISS - European Committee for Iron and Steel Standardization

### Scope

Standardization on the definition, classification, testing, chemical analysis and technical delivery requirements for iron and steel products

The involved structure is the following:

### CEN/TC 459/SC 1. Test methods for steel (other than chemical analysis)

#### Scope

Standardization of general methods for mechanical testing, physico-chemical and non-destructive testing including if necessary, the verification and calibration of testing equipment that is used to determine the properties of the steel.

NOTE 1: if the test standard is applicable to all metallic materials (in particular cases where the European Standard is based on an International Standard applicable to all metallic materials) the scope can be extended to all metallic materials. NOTE 2: where product specific testing is required, test methods must be prepared by the appropriate Technical Committees, unless otherwise decided by ECISS/COCOR.





Table 1211. List of CEN/TC 459/SC 1 standards and standards under development

Standard reference	Title	Status
EN ISO 6892-1:2019	Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2019)	
EN ISO 12004-1:2020	Metallic materials - Determination of forming-limit curves for sheet and strip - Part 1: Measurement and application of forming-limit diagrams in the press shop (ISO 12004-1:2020)	
EN ISO 12004-2:2021	Metallic materials - Determination of forming-limit curves for sheet and strip - Part 2: Determination of forming-limit curves in the laboratory (ISO 12004-2:2021)	
EN ISO 16808:2014	Metallic materials - Sheet and strip - Determination of biaxial stress-strain curve by means of bulge test with optical measuring systems (ISO 16808:2014)	
EN ISO 18265:2013	Metallic materials - Conversion of hardness values (ISO 18265:2013)	
EN ISO 26203-1:2018	Metallic materials - Tensile testing at high strain rates - Part 1: Elastic-bar-type systems (ISO 26203-1:2018)	
EN ISO 26203-2:2011	Metallic materials - Tensile testing at high strain rates - Part 2: Servo-hydraulic and other test systems (ISO 26203-2:2011)	

## CEN/CLC/JTC 10. Material efficiency aspects for products in scope of Ecodesign legislation

### Scope

Material efficiency aspects for products in scope of the Ecodesign Directive 2009/125/EC and its future revisions. Producing generic and horizontal CEN-CENELEC publications covering aspects such as assessment methods, design rules, dematerialization, digitalization, and transfer of information on a variety of material efficiency topics, in particular (but not limited to): Extending product lifetime; Ability to reuse components or recycle materials (\*) from products at End-of-Life; Use of reused components and/or recycled materials (\*) in products. Note (\*): Includes coverage of the European Commission defined list of Critical Raw Materials (CRM).

Table 123. List of CEN/CLC/JTC 10 standards and standards under development

Standard reference	Title	Status
EN 45555:2019	General methods for assessing the recyclability and recoverability of energy-related products	
EN 45557:2020	General method for assessing the proportion of recycled material content in energy-related products	
EN 45558:2019	General method to declare the use of critical raw materials in energy-related products	
EN 45559:2019	Methods for providing information relating to material efficiency aspects of energy-related products	



## CLC/TC 65X. Industrial-process measurement, control and automation

### Scope

To contribute, support and coordinate the preparation of international standards for systems and elements used for industrial process measurement, control and automation at CENELEC level. To coordinate standardisation activities which affect integration of components and functions into such systems including safety and security aspects. This CENELEC work of standardisation is to be carried out for equipment and systems and closely coordinated with IEC TC65 and its subcommittees with the objective of avoiding any duplication of work while honouring standing agreements between CENELEC and IEC.

**Table 14. List of CLC/TC 65X standards and standards under development**

Standard reference	Title	Status
CLC IEC/TR 63069:2020	Industrial-process measurement, control and automation - Framework for functional safety and security	
EN 61069-1:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 1: Terminology and basic concepts	
EN 61069-2:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 2: Assessment methodology	
EN 61069-3:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 3: Assessment of system functionality	
EN 61069-4:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 4: Assessment of system performance	
EN 61069-5:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 5: Assessment of system dependability	
EN 61069-6:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 6: Assessment of system operability	
EN 61069-7:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 7: Assessment of system safety	
EN 61069-8:2016	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 8: Assessment of other system properties	
EN 62381:2012	Automation systems in the process industry - Factory acceptance test (FAT), site acceptance test (SAT) and site integration test (SIT)	
EN IEC 62443-4-1:2018	Security for industrial automation and control systems - Part 4-1: Secure product development lifecycle requirements	
EN IEC 62832-1:2020	Industrial-process measurement, control and automation - Digital factory framework - Part 1: General principles	



Standard reference	Title	Status
EN IEC 62832-2:2020	Industrial-process measurement, control and automation - Digital factory framework - Part 2: Model elements	
EN IEC 62832-3:2020	Industrial-process measurement, control and automation - Digital factory framework - Part 3: Application of Digital Factory for life cycle management of production systems	
EN IEC 62890:2020	Industrial-process measurement, control and automation - Life-cycle-management for systems and components	
EN ISO 11354-1:2011	Advanced automation technologies and their applications - Requirements for establishing manufacturing enterprise process interoperability - Part 1: Framework for enterprise interoperability (ISO 11354-1:2011)	

## CEN/SS S26. Environmental Management

### Scope

Standardization in the field of environmental management systems.

*All the ISO standards from ISO/TC 207 are adopted as EN ISO standards in this CEN/SS. These standards are developed in ISO/TC 207 "Environmental management".*

## CEN/WS 113. Framework linking dismantled parts with new design components for the automotive industry in a circular economy model

Table 135. List of CEN/WS 113 standards and standards under development

Standard reference	Title	Status
CWA 17806:2021	Design Circular Framework Setting - Composite recovery design solutions in the automotive industry	
CWA 17807:2021	Dismantling methods and protocols in a Circular Economy Framework - Composite recovery in the automotive industry	

## ISO/TC 22. Road vehicles

### Scope

All questions of standardization concerning compatibility, interchangeability and safety, with particular reference to terminology and test procedures (including the characteristics of instrumentation) for evaluating the performance of the following types of road vehicles and their equipment as defined in the relevant items of Article 1 of the convention on Road Traffic, Vienna in 1968 concluded under the auspices of the United Nations: mopeds (item m); motor cycles; motor vehicles; trailers; semi-trailers; light trailers; combination vehicles; articulated vehicles.



Table 16. List of ISO/TC 22 standards and standards under development

Standard reference	Title	Status
ISO 22628:2002	Road vehicles — Recyclability and recoverability — Calculation method	

## ISO/TC 22/SC 37. Electrically propelled vehicles

### Scope

Specific aspects of electrically propelled road vehicles, electric propulsion systems, related components and their vehicle integration.

Table 17. List of ISO/TC 22/SC 37 standards and standards under development

Standard reference	Title	Status
ISO 21782-5:2021	Electrically propelled road vehicles — Test specification for electric propulsion components — Part 5: Operating load testing of the motor system	
ISO 8715:2001	Electric road vehicles — Road operating characteristics	
ISO 8714:2002	Electric road vehicles — Reference energy consumption and range — Test procedures for passenger cars and light commercial vehicles	
ISO 6469-3:2018	Electrically propelled road vehicles — Safety specifications — Part 3: Electrical safety	Corrigendum Amd 1:2020
ISO 6469-4:2015	Electrically propelled road vehicles — Safety specifications — Part 4: Post crash electrical safety	
ISO 17409:2020	Electrically propelled road vehicles — Conductive power transfer — Safety requirements	
ISO 19363:2020	Electrically propelled road vehicles — Magnetic field wireless power transfer — Safety and interoperability requirements	

## ISO/TC 79. Light metals and their alloys

### Scope

Standardization in the field of aluminium, magnesium, titanium, their alloys (i.e., alloys in which aluminium, magnesium or titanium is the principal element) and aluminium ores (aluminium ores and minerals used either for obtaining the metal aluminium and the intermediate aluminium compounds, or by other industries).

Table 1814. List of ISO/TC 79 standards and standards under development

Standard reference	Title	Status
ISO 10049:2019	Aluminium alloy castings — Visual method for assessing porosity	



Standard reference	Title	Status
ISO 17615:2007	Aluminium and aluminium alloys — Alloyed ingots for remelting — Specifications	Corrigendum Cor 1:2008
ISO 1784:1976	Aluminium alloys — Determination of zinc — EDTA titrimetric method	
ISO 2297:1973	Chemical analysis of aluminium and its alloys — Complexometric determination of magnesium	
ISO 2355:1972	Chemical analysis of magnesium and its alloys — Determination of rare earths — Gravimetric method	
ISO 2637:1973	Aluminium and its alloys — Determination of zinc — Atomic absorption method	
ISO 3134-1:1985	Light metals and their alloys — Terms and definitions — Part 1: Materials	
ISO 3134-2:1985	Light metals and their alloys — Terms and definitions — Part 2: Unwrought products	
ISO 3134-3:1985	Light metals and their alloys — Terms and definitions — Part 3: Wrought products	
ISO 3134-4:1985	Light metals and their alloys — Terms and definitions — Part 4: Castings	
ISO 3134-5:1981	Light metals and their alloys — Terms and definitions — Part 5: Methods of processing and treatment	
ISO 3256:1977	Aluminium and aluminium alloys — Determination of magnesium — Atomic absorption spectrophotometric method	
ISO 3522:2007	Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties	
ISO 3978:1976	Aluminium and aluminium alloys — Determination of chromium — Spectrophotometric method using diphenylcarbazide, after extraction	
ISO 3979:1977	Aluminium and aluminium alloys — Determination of nickel — Spectrophotometric method using dimethylglyoxime	
ISO 3980:1977	Aluminium and aluminium alloys — Determination of copper — Atomic absorption spectrophotometric method	
ISO 3981:1977	Aluminium and aluminium alloys — Determination of nickel — Atomic absorption spectrophotometric method	
ISO 4192:1981	Aluminium and aluminium alloys — Determination of lead content — Flame atomic absorption spectrometric method	
ISO 4193:1981	Aluminium and aluminium alloys — Determination of chromium content — Flame atomic absorption spectrometric method	
ISO 5194:1981	Aluminium and aluminium alloys — Determination of zinc content — Flame atomic absorption spectrometric method	
ISO 6827:1981	Aluminium and aluminium alloys — Determination of titanium content — Diantipyrylmethane photometric method	



Standard reference	Title	Status
ISO 793:1973	Aluminium and aluminium alloys — Determination of iron — Orthophenanthroline photometric method	
ISO 797:1973	Aluminium and aluminium alloys — Determination of silicon — Gravimetric method	
ISO 808:1973	Aluminium and aluminium alloys — Determination of silicon — Spectrophotometric method with the reduced silicomolybdc complex	
ISO 886:1973	Aluminium and aluminium alloys — Determination of manganese — Photometric method (Manganese content between 0,005 and 1,5 %)	
ISO 9915:1992	Aluminium alloy castings — Radiography testing	
ISO 9916:1991	Aluminium alloy and magnesium alloy castings — Liquid penetrant inspection	
ISO/R 2298:1972	Alluminium and its alloys — Determination of chromium — Spectrophotometric method using diphenylcarbazine	
ISO/R 798:1968	Chemical analysis of aluminium and its alloys — Gravimetric determination of zinc in aluminium alloys (zinc content between 0.50 and 6.5 %)	
ISO/R 827:1968	Mechanical property limits for extruded products of aluminium and aluminium alloys — Addendum 1	Addendum 1 Add 1:1971
ISO/TR 3134-1:1977	Light metals and their alloys — Terms and definitions — Part 1: Materials	
ISO/TR 3134-2:1977	Light metals and their alloys — Terms and definitions — Part 2: Unwrought products	
ISO/TR 3134-3:1977	Light metals and their alloys — Terms and definitions — Part 3: Wrought products	
ISO/TR 3134-4:1977	Light metals and their alloys — Terms and definitions — Part 4: Castings	
ISO/TR 7242:1981	Chemical analysis of light metals and their alloys — Statistical interpretation of inter-laboratory trials	

## ISO/TC 135. Non-destructive testing (NDT)

### Scope

Standardization covering non-destructive testing as applied generally to constructional materials, components, and assemblies, by means of glossary of terms; methods of test; performance specifications for testing equipment and ancillary apparatus.

Excluded: quality levels; and specifications for electrical equipment and apparatus, which fall within the range of IEC Committees.



Table 1915. List of ISO/TC 135 standards and standards under development

Standard reference	Title	Status
ISO 11699-1:2008	Non-destructive testing — Industrial radiographic film — Part 1: Classification of film systems for industrial radiography	
ISO 11699-2:2018	Non-destructive testing — Industrial radiographic films — Part 2: Control of film processing by means of reference values	
ISO 16809:2017	Non-destructive testing — Ultrasonic thickness measurement	
ISO 16810:2012	Non-destructive testing — Ultrasonic testing — General principles	
ISO 16826:2012	Non-destructive testing — Ultrasonic testing — Examination for discontinuities perpendicular to the surface	
ISO 16827:2012	Non-destructive testing — Ultrasonic testing — Characterization and sizing of discontinuities	
ISO 19232-3:2004	Non-destructive testing — Image quality of radiographs — Part 3: Image quality classes for ferrous metals	
ISO 23243:2020	Non-destructive testing — Ultrasonic testing with arrays — Vocabulary	
ISO 5576:1997	Non-destructive testing — Industrial X-ray and gamma-ray radiology — Vocabulary	
ISO 5577:2017	Non-destructive testing — Ultrasonic testing — Vocabulary	
ISO 5579:2013	Non-destructive testing — Radiographic testing of metallic materials using film and X- or gamma rays — Basic rules	
ISO 5580:1985	Non-destructive testing — Industrial radiographic illuminators — Minimum requirements	
ISO/TS 16829:2017	Non-destructive testing — Automated ultrasonic testing — Selection and application of systems	

## ISO/TC 156 Corrosion of metals and alloys

### Scope

Standardization in the field of corrosion of metals and alloys including corrosion test methods, corrosion prevention methods and corrosion control engineering life cycle. General coordination of activities in these fields within ISO.

*There isn't any list of ISO/TC 156 standards because all the identified ISO standards have been adopted as EN ISO standards by the CEN/TC 262 Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys, so they are already included in the list of CEN/TC 262 standards.*



## ISO/TC 164. Mechanical testing of metals

### Scope

*Standardization of methods for mechanical testing, including the verification and calibration of equipment, that are used to determine the properties of metallic materials.*

*Excluded: The responsibility for application of the method and for the results obtained.*

*Note: This does not preclude product committees from developing tests appropriate to their specific materials.*

**Table 2016. List of ISO/TC 164 standards and standards under development**

Standard reference	Title	Status
ISO 1099:2017	Metallic materials — Fatigue testing — Axial force-controlled method	
ISO 4965-1:2012	Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 1: Testing systems	
ISO 4965-2:2012	Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 2: Dynamic calibration device (DCD) instrumentation	
ISO/DTR 12105	Metallic materials — Fatigue testing — General principles	
ISO 12106:2017	Metallic materials — Fatigue testing — Axial-strain-controlled method	
ISO 12107:2012	Metallic materials — Fatigue testing — Statistical planning and analysis of data	
ISO 12108:2018	Metallic materials — Fatigue testing — Fatigue crack growth method	
ISO 12110-1:2013	Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 1: General principles, test method and reporting requirements	
ISO 12110-2:2013	Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 2: Cycle counting and related data reduction methods	
ISO 12111:2011	Metallic materials — Fatigue testing — Strain-controlled thermomechanical fatigue testing method	
ISO/TR 12112:2018	Metallic materials — Principles and designs for multiaxial fatigue testing	
ISO 12135:2021	Metallic materials — Unified method of test for the determination of quasistatic fracture toughness	
ISO 12737:2010	Metallic materials — Determination of plane-strain fracture toughness	
ISO 15653:2018	Metallic materials — Method of test for the determination of quasistatic fracture toughness of welds	
ISO 22407:2021	Metallic materials — Fatigue testing — Axial plane bending method	





Standard reference	Title	Status
ISO 22889:2013	Metallic materials — Method of test for the determination of resistance to stable crack extension using specimens of low constraint	

## ISO/TC 207 Environmental management

### Scope

Standardization in the field of environmental management systems and tools in support of sustainable development.

Excluded: test methods of pollutants, setting limit values and levels of environmental performance, and standardization of products.

Note: The TC for environmental management will have close cooperation with ISO / TC 176 in the field of environmental systems and audits.

**Table 2117. List of ISO/TC 207 standards and standards under development**

Standard reference	Title	Status
ISO 14020:2000	Environmental labels and declarations -- General principles	
ISO 14025:2006	Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures	
ISO 14026:2017	Environmental labels and declarations -- Principles, requirements and guidelines for communication of footprint information	
ISO 14040:2006	Environmental management -- Life cycle assessment -- Principles and framework	
ISO 14044:2006	Environmental management -- Life cycle assessment -- Requirements and guidelines	Amendment Amd 1:2017
ISO 14045:2012	Environmental management -- Eco-efficiency assessment of product systems -- Principles, requirements and guidelines	
ISO 14052:2017	Environmental management — Material flow cost accounting — Guidance for practical implementation in a supply chain	
ISO 14063:2020	Environmental management — Environmental communication — Guidelines and examples	
ISO 22628:2002	Road vehicles — Recyclability and recoverability — Calculation method	
ISO/TR 14047:2012	Environmental management -- Life cycle assessment -- Illustrative examples on how to apply ISO 14044 to impact assessment situations	
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 14027:2017	Environmental labels and declarations -- Development of product category rules	



Standard reference	Title	Status
ISO/TS 14048:2002	Environmental management -- Life cycle assessment -- Data documentation format	
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	

All these ISO standards are adopted as EN ISO standards directly by CEN through the Subsector CEN/SS S 26 Environmental management.

## ISO/TC 323. Circular economy

### Scope

Standardization in the field of Circular Economy to develop frameworks, guidance, supporting tools and requirements for the implementation of activities of all involved organizations, to maximize the contribution to Sustainable Development.

Excluded: Aspects of Circular Economy already covered by existing committees.

Note: In parallel, the ISO TC 323 works in cooperation with existing committees on subjects that may support Circular Economy.

**Table 2218. List of ISO/TC 323 standards and standards under development**

Standard reference	Title	Status
ISO/WD 59004	Circular economy — Framework and principles for implementation	Under development
ISO/WD 59010	Circular economy — Guidelines on business models and value chains	Under development
ISO/WD 59020.2	Circular economy — Measuring circularity framework	Under development
ISO/CD TR 59031	Circular economy – Performance-based approach – Analysis of cases studies	Under development
ISO/DTR 59032.2	Circular economy - Review of business model implementation	Under development
ISO/AWI 59040	Circular Economy — Product Circularity Data Sheet	Under development



## 4. Other involved organizations and relevant documents

### 4.1 American Society for Testing and Materials (ASTM)

ASTM International, formerly known as the American Society for Testing and Materials (ASTM), is recognized in the development and delivery of international voluntary consensus standards. Today, some 12.000 ASTM standards are used around the world to improve product quality, enhance safety, facilitate market access, and trade, and build consumer confidence.

ASTM's leadership in international standards development is driven by the contributions of its members: more than 30.000 technical experts representing 150 countries, which working in an open and transparent process and using ASTM's advanced electronic infrastructure, ASTM members deliver the test methods, specifications, guides, and practices that support industries and governments worldwide.

Table 2319. List of ASTM standards

Standard reference	Title
ASTM D1002 - 01	Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
ASTM E517 - 00	Standard Test Method for Plastic Strain Ratio $r$ for Sheet Metal
ASTM E2218 - 02	Standard Test Method for Determining Forming Limit Curves

### 4.2 German Association of the Automotive Industry (VDA)

VDA is the German Institute for Standardization. The VDA combines the strengths of the automotive industry and consolidates the manufacturers of passenger cars, trucks, vans and buses, the suppliers of parts and accessories, as well as the makers of trailers and bodies.

The VDA standards originate from the Association of the German Automobile Industry.

Table 2420. List of VDA standards

Standard reference	Title
VDA 238-100	Plate bending test for metallic materials
VDA 233-102	Cyclic corrosion testing standards of components in automotive construction

### 4.3 European Commission-Joint Research Centre - Institute for Environment and Sustainability

The mission of the JRC-IES is to provide scientific-technical support to the European Union's Policies for the protection and sustainable development of the European and global environment. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the



Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

The following guidance document is relevant for the environmental assessment task of this project:

- International Reference Life Cycle Data System - ILCD handbook - Recommendations for Life Cycle Impact Assessment in the European context - based on existing environmental impact assessment models and factors.

### 4.4 Product Category Rules (PCR)

Product Category Rules (PCR) are documents that provide rules, requirements, and guidelines for developing Environmental Product Declarations (EPD)\* for a specific product category. They are used as complements to the programme instructions, e.g., in terms of calculation rules, scenarios, and EPD contents. A PCR should enable different practitioners to use the PCR to generate consistent results when assessing products of the same product category.

*\* An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.*



## 5. Conclusions

Throughout this document, the current standardization context has been widely analysed, following the methodology previously described. Project partners collaboration and their feedback have been very important and useful for this analysis.

This initial analysis of the standardization landscape is useful at the very early stage of the project because it reveals already existing material and promotes the alignment with current and under development standardization work, facilitating the compatibility of the outcomes with the current market practises.

The present deliverable concerning the standardization landscape and applicable standards has identified the main topics of interest for the SALEMA project. For each topic and each technical body, the most relevant standards and standards under development have been identified and reported in tables of this report.

After the analysis of the current standardization context at European and international levels, one main conclusion may be drawn:

1.- There is a large number of European and international technical committees, as well as standards and standards under development related to SALEMA that may be useful for its development and also for its future dissemination. Despite not having found only a specific standardization technical committee whose activity impacts directly on the SALEMA project, specific tasks to be addressed in the project are related to standardization works, and several technical committees have been identified as possibly most relevant.

Depending on the assessment by SALEMA partners of the impact of the identified standardization committees on their tasks and the level of contribution that their results can represent for these committees and the development of Deliverable D8.4 “Report on the contribution to standardization”, several actions can be performed, for example:

- the follow up of the standardization activity through updates reported by UNE;
- the follow up through the joining of one or more SALEMA representatives to these standardization committees. Standardization is an open activity, and all interested parties may participate in a CEN/CENELEC/ISO/IEC technical committee through its National Mirror Committee and National Standardization Body;
- the dissemination of the SALEMA project progress by delivering reports to the relevant TCs Secretaries or by attending relevant technical committees’ meetings.

2. - Once decided the target TCs, initial planning of activities (direct participation, meeting attendances, workshop organization-invitation-dissemination activities to TCs) should be determined for each relevant TC and the development of the future Deliverable D8.4 “Report on the interaction with the standardization”.

As previously said, concerning the dissemination activities, despite all the technical committees of this report have some relation to the SALEMA project, probably the most relevant are those summarized in the following table:



Table 2521. List of most relevant technical committees for dissemination activities

European TC	Title
CEN/TC 132	Aluminium and aluminium alloys
CEN/TC 250/SC 9	Eurocode 9: Design of aluminium structures
CEN/WS 113	Framework linking dismantled parts with new design components for the automotive industry in a circular economy model
CEN/SS S26	Environmental Management
International TC	Title
ISO/TC 79	Light metals and their alloys
ISO/TC 207	Environmental management
ISO/TC 323	Circular economy



## 6. Next steps

The next step is to validate by all partners the "List of most relevant technical committees for dissemination activities (Table 25)" as the list of TCs with which we will carry out dissemination activities and contribution to standardization.

In M9 we will realize the first version of Deliverable D8.5 "Report on the contribution to the standardization"



## 7. References

For the elaboration of this report, the following sources have been consulted:

- CEN Website ([www.cen.eu](http://www.cen.eu))
- CEN/CENELEC Projex Online database ([projex.cen.eu](http://projex.cen.eu)) (restricted to authorized users)
- ISO Website ([www.iso.org](http://www.iso.org))
- ISO Project Portal ([isotc.iso.org](http://isotc.iso.org)) (restricted to authorized users)
- EUR-Lex ([eur-lex.europa.eu](http://eur-lex.europa.eu))
- European Commission Energy website ([ec.europa.eu/energy/en/topics/energy-efficiency](http://ec.europa.eu/energy/en/topics/energy-efficiency))
- ASTM International Website ([www.astm.org](http://www.astm.org))

