الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي

جامعة المسيلة
كلية التكنولوجيا
قسم الهندسة الميكانيكية

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مستخلص اللجنة العلمية لقسم الهندسة الميكانيكية
بخصوص تقييم مطبوعة جامعية

بناءا على التقارير الإيجابية الواردة من السادة أعضاء لجنة دراسة وتقييم مطبوعة جامعية , والآتية أسماؤهم :

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صادق أعضاء اللجنة العلمية على قبول المطبوعة المنجزة باللغة الإنجليزية من طرف الأستاذ : **سايب شريف** أستاذ محاضر - أ - قسم الهندسة الميكانيكية , كلية التكنولوجيا , جامعة محمد بوضياف بالمسيلة. تحت عنوان :

- NORMALIZATION

وفق البرنامج المقترح لطلبة السنة الثالثة ليسانس شعبة هندسة المواد .

.

رئيس اللجنة العلمية للقسم

People's Democratic Republic of Algeria

Ministry of High Education and Scientific Research

MOHAMED Boudiaf University of M'sila

Faculty of Technology

Mechanical Engineering Department

Course handout:

NORMALIZATION

(De jure standards)

Third year Bachelor in Materials Engineering

(3eme Année Licence Génie Des Matériaux)

Realized by:

H.D.R. Dr. Cherif SAIB

Academic year: 2024/2025

Course handout:

Standardization (Normalization)

Third year Bachelor in Materials Engineering

Realized by: Dr. Cherif SAIB

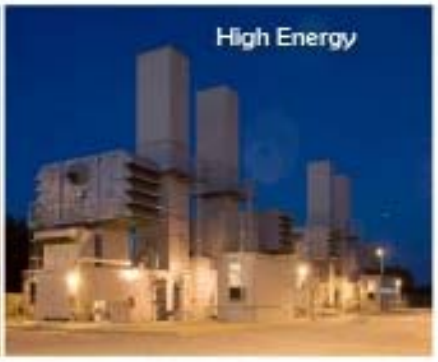
Academic year: 2024/2025

بسم الله الرحمن الرحيم

Say:
My Lord!
Increase me
in knowledge

صدق الله العظيم











My hope !! Algeria in future days

DEDICATIONS

I dedicate this work as a call for recognition and reflection to:

♣ *My very dear wife and my dear children for their moral support which allowed me to complete this work.*

I also dedicate it to:

♣ *My dear parents for their encouragement,*

♣ *My dear brothers and sisters*

♣ *My uncles and aunts*

♣ *All my family and loved ones*

Contents

Figures list:

Foreword

The present handout, entitled: Standardization, is intended for students of License 3 of mechanical engineering, option of materials engineering, of the Semester 5 License training, given at the Mechanical Engineering Department of the technology faculty. Mohamed Boudiaf University of M'sila.

Definitions of standards and general information on the importance of standardization are dealt with in the first chapter.

The difference between standards and other industrial documents are part of the second chapter.

A little bit of the history of legitimate international standard-setting entities will be part of the third chapter.

When in the fourth chapter we discuss the steps to develop a standard and the entities that take care of its characteristics

The development and progress of the ISO standards is been established in the fifth chapter

In the sixth and the seventh chapters highlighted the norms equivalencies and international classes of norms.

The patent and industrial and intellectual property will be fully explained in the eighth chapter.

In chapter nine the regulation and normalization are discussed,

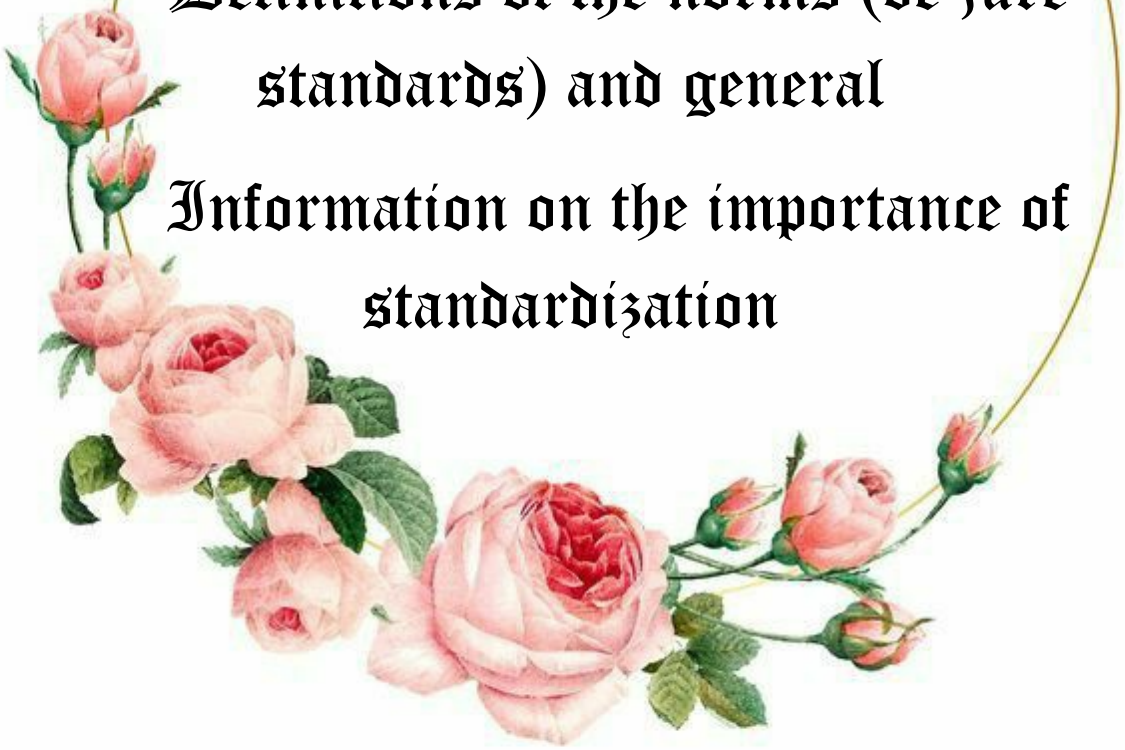
The certification and accredition are well explained in chapter ten,

The eleventh chapter discuss the manufacturing standards,

We end with a bibliography of the references used for the establishment of this course handout.

Chapitre I :

Definitions of the norms (de jure standards) and general Information on the importance of standardization



1. **The norms (de jure standards) and their daily impact:**

Examples from daily life:

Paper sheet formats

- A4 size sheet ISO 216

Figure.1. A4 size sheet.

- metric system ISO 1000

Figure.2. Roulette measuring.

- headphones and earphones associated with a walkman NF EN 50332-1

Figure.3. Headphones and earphones.

Standardization (Normalization) is quite simply a language common to the actors of economic life, common to economic, financial, technical and social partners.

Container (successful):

ISO 668

...."transportation device"....

In everyday language we speak of boxes

a) having a permanent character and therefore being strong enough to allow repeated use;
b) specially designed to facilitate the transport of goods, without breaking the bulk, by one or more type of transportation;
c) provided with devices the performance during its transfer from one type of transportation to another;
d) designed to be easy to fill and empty;

The containerized fleet has gone from 1.5 million boxes in 1988 > 12 million in 2009 (+10.5% for 20 years ...)

Figure.4. The normalized containerized fleet.

Electric motor frequencies: 50 Hz in Europe / 60 Hz in the US,

Televisions, portable microphones, mobile phones, road signals and traffic lights, means of transport….

A norm (the de jure standard) -etymologically, norma is a Latin term designating the rule, the square. Therefore; its current definition is given by: "a standard" is a document established by consensus between subject matter experts and approved by a recognized organization, which provides guidelines for the design, use or performance of materials, products, processes, services, systems or people.

Formal definition of the norm (the de jure standard) :

document, established by consensus and approved by a recognized body, which provides, for common and repeated use, rules, guidelines or characteristics, for activities or their results, guaranteeing an optimal level of order in a given context.

A standard is not obligatory; its adhesion is a voluntary act. Some are made mandatory by a regulatory text or decree of law.

A de jure standard designates a set of specifications describing an object, a being or a way of operating. This results in a principle serving as a rule and technical reference.

It is not obligatory; its adhesion is a voluntary act. Some are made mandatory by a regulatory text or legislative decree. We can say that the standard is a reference document on a given subject. It indicates the state of science, technology and know-how at the time of writing.

To be considered as a standard, the document must meet two conditions:

- The means and methods described must be reproducible by using and respecting the conditions which are indicated;

-it must have received the recognition of all.

The de jure standard must imperatively:

- list the methods to reproduce a product or a service;

- be recognized by professionals in the field concerned.

It is an indisputable common reference offering technical and commercial solutions. They are used to simplify contractual relations.

A de jure standard is the result of a consensus developed by a process known as standardization.

In the general case, a manufacturer or a service provider is not obliged to follow a de jure standard. That said, they can however be imposed:

- Contractually: when a principal sets de jure standards to be respected for the performance of the reference contract;

- more extensively: legal or regulatory provisions impose - in specific and defined cases - compliance with de jure standards in the design, composition, manufacture of goods and services - see the case of standards applicable to electrical installations, toys for children, pressure vessels, etc.

What look a standard?

The first page of the norm (de jure standard) posses the essential information:

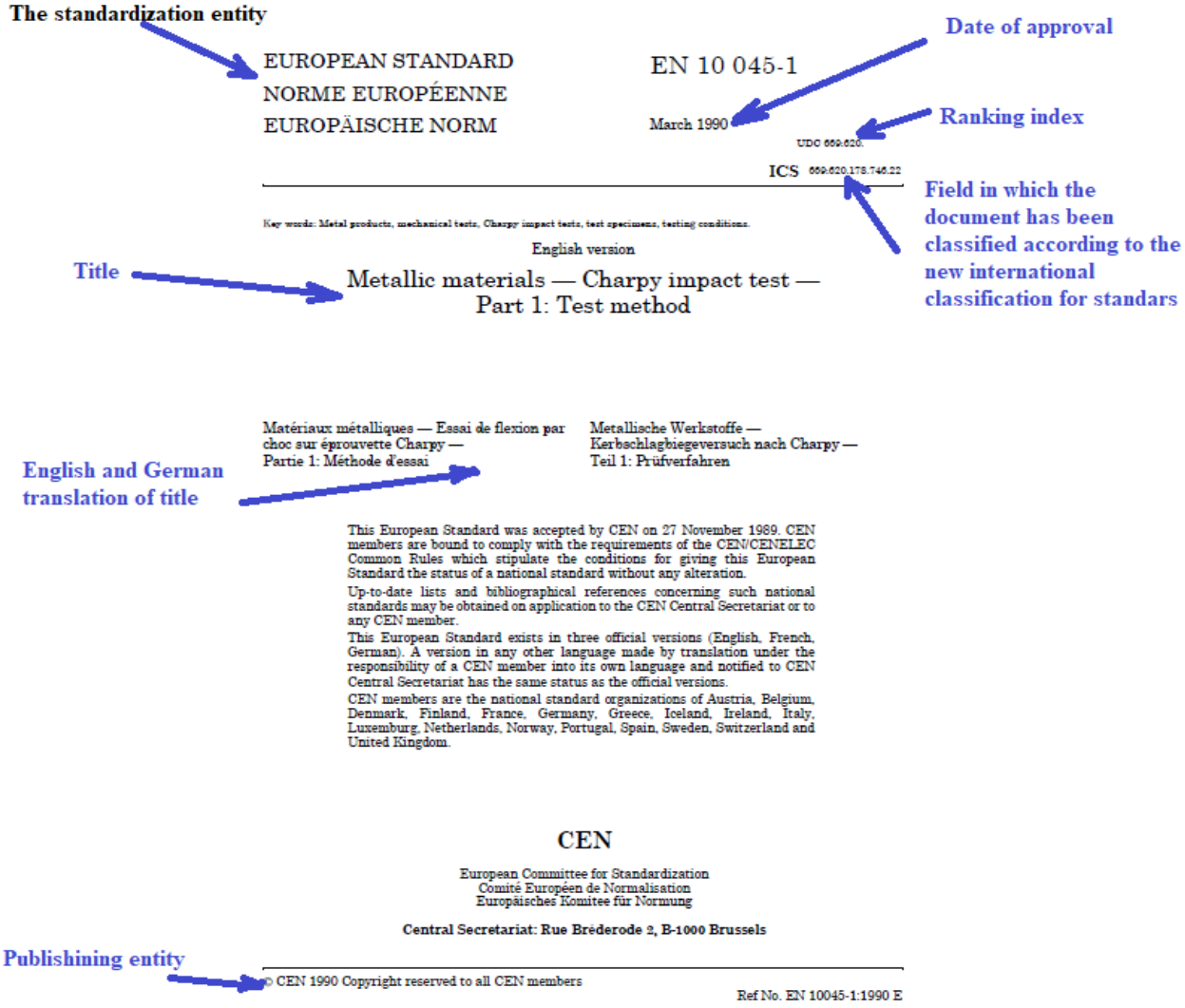


Figure.5. The first page of the norm (de jure standard).

In the other pages the de jure standard

Foreword,

Historical,

Summary,

The tables, the sketch drawings, the diagrams

And bibliography

2. Why standardize?

The norms (de jure standards) are diverse and varied: behavioural (compliance with 'codes'), technical (equipment, products, test methods), organizational (management standards 9001, 14001, 26000, etc.), and reign everywhere in the lives of all days. They are also (unfortunately) unknown.

Technical standards are intended to meet interoperability objectives - the ability of a product or system, whose interfaces are fully known, to operate with other existing or future products or systems without restriction of access or implementation. -, quality and safety, and to facilitate trade

The de jure standards are alive: they are born, progress, (die!)

Mastery of the de jure standards represents a considerable economic challenge. It is also an economic intelligence tool.

The de jure standards are at the heart of a well-functioning economy.

3. Role of normalization (standardization):

• The purpose of normalization (de jure standards) is the development, publication and application of reference documents called the de jure standards.

•The norms include solutions to technical and commercial problems concerning products and services that repeatedly arise in relations between economic, scientific, technical and social partners.

As one scientist said: “the norms (de jure standards) are alive: they are born, evolve, (die!)”

Controlling standards represents a considerable economic challenge. It is also a tool for economic intelligence.

The norms are at the heart of a well-functioning economy.

Chapitre II :

The importance of the normalization

1. **The standards and other similar documents:**

A- Satandard (De facto standard) — is a reference published by a private entity other than a national or international standardization organization or not approved by one of these organizations for national or international use. We only speak of a standard when the reference system is widely distributed. A standard is open when the repository is freely distributed.

On the other hand, this definition does not seem to require that the reference system have been the subject of a collective examination and a search for technical consensus, as is the case of a de jure standard.

Beware of the confusion between de facto Standard and de jure standard. The de facto standard results from a more restricted consensus than for the de jure standard; it is developed between industrialists within consortia and not by national organizations. The difference is however small and the Anglo-Saxons use the term "standard" to designate a norm (de jure standard).

B-Regulations — any provision made by a government agency or administrative authority.

C-Technical report — Document published by a national or international standardization organism, bringing together data of a different nature from that which is normally published as International Standards or Technical Specifications.

E-Guide — is a document published by a national or international standards body, giving rules, guidelines, advice or recommendations related to international standardization.

2. **Certification :**

Certification is a procedure by which a third party gives written assurance that a product, organization, service, quality system or personnel complies with the requirements specified in a reference system. This repository can be a document from an official standardization body, a regulatory source or a specification from a private organization.

3. **The benefits of normalization (standardization):**

a- *For customers*: with products and services based on International Standards, the worldwide compatibility of technology opens up an increasingly diversified choice of offers. They also reap the benefits of the effects of competition between suppliers.

b- *For companies*: companies that use International Standards can increasingly freely access many more markets around the world. The widespread adoption of International Standards means that suppliers can base the development of their products and services on specifications that enjoy wide acceptance in their industries.

c- *For governments*: International Standards provide the technological and specific bases that facilitate health, safety and environmental legislation for governments.

d- *For economic leaders*: negotiating the opening of regional and global markets, International Standards create a fair “marketplace” for all competitors. The existence of divergent national or regional standards can create technical barriers to trade, even in the presence of political agreements to abolish import and similar quotas.

International Standards are the technical means by which trade policy agreements are put into practice.

e- *For developing countries*: International Standards are a basis that allows developing countries to support their decisions when it comes to investing their scarce resources and avoiding squandering them. International Standards, which represent an international consensus on the state of the art, are an important source of technological know-how. By defining the characteristics that products must have in order to access export markets.

f- *For consumers*: International Standards provide assurance of quality, safety and reliability for products and services.

g- *For everyone*: International Standards can contribute to the quality of life in general, by ensuring the safety of the transport, machines and tools we use.

h- *For ecology*: International Standards on air, water and soil quality and on gas emissions and radiation are part of the efforts to protect the environment.

Chapitre III:

Normalization(de jure standards) organizations

The norms (de jure Standards) organizations

1. History:

Historically, the first standards were born in the fields of electricity and metallurgy to solve problems of interchange-ability. Then standardization extended to all types of industrial products. Currently, it goes beyond the technical framework and covers almost all areas by opening up to the world of health, the environment, services, processes...as we will see:

In 1906, international standardization began in the electrotechnical field with the creation of the (IEC) International Electrotechnical Commission. The first fundamental work in other fields was undertaken by the International Federation of National Standards Associations (ISA), established in 1926. Within the ISA, the emphasis was overwhelmingly on mechanical engineering. These activities ceased in 1942.

Following a meeting held in London in 1946, delegates from 25 countries decided to create a new international organization "the object of which would be to facilitate the international coordination of industrial standards". The new organization, ISO, officially came into operation on February 23, 1947. The name "ISO" is derived from the Greek "isos", meaning "equal". The name of the International Organization for Standardization would give rise to different abbreviations depending on the language ("IOS" in English and "OIN" in French), for this it was decided to adopt the abbreviated form ISO.

An ISO standard is a document whose content length can range from a few pages to several hundred pages, published in A4 format. They are also available in electronic form. In liaison with other international organizations which, in addition to their main activity, develop standards in their field of speciality. In addition, there are several hundred thousand standards and technical regulations in use around the world which contain requirements specific to certain countries or regions.

Finding information regarding these standards, technical regulations or other testing and certification activities can be a daunting task. ISONET, the ISO Information Network, is helping to solve the problem.

The World Trade Organization Agreement on Technical Barriers to Trade (WTO) calls on signatory countries to establish a national inquiry point to answer questions in these areas.

2. Types of norms (de jure standards):

There are four types of norms (de jure standards):

• **The fundamental norms:** they give the rules in terms of terminology, acronyms, symbols, and metrology (ISO 31: quantities and units).

• **Specification norms:** they indicate the characteristics, performance thresholds of a product or service (example: EN 2076-2: Aerospace series - Ingots and castings in aluminum and magnesium alloys - Technical specification - Part 2 - Ingots for remelting.)

• **Analysis and test norms:** they indicate the methods and means for carrying out a test on a product (example: ISO 6506-1: Metallic materials - Brinell hardness test - Part 1: Test method).

• **Organizational norms:** they describe the functions and organizational relationships within an entity (example: ISO 9001: Quality management systems and the quality process).

The norms (de jure standards) are developed by organizations, the best known are:

At an international level:

- ISO (International Organization for Standardization) – 1947;
- The IEC (International Electrotechnical Commission);
- ITU (International Telecommunications Union);

At the European level:

- CEN (European Committee for Standardization) – 1961;
- ECNELEC (European Committee for Electrotechnical Standardization);
- ETSI (European Telecommunications Standard Institute);

At the French level:

- AFNOR (French Association for Standardization);
- The TUE (Technical Union for Electricity);

In foreign countries

- The SSC (Standards Council of Canada);
- The BIS (Belgian Institute for Standardization);
- ASTM (American Society for the Testing of Materials);
- THE SNV (Schweizerischen Normen Vereinigung);
- DIN (Deutsche Industrie Normen);
- The BSI (British Standard Institute);
- ANSI (American National Standard Institute);
- JSA: Japanese Standards Association
- JIS: Japanese Industrial Standard (from the 1920s).

ISO (not an acronym, ISO comes from the Greek “isos” meaning equal) is headquartered in Geneva, Switzerland. It is an international organization created in 1947 and composed of representatives of national organizations from more than 150 countries.

CEN is based in Brussels, Belgium with association status. There is no general catalogue of CEN standards, you have to go to the sites of each member country or each affiliated country.

The status of standardization is governed in France by decree 84-74 of January 26, 1984 and 93-1235 of November 15, 1993. It was entrusted to AFNOR and subdivided into 31 sectoral standardization offices made up of more than 20,000 experts.

AFNOR is a member of CEN and ISO. As such, AFNOR is required to give these standards the status of national standard, either by publication of an identical text or by endorsement and to withdraw conflicting national standards.

A French approved standard bears the NF label. Some standards awaiting approval are said to be experimental and bear the inscription XP.

Chapitre IV:

Characteristics of ISO norms

Figure.6. The characteristics of the norms (de jure standards).

The characteristics of ISO norms:

a) Equality: each participating member has the right to take part in the development of any standard that it considers important for the economy of its country within the framework of ISO. Each member participating in the work of ISO has one vote regardless of the size or strength of its economy. ISO's activities thus have a democratic framework where countries are on an equal footing to influence, at the strategic level, the direction of ISO's work, as well as the technical content of their national standards.

b) Voluntary: ISO standards are voluntary. As a non-governmental organization, ISO has no authority to enforce them. A certain percentage of ISO standards - mainly those relating to health, safety or the environment - have been adopted by certain countries as part of their regulations or are cited in laws for which they serve as a technical basis. However, such adoptions are sovereign decisions of the regulatory authorities or the governments of the countries concerned. ISO itself has no regulatory or legislative powers. However, even if ISO standards are voluntary in nature, they can become market requirements, as was the case for the ISO 9000 series standards relating to quality management systems, for standards relating to container dimensions for goods and those relating to bank cards.

c) Market-oriented: ISO only develops standards that meet a market imperative. The work is carried out by experts in the sector (industrial, technical or economic) which has requested the standards in question and which will put them into practice. These experts may be joined by others with the required skills, including experts from governments, regulatory authorities, testing bodies, academia, consumer associations or other relevant organizations.

d) Consensus-agreement: although ISO standards are voluntary, the fact that they are developed in response to market demands and are based on consensus evolves, like technology, and ISO takes into account both the evolution technologies and evolving interests by reviewing its standards at least every five years to decide whether to maintain, update or cancel them. In this way, ISO standards continue to reflect the state of the art according to representative experts in the field.

e) Global Plan: ISO standards are technical agreements that provide the framework for globally compatible technologies. Building technical consensus at this international level is a major undertaking. In all, there are 2,850

technical groups (technical committees, sub-committees, working groups) and some 30,000 experts participate annually in the development of standards.

Scope of ISO norms:

Since 1947, ISO has published more than 13,700 International Standards. The Organization's work program ranges from standards relating to traditional activities, such as agriculture and construction, to mechanics and the most recent developments in information technology, such as the digital coding of audiovisual signals, for multimedia applications.

The standardization of threads helps the correct assembly of chairs, children's bicycles or airplanes and solves the repair and maintenance problems once caused by the lack of standardization and which represented a real headache for manufacturers and product users. Standards that establish an international consensus on terminology facilitate technology transfer and are important in the advancement of new technologies.

Without standardized dimensions of containers for transporting goods, international trade would be slower and more expensive. Without the standardization of telephone and bank cards, life would be more complicated. The lack of standardization can affect the quality of life itself, for example that of the disabled, if they do not have access to consumer products, public transport and buildings because the dimensions of wheelchairs and openings have not been standardized.

Standardized symbols make it possible to warn of dangers and to communicate information across linguistic borders. Consensus on various categories of materials provides a common frame of reference for suppliers and customers in business transactions.

Agreeing on enough variants of a product to meet the most common applications creates economies of scale and profitability for producers and customers alike. The standardization of paper sizes is a good example.

Standardizing the performance or security requirements of different hardware helps ensure that user needs are met, while allowing manufacturers the freedom to design their own solutions. Customers, who then have a choice of products that all meet basic requirements, benefit from the effects of competition between manufacturers.

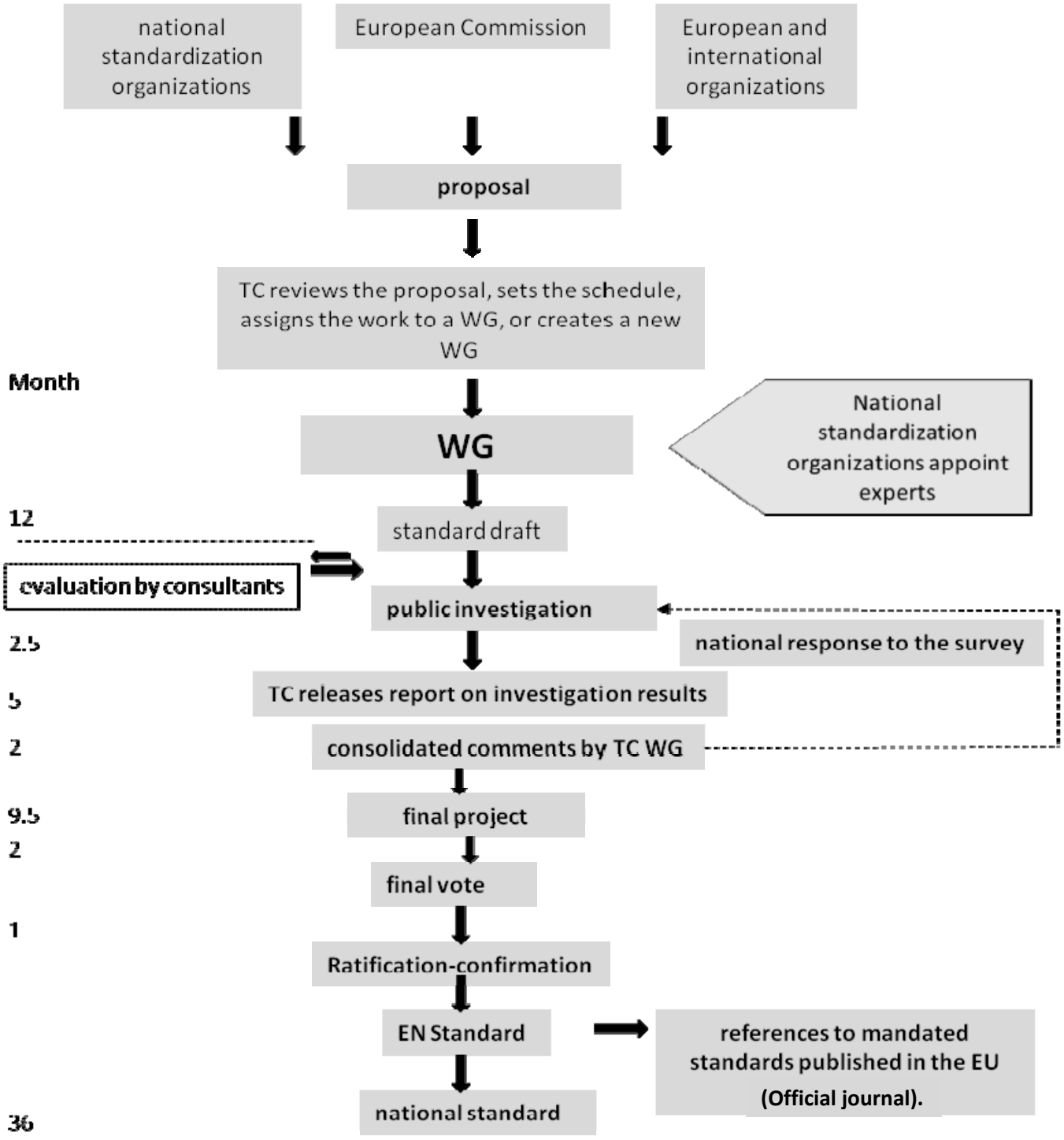
An agreement on test methods makes it possible to compare products with relevance and plays an important role in the fight against pollution of noise, vibration or gaseous origin. Machine safety standards protect people at work, on playgrounds, at sea… and at the dentist.

Without the international agreements embodied in ISO standards on quantities and units, purchasing and trade would be haphazard, science would be unscientific, and technological development would be hampered.

More than half a million organizations in more than 60 countries apply the ISO 9000 series of standards, which provide a framework for managing quality throughout the process of producing and delivering products and services to customers.

Chapitre V:

Development of ISO norms



WG: Work group- TC: Technical committee.

Figure.7. The ISO norms development flowchart.

The development of an ISO norm (standard) is divided into several stages:

1. Proposal:

A proposal for drafting or revising a standard is drafted based on a request from a national ISO member body, a committee or a sub-committee, the ISO general secretariat, or an organization in liaison with ISO. This proposal is generally made because a need has been expressed by an industry sector.

2. Preparation:

This is the actual writing phase. Based on the proposal, the TC or SC forms a working group (WG). It is made up of a project manager and experts appointed by the national committees. He writes a draft standard which is called CD (committee draft).

3. Committee:

This is the main stage where the observations and remarks of the national bodies are taken into account. This is a consensus-building phase. The committee secretariat sends the draft to the participating national committees. The committees have three months to issue comments and weigh in on the content of the future standard.

Based on the results of the consultation, based on the consensus, the committee secretariat can:

Propose a revised draft for comments from national bodies

Discuss the project in a meeting.

Validate the project and advance it to the next stage

The process is iterative until a consensus is reached.

Once the project has been validated, it is called DIS; the document bears the reference ISO/DIS XXXX.

4. Investigation:

The “DIS” project is distributed to the national committees, which have five months to vote (positively, negatively or abstention) and make observations. The positive vote can be accompanied by observations (often editorial). The negative vote must be systematically accompanied by technical remarks. Otherwise, the vote will be rejected.

The project is adopted if a majority of two thirds of the votes cast are in favor and if the unfavorable votes do not exceed one quarter of the votes cast. If there are no negative votes, then the standard is published. If the project is adopted and there are however negative votes, it must go through an approval stage. The validated DIS project becomes an FDIS project: ISO/FDIS XXXX.

In the event of an unfavorable vote, the secretariat can either circulate a revised draft for a vote at the inquiry stage, or refer a draft to a committee or examine the draft in a meeting.

5. Approval (agreement):

The FDIS project is again submitted to the vote (duration: two months) of the national bodies. With the same rules as for the investigation stage. The project is either adopted and sent for publication, or sent back to the committee for re-examination. The committee can then decide either to propose a new project or to cancel the project.

In the ISO system, the initiative to develop a standard comes from the industry that needs it. Thus, when an industrial or economic sector needs a standard, it informs a national member of ISO. The latter submits the new

study proposal to ISO. If the proposal is accepted, the study is assigned to an existing technical committee. Proposals may also include the creation of technical committees to address new areas of technical activity. In order to ensure the highest efficiency in the use of resources, ISO only undertakes the development of new standards if they clearly meet a market imperative.

The field of ISO technical committees is necessarily specialized and precise. The elaboration has multi-sectorial aspects.

Three technical committees responsible for developing:

Casco ‘conformity assessment’ committee

Copolco ‘consumer policy’ committee

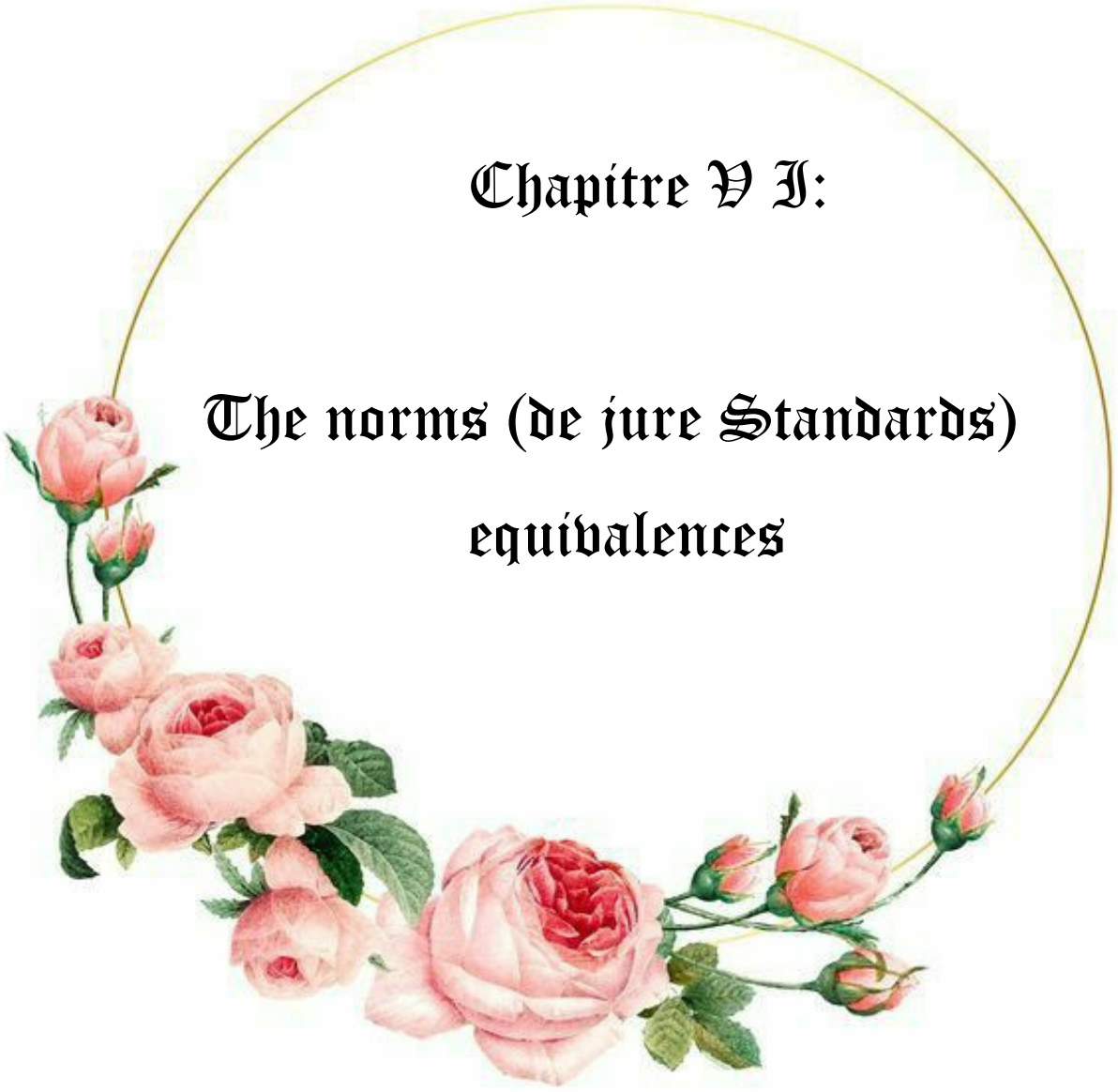
Devco ‘developing country issues committee

The standards are drawn up by: experts belonging to the industrial, technical and economic sectors who have requested the establishment of the standards in question, and who subsequently apply them. Academics can be associated with these experts to consult on a subject, study it and debate it to reach a consensus on a draft agreement. The document is distributed as a draft international standard to all ISO members for comments and voting.

ISO members consider all information received. If the result of the vote is favourable, the document, with any modifications, is distributed to ISO members as a final draft international standard. The document is then published as an International Standard.

Chapitre V I:

The norms (de jure Standards) equivalences



“Understand the normalization system and the norm (de jure standard) development process”

“It is increasingly necessary to “create the norm (de jure standard)… or to prepare to undergo it”
G. Gesquière

“The one who “sets the norm (de jure standard)” steers the market in his favour”

1-**Role of normalization (standardization):**

It aims to encourage economic development and innovation while taking into account sustainable development objectives”

2- **Standardization…for what objectives:**

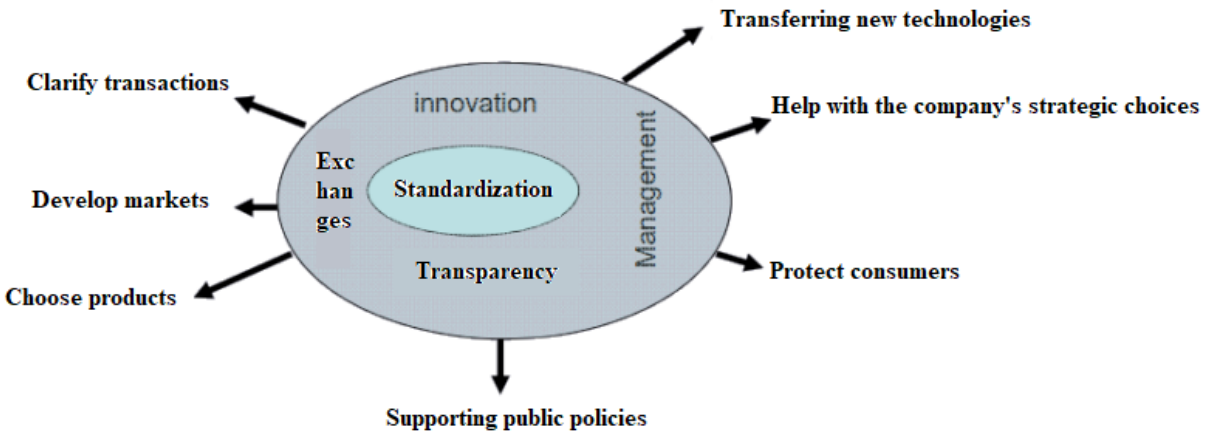


Figure.8. The objectives of norms (de jure standards).

B/Fundamental reference books:

ISO/IEC standards cover certain technical areas by category, such as:

1. **Standardized terminology:**
   ISO/IEC 2382 (all parts), Information technology —Vocabulary,
   IEC 60050 (all parts), International Electrotechnical Vocabulary,
   ISO/IEC Guide 2, Standardization and related activities — General vocabulary,
   ISO/IEC 17000, Conformity assessment — Vocabulary and general principles,

2. **Principles and methods of terminology:**
   ISO 704, Principles and methods of terminology,
   ISO 10241, International terminology standards — Development and presentation,
3. **Quantities, units and their symbols:**

   ISO 31 (all parts), Quantities and units,

   ISO 1000, SI units and recommendations for the use of their multiples and certain other units,

   IEC 60027 (all parts), Literal symbols for use in electrical engineering,

4. **Abbreviated terms:**
   ISO 639 (all parts), Code for the representation of language names,
   ISO 1951, Lexicographic symbols and typographical conventions for use in terminography,
   ISO 3166 (all parts), Codes for the representation of country names and their subdivisions,
5. **Bibliographic references:**
   ISO 690, Documentation — Bibliographic references — Content, form and structure,

ISO 690-2, Information and documentation — Bibliographic references —Part 2: Electronic documents, complete documents or parts of documents,

6. **Technical drawings:**
   ISO 128 (all parts), Technical drawings — General principles of representation,
   ISO 129 (all parts), Technical drawings — Indication of dimensions and tolerances,
   ISO 406, Technical drawings — Tolerance of linear and angular dimensions,
   ISO 3098 (all parts), Technical product documentation —Writing,
   ISO 6433, Technical drawings — Element markings,
   IEC 61082 (all parts), Establishment of documents used in electrical engineering,
   IEC 61175, Signal designations and connections,
   IEC 61346 (all parts), Industrial systems, installations and apparatus, and industrial products — Structuring principles and reference designations,
7. **Technical documentation:**
   IEC 61355, Classification and designation of documents for industrial installations, systems and equipment,
   IEC 61360 (all parts), Standard types of data elements with classification scheme for electrical components,
8. **Graphic symbols:**
   ISO 7000, Graphic symbols usable on equipment — Index and synoptic table,
   ISO 14617 (all parts), Graphic symbols for diagrams,
   IEC 60417, Graphic symbols usable on equipment,
   IEC 60617, Graphic symbols for diagrams,
   IEC 80416-1, Basic principles for graphic symbols for use on equipment — Part 1: Creation of original symbol drawings,

ISO 81714-1, Creation of graphic symbols for use in technical product documentation — Part 1: Fundamental rules,

IEC 81714-2, Creation of graphic symbols usable in the technical product documentation — Part 2: Specification for graphic symbols in computer-friendly form, including reference library symbols, and requirements for their exchange,

9. **Tolerances, fits and surface properties:**

Documents developed by ISO/TC 213, Specification and verification dimensional and geometrical dimensions of the products.

10. **Normal numbers:**

ISO 3, Normal numbers—Normal number series

ISO 17, Guide to the use of normal numbers and series of normal numbers

ISO 497, Guide for the choice of series of normal numbers and series with more rounded values of normal numbers

IEC 60063, Normal value series for resistors and capacitors Guide IEC 103, Guide for dimensional coordination

11. **Statistical methods:**

ISO 3534 (all parts), Statistics — Vocabulary and symbols

12. **Environmental conditions and associated tests:**

ISO 554, Normal conditioning and/or testing atmospheres — Specifications

ISO 558, Packaging and testing — Normal atmospheres — Definitions

ISO 3205, preferential test temperatures;

ISO 4677-1, Conditioning and testing atmospheres — Determination of relative humidity — Part 1: Method using an aspiration psychrometer

ISO 4677-2, Conditioning and testing atmospheres — Determination of relative humidity — Part 2: Method using a sling psychrometer

ISO Guide 64, Guide for the introduction of environmental aspects into product standards

Guide CEI 106, Guide for the specification of environmental conditions for setting the operating characteristics of equipment

IEC Guide 109, Environmental aspects — Consideration in electrotechnical product standards

Documents developed by IEC/CE 104, Environmental conditions, classification and testing.

13. Security :

ISO/IEC Guide 50, Safety aspects — Guiding principles for child safety

ISO/IEC Guide 51, Security aspects — Guidance for their inclusion in standards

IEC Guide 104, Development of safety publications and use of basic safety publications and grouped safety publications

14. Chemistry :

ISO 78-2, Chemistry — Standards plans — Part 2: Methods of chemical analysis

15. Electromagnetic compatibility:

IEC Guide 107, Electromagnetic Compatibility — Guide to preparing publications on electromagnetic compatibility

16. Conformity and quality:

ISO 9000, Quality management systems — Essential principles and vocabulary

ISO 9001, Quality management systems — Requirements

ISO 9004, Quality management systems — Guidelines for performance improvement

ISO/IEC 17050-1, Conformity assessment — Supplier declaration of conformity — Part 1: General requirements

ISO/IEC 17050-2, Conformity assessment — Supplier declaration of conformity — Part 2: Supporting documentation

ISO/IEC Guide 23, Methods for indicating conformity to standards in third-party certification systems

IEC Guide 102, Electronic components — Structure of specifications for quality assurance (Approval and know-how approval)

17. Environmental management:

ISO 14040, Environmental management — Life cycle assessment — Principles and framework

ISO 14041, Environmental management — Life cycle analysis — Definition of objective and scope of study and inventory analysis

ISO 14042, Environmental management — Life cycle analysis — Life cycle impact assessment

ISO 14043, Environmental management — Life cycle analysis — Life cycle interpretation

18. Packaging :

Subject area 55, Packaging and distribution of goods, in the ISO/IEC catalogue.

b) The norms (de jure standards) equivalance:

ISO Standard 31 entitled “Unit quantities, symbols, conversion factors” is made up of 14 parts corresponding to various branches of the physical sciences.

Norme	Partie	Titre
ISO 31-0:1992 modifiée 12/1998 et 10/2005	0	Principes généraux
ISO 31-1:1992 modifiée 12/1998	1	Espace et temps
ISO 31-2:1992 modifiée 12/1998	2	Phénomènes périodiques et connexes
ISO 31-3:1992 modifiée 12/1998	3	Mécanique
ISO 31-4:1992 modifiée 12/1998	4	Chaleur
ISO 31-5:1992 modifiée 12/1998	5	Électricité et magnétisme
ISO 31-6:1992 modifiée 12/1998	6	Lumière et rayonnements électromagnétiques connexes
ISO 31-7:1992 modifiée 12/1998	7	Acoustique
ISO 31-8:1992 modifiée 12/1998	8	Chimie physique et physique moléculaire
ISO 31-9:1992 modifiée 12/1998	9	Physique atomique et nucléaire
ISO 31-10:1992 modifiée 12/1998	10	Réactions nucléaires et rayonnements ionisants
ISO 31-11:1992	11	Signes et symboles mathématiques à employer dans les sciences physiques et dans la technique
ISO 31-12:1992 modifiée 12/1998	12	Nombres caractéristiques
ISO 31-13:1992 modifiée 12/1998	13	Physique de l'état solide

The ISO 1000 standard relates more to SI units and general writing rules.

ISO 1000:1992 modifiée 11/1998		Unités SI et recommandations pour l'emploi de leurs multiples et de certaines autres unités

In France, the equivalent of the ISO 31 standard are the AFNOR standards X02-001 and X02-201 to 213 and those of ISO 1000, NF X02-003, 004 and 006 describing the general rules for writing numbers, units and symbols.

Grandeurs et unités

Nom	Titre et date	Descripteur
NF X02-001 12/1993	Grandeurs et unités - Principes généraux	Grandeur, unité de mesure, système international d'unités, symbole, généralités
Le but de la présente norme est de donner des renseignements généraux sur les principes concernant les grandeurs physiques, les équations, les symboles de grandeurs et d'unités, les systèmes cohérents d'unités, spécialement le Système International d'unités SI. Les principes établis dans la présente norme sont destinés à un usage général dans les différents domaines de la science et de la technique, ainsi qu'à servir d'introduction générale aux autres normes de la série X 02-2... NF X02-001 PR 04/2005 (projet de norme)		
NF X02-003 12/1995	Normes fondamentales - Principes de l'écriture des nombres, des grandeurs, des unités et des symboles	Écriture, nombre, grandeur, unité de mesure, symbole, opération mathématique, signe
Le présent document définit les principes de l'écriture des nombres, des grandeurs, des unités et des symboles. Une grandeur s'exprime, comme il est indiqué à l'article 6, par le produit d'un nombre (valeur numérique) et d'une unité. Une telle expression permet : - de former les noms et les symboles des unités composées par l'application des règles de l'algèbre ; - d'utiliser des formules entre grandeurs qui évitent toute erreur, malgré l'emploi éventuel d'unités diverses. À côté des principes relatifs à l'écriture correcte des nombres entiers ou décimaux et des nombres fractionnaires et à l'emploi des signes d'opération, le présent document énonce les règles de formation des noms d'unités composées et de leurs symboles, à partir de l'équation de définition ou de l'équation aux dimensions, définissant ainsi, en quelque sorte, les règles de grammaire des notations scientifiques et techniques. NF X02-003 PR 04/2005 (projet de norme)		
NF X02-004 08/1994	Normes fondamentales - Noms et symboles des unités de mesure du système international d'unités (SI)	Grandeur, unité de mesure, symbole, système SI, unité SI, multiple, écriture
Le présent document présente le système international d'unités (SI) (ISO 1000) sous une forme concise et pratique. Il spécifie les unités dérivées (noms et symboles) y compris les unités supplémentaires pour les grandeurs usuelles et rappelle les règles d'écriture des symboles d'unité et de formation des multiples et sous-multiples.		
NF X02-006 08/1994	Normes fondamentales - Le système international d'unités - Description et règles d'emploi - Choix de multiples et de sous-multiples.	Unité de mesure, système métrique, système international d'unités, multiple, utilisation
La présente Norme a) décrit le Système international d'unités (dans les articles 3, 4 et 6) ; b) recommande les multiples et sous-multiples décimaux des unités SI à utiliser dans la pratique courante et indique certaines autres unités pouvant être utilisées avec le Système international d'unités (dans les articles 5 et 7, et dans l'annexe A);		

08/1994 NF ISO 31-8	Partie 8 : chimie physique et physique moléculaire.	moléculaire, chimie physique, définition, symbole, système international d'unités
**		
NF X02-209 12/1993	Grandeurs et unités - Physique atomique et nucléaire	Grandeur, unité de mesure, physique atomique, physique nucléaire, définition, symbole, système international d'unités
*		
NF X02-210 08/1994 NF ISO 31-10	Grandeurs et unités – Partie 10 : réactions nucléaires et rayonnements ionisants.	Grandeur, unité de mesure, réaction nucléaire, rayonnement ionisant, définition, symbole, système international d'unités
**		
NF X 02-211 08/1994 NF ISO 31-11	Grandeurs et unités – Partie 11 : signes et symboles mathématiques à employer dans les sciences physiques et dans la technique.	Grandeur, unité de mesure, symbole, signe, mathématiques, physique
La présente partie de l'ISO 31 donne des informations générales sur les signes et symboles mathématiques, leurs sens, leur énoncé et leur application. Les recommandations données dans la présente partie de l'ISO 31 sont prévues pour être utilisées dans les sciences physiques et en technologie.		
NF X02-212 12/1992 NF ISO 31-12	Grandeurs et unités - Nombres caractéristiques.	Paramètre sans dimension, nombre caractéristique, propriété physique, propriété mécanique, transfert de chaleur, transfert de masse, quantité de mouvement, définition, symbole
La présente partie de l'ISO 31 donne les noms et symboles des nombres caractéristiques employés pour la description des phénomènes de transfert.		
NF X02-213 12/1992 NF ISO 31-13	Grandeurs et unités – Partie 13 : physique de l'état solide.	Grandeur, unité de mesure, physique du solide, définition, symbole, système international d'unités
**		

Sources AFNOR

(*) La présente norme donne les noms et symboles des grandeurs et unités du domaine correspondant. Les facteurs de conversion sont également donnés, s'il y a lieu.
(**) La présente partie de l'ISO 31 donne les noms et symboles des grandeurs et unités du domaine correspondant. Les facteurs de conversion sont également donnés, s'il y a lieu.

Standards X02-205, 208, 210, 211, 212 and 213 fully reproduce the corresponding ISO standard.

No mention was made of the NF X02-002 standard, because it is intended for metrology laboratories.

The purpose of this documentation booklet is to briefly describe the operations by which major metrology laboratories can carry out physical measurements in accordance with the text of the definition of the main SI units. It indicates how the theoretical definitions of the SI base units set out in the appendix to NF X 02-006 [2] can be put into practice for the certification of precision standards.

The NF standards X02-001 PR, X02-003 PR are the subject of a modification project since April 2005.

Metals and alloys correspondence table

ferritic stainless steels according to NF EN 10088-1

NF EN 10088-1		France	USA		
n° matière	symbole		UNS	ASTM	AISI
1.4000	X6Cr13		S41008		410S
1.4002	X6CrAl13		S40500		405
1.4003	X2CrNi12		S40300		403
1.4016	X6Cr17	Z 8 C 17	S43000		430
1.4017	X6CrNi17-1				
1.4113	X6CrMo17-1		S43400		434
1.4510	X3CrTi17		S43035		439
1.4511	X3CrNb17				
1.4512	X2CrTi12		S40900		409
1.4513	X2CrMoTi17-1				
1.4516	X6CrNiTi12		S41400		414
1.4520	X2CrTi17				
1.4521	X2CrMoTi18-2				
1.4526	X6CrMoNb17-1				

martensitic stainless steels according to NF EN 10088-1:

NF EN 10088-1		France NFA 35-572	USA		
n° matière	symbole		UNS	ASTM	AISI
1.4005	X12CrS13	Z 11 CF 13	S41600		416
1.4006	X12Cr13	Z10C13/Z13C13	S41000		410
1.4021	X20Cr13	Z 20 C 13			
1.4028	X30Cr13	Z 33 C 13	S42000		420
1.4029	X29CrS13		S42020		420F
1.4031	X39Cr13				
1.4034	X46Cr13				
1.4057	X17CrNi16-22	Z 15 CN 16-02	S43100		431
1.4104	X14CrMoS17				
1.4105	X6CrMoS17		S43020		430F
1.4109	X70CrMo15				
1.4112	X90CrMoV18				
1.4116	X50CrMoV15				
1.4122	X39CrMo17-1				
1.4125	X105CrMo17				440C
1.4313	X3CrNiMo13-4				
1.4418	X4CrNiMo16-5-1	Z 6 CND 16-05-01			
1.4532	X8CrNiMoAl15-7-2		S15700		PH15.7Mo
1.4542	X5CrNiCuNb16-4	Z 7 CNU 16-04	S17400		630
1.4568	X7CrNiAl17-7		S17780		17.7PH
1.4594	X5CrNiMoCuNb14-5				

Austenitic stainless steels according to NF EN 10088-1:

NF EN 10088-1		France	USA		
n° matière	symbole		UNS	ASTM	AISI
1.4301	X5CrNi18-10	Z 7 CN 18-09	S30400		304
1.4303	X4CrNi18-12	Z 5 CN 18-11 FF	S30500		305
1.4305	X8CrNiS18-9	Z 8 CNF 18-09	S30300		303
1.4306	X2CrNi19-11		S30403		304L
1.4307	X2CrNi18-9	Z 3 CN 19-09	S30403		304L
1.4310	X10CrNi18-8	Z 11 CN 17-08	S30100		301
1.4311	X2CrNiN18-10		S30453		304LN
1.4318	X2CrNiN18-7				
1.4335	X1CrNi25-21		S31008		310S
1.4361	X1CrNiSi18-15-4		S30600		18.15
1.4371	X2CrMnNiN17-7-5				
1.4372	X12CrMnNiN17-7-5	Z 12 CMN 17-07 Az	S20100		201
1.4373	X12CrMnNiN18-9-5		S20200		202
1.4401	X5CrNiMo17-12-2	Z7CND17-12-02	S31600		316
1.4404	X2CrNiMo17-12-2	Z 3 CND 17-11-02	S31603		316L
1.4404 RCCM	X2CrNiMo17-12-2	Z 3 CND 17-12-02			316L RCCM
1.4406	X2CrNiMoN17-11-2		S31653		316LN
1.4429	X6CrNiMoN17-13-3	Z 3 CND 17-12 Az			
1.4432	X2CrNiMo17-12-3				
1.4434	X2CrNiMoN18-12-4		S31753		317LN
1.4435	X2CrNiMo18-14-3	Z 3 CND 18-14-03			
1.4436	X3CrNiMo17-13-3	Z 7 CND 18-12-03			
1.4438	X2CrNiMo18-15-4		S31703		317L
1.4439	X2CrNiMoN17-13-5		S31726		317L4
1.4466	X1CrNiMoN25-22-2		S31050		310MoLN
1.4537	X1CrNiMoCuN25-25-5		N08932		URSB8
1.4539	X1NiCrMoCu25-20-5	Z 2 NCDU 25-20	N08904		904L
1.4541	X6CrNiTi18-10	Z 6 CNT 18-10	S32100		321
1.4550	X6CrNiNb18-10	Z 6 CNNb 18-10	S34700		347
1.4560	X3CrNiCu19-9-2				
1.4563	X1NiCrMoCu31-27-4				
1.4567	X3CrNiCu18-9-4	Z 3 CNU 18-10	S30430		XM7
1.4570	X6CrNiCuS18-9-2				
1.4571	X6CrNiMoTi17-12-2	Z 6 CNDT 17-12	S31635		316TI
1.4578	X3CrNiCu17-11-3-2				
1.4580	X6CrNiMoNb17-12-2		S31640		316Cb

Refractory nickel steels and alloys according to NF EN 10095:

NF EN 10095		France NFA 35-584	USA		
n° matière	symbole		UNS	ASTM	AISI
1.4713	X10CrAlSi7		S50300		503
1.4762	X10CrAlSi25		S44600		446
1.4818	X6CrNiSiNCe19-10		S30415		
1.4828	X15CrNiSi20-12	Z 17 CNS 20-12			309
1.4833	X12CrNi23-13	Z 15 CN 23-13	S30900		309S
1.4835	X9CrNiSiNCe21-11-2		S30815		253MA
1.4841	X15CrNiSi25-21	Z 15 CNS 25-20	S31400		314
1.4845	X8CrNi25-21	Z 8 CN 25-20	S31008		310S
1.4854	X6NiCrSiNCe35-52		S35315		
1.4876	X10NiCrAlTi32-21		N08800		Incolloy® 800
1.4877	X6NiNbCe32-27		S33228		
1.4878	X8CrNi18-10		S32100		321
2.4816	NiCr15Fe	NC 15 Fe	N06600		Inconel® 600
2.4851	NiCr23Fe		N06601		Inconel® 601
2.4856	NiCr22Mo9Nb	NC 22 DNb	N06625		Inconel® 625

Steels for bolts for flanges NFE 29043:

Désignation européenne			USA		
Norme de ref. analyse chimique	France	Allemagne	UNS	ASTM	AISI
NF A 35-558	25 CD 4	24CrMo 5			
NF A 35-559	25 CD 4	24CrMo 5			
	45 D 3			A194 Gr4	
NF A 33-101	AF 65 C 45	C45		A194 2H	
NF A 35-558	15 CD 4-05	13CrMo 4.4		A387 Gr2c12	
NF A 35-557	42 CD 4	42CrMo 4		A193 B7	
NF A 35-559	42 CD 4	42CrMo 4		A320 L7	
NF A 35-558	20 CDV 5-07	21CrMoV5.7			
NF A 35-558	42 CDV 4	40CrMoV4.7		A193 B16	
	40 NCD 7-03	40NiCrMo 6		A320 L43	4340
	40 NCD 7-03	40NiCrMo 6		A540 B24	4340
NF A 35-558	Z 12 C 13	X 10 Cr13		A193 B6	410
NF A 35-558	Z 15 CD 5-05			A195 B5	-
				A194 Gr3	501
NF A 35-558	Z 20 CDNbV 11	X19CrMoVNbN11.1			
NF A 35-559 et 35-574	Z 2 CN 18-10	X2CrNi 19.11			304L
NF A 35-559 et 35-574	Z 6 CN 18-09	X5CrNi 18.10		A193 B8	304
NF A 35-559 et 35-578	Z 12 CN 25-20	X12CrNi 25.21			310
NF A 35-558	Z 6 CND 16-04				
NF A 35-574	Z 7 CND 17-11-02	X5CrNiMo17.12.2		A193 B8M	316
NF A 35-574	Z 3 CND 17-11-02	X2CrNiMo17.13.3			316L
NF A 35-559 et 35-574	Z 6 CNT 18-10	X6CrNiTi18.09		A193 B8T	321
NF A 35-558	Z 6 CNU 17-04	X5CrNiCuNb17.4		A564 Gr630	630
NF A 35-559	Z 8 N 09	X8Ni9		A553	
NF A 35-558	Z 6 NCTDV 25-15	X5NiCrTi26.15		A453 Gr660	660

Aluminum according to NF EN 573-1

NF EN 573-1		France	USA		
n° matière	symbole		UNS	ASTM	AISI
3.0205	Al99.0	1200			
3.0255	Al99.5	1050A		1050	
3.0275	Al99.7	1070A		1050	
3.0285	Al99.8	1080		1080	
3.0505	AlMn0.5Mg0.5	3105		3105	
3.0525	AlMnMg0.5	3005		3005	
3.0526	AlMn1Mg1	3004		3001	
3.1255	AlCu4SiMg	2014		2014	
3.1325	AlCu4MgSi	2017A		2017	
3.1355	AlCu4Mg1	2024		2024	
3.1517	AlMn1Cu	3003		3003	
3.1655	AlCu6BiPb	2011		2011	
3.2315	AlSi1Mg	6082		6082	
3.3206	AlMgSi	6060		6063	
3.3210	AlSiMg	6005A			
3.3211	AlMg1SiCu	6061		6061	
3.3523	AlMg2.5	5052		5052	
3.3525	AmMg2	5251			
3.3535	AlMg3	5754			
3.3537	AlMg3Mn	5454		5454	
3.3545	AlMg4	5086		5086	
3.3547	AlMg4.5Mn	5083		5083	

Bronze:

n° matière	symbole	France	USA		
			UNS	ASTM	AISI
2.1016	CuSn4	CuSn4P		C51100	
2.1020	CuSn6	CuSn6P		C51900	
2.1030	CuSn8	CuSn9P		C52100	

Copper:

n° matière	symbole	France	USA		
			UNS	ASTM	AISI
2.0060	Cu-ETP	Cu-a1	C11000		
2.0090	Cu-DHP	Cu-b1	C12200		
2.0076	Cu-DLP	Cu-b2	C12000		
2.0040	Cu-OF	Cu-c2	C10100		

Brass:

n° matière	symbole	France	USA		
			UNS	ASTM	AISI
2.0321	CuZn37	CuZn37	C27200		
2.0220	CuZn5	CuZn5	C21000		
2.0230	CuZn10	CuZn10	C22000		
2.0240	CuZn15	CuZn15	C2300		
2.0250	CuZn20	CuZn20	C24000		
2.0261	CuZn28	CuZn28			
2.0265	CuZn30	CuZn30	C26000		
2.0280	CuZn33	CuZn33	C26800		
2.0335	CuZn36	CuZn36	C27000		
2.0360	CuZn40	CuZn40			

As we can see in washers , spring washers, belts, bolts,o-rings …so on.

A comparative washers norms table is given in this reference:

tableau-comparatif-rondelle-selon-norme-nfe-din-iso-pdf-43-ko-for_d1-lfor1.pdf

O-rings:

DIN Norms:

DIN ISO 3601-1, DIN 3771-1, DIN ISO 3601-2, DIN 3771-2, DIN ISO 3601-3, DIN 3771-3, DIN ISO 3601-4, DIN 3771-4, DIN 65202, DIN 65203, DIN 7716, DIN 24320, DIN 51524-1, DIN 51525, DIN ISO 815-1, DIN EN 10204.

ISO Norms: ISO 3601-1, ISO 3601-3, ISO 3601-5

British Norms: BS 1806, BS 4518

French Norms: NF-T-47-501, NF-T-47-502, NF-T-47-503

American Norms: AS 568 B

ASTM D395, ASTM D 412a, ASTM D471a, ASTM D 1329

VDMA 24317.

International safety standards – air conditioning, refrigeration and heat pumps:

EN 1012-3, EN 12178:2003, EN 12263, EN 12263:1998, EN 12284:2003, EN 12693:2008, EN 13136:2013, EN 13313:2010, EN 13445-1:2014_EN 13445-6:2014, EN 13445-8:2014, EN 1366-2,

EN 14276-1:2006+A1:2011, EN 14276-2:2007+A1:2011, EN 378-3:2016, EN 60079-15:2010,

EN 60335-2-89:2010,

EN ISO 12100:2010, EN ISO 4126-1:2013

CEI 60079-1:2014, CEI 60079-17:2013,

ISO 12100:2010 Sécurité des machines – Principes généraux de conception – Appréciation du risque et réduction du risque
ISO 13043, Véhicules routiers — Systèmes fluides frigorigènes utilisés dans les systèmes d'air conditionné embarqués (MAC) — Exigences de sécurité

ISO 13043:2011, Véhicules routiers — Systèmes fluides frigorigènes utilisés dans les systèmes d'air conditionné embarqués (MAC) — Exigences de sécurité.

With visting this web site you download all norms in this fields :

https://www.green-cooling-initiative.org/news-media/publications/publication-detail/2018/06/01/international-safety-standards-in-air-conditioning-refrigeration-and-heat-pump-en-es-fr

Common thread (Filetage) norms:

NF E 03-056, NF E 03-001, NF E 03-154, NF E03-004, NF C 68-190, NF C 63-021

AINSI B1-1 BS 1580, BS 4084 MILS 8879, AISI B1-20-5

BS 84, BS 93, BS 919

In the different sectors of **health** we can see:

EN 285:2006+A2:2009 Sterilization - Steam sterilizers - Large sterilizers

EN ISO 10079-3:2009 Medical suction equipment - Part 3: Suction equipment powered from a vacuum or pressure source (ISO 10079-3:1999)

EN 80601-2-58:2009 Medical electrical equipment - Part 2-58: Particular requirements for the basic safety and essential performance of lens removal devices and vitrectomy devices for ophthalmic surgery

You can download all the European health norms at: UE.LST.normes.harmonisees.93.42.11.2017.pdf

The equivalence between the norms Algerian Institute of Normalization (AIN) –IANOR-and the different international organizations of normalization as we can see in the following examples:

Committee 51 "public works" the AIN norm Roadway Tests (NA 5235) is the NF P 98-232-1:1991 equivalent norm. as (NA 5315)for Road marking products its equivalent is EN 1424:1997 P 98- 661.

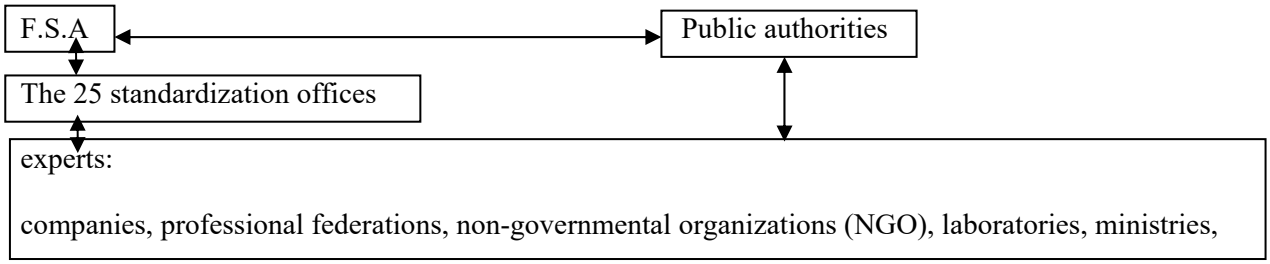
You can find all of these equivalencies on this reference: CATALOGUE-DES-NORMES-ALGERIENNES-31-DECEMBRE-2024.pdf.

Chapitre VII :

French & International Classes of Norms

1 - The French standardization system:

French standardization players 27,000 French experts who work in standardization



(AFNOR) F.S.A organization:

DD: Development department

IEE: Department of Industrial and Environmental Engineering

CWD: Construction and Water Cycle Department

TECD: Transport, Energy and Communication Department

AHSD: Agro-Food Health and Social Action Department

SCD: Services and Consumption Department

Quality and Production Department Process all standards

The director of FSA represents France at ECN and ISO

Fields attached to departments:

ICOE: Industrial engineering, capital goods and materials, Occupational health and safety, Environment

C: Construction,

Water: Environment and Uses

TLCE: Transportation and Logistics, Information and Communication, Energy (gas, oil, Electricity)

F H: Food industry, Health

MSSL: Management and services, Sports/Leisure, consumer goods and services

2- The experts :

- sit in the work structures as representatives of interested parties
- Provide the technical content of the documents
- Participate in European and international work
- Contribute to the relevance of standards

Experts: functions, roles and competencies:

- **Functions:**
  - delegate
  - Project Manager
  - animator
  - president
- **competencies:**
  - Techniques
  - Economics
  - Mastery of presentation rules and writing
  - Linguistic
  - Entertainment (animation)
- **Roles:**
  - Anticipate
  - Prepare
  - Participate
  - Explain
  - seeking alliances
  - create links
  - negotiate

3- <u>Identification of formative documents:</u>

A standard approved by AFNOR (FSA) bears the two letters NF at the top of its designation. This NF prefix is specific to an approved standard.

Example 1: NF A 04-160
Approved French standard developed only on a French plan.
Exemple 2 : NF EN 1563
Standard of European origin (or European standard), therefore obligatory included in the French AFNOR collection of approved standards.
Exemple 3 : NF ISO 8044
Standard of international origin included in the French AFNOR collection of approved standards.
Exemple 4 : NF EN ISO 9001
Standard of international origin, taken up at European and therefore French level in the French AFNOR collection of approved standards.
Exemple 5 : ISO 8402
International Standard “Quality Management and Quality Assurance-Vocabulary”.

<u>4- Classes in French Standards:</u>

A: Metallurgy	M: fuels, energies
B: careers, ceramics, glass, wood	P: Building and civil engineering
C: Electricity	Q: paper and cardboard
D: domestic economics	R: automobile, motorcycle, cycle
E: mechanics	S: miscellaneous industries
F: railway	T: Chemical industries
G: textiles and leather	U: materials and objects used in agriculture
H: distribution of goods	V: agricultural and fishing products
J: shipbuilding	X: fundamental, general standards
K: banks, insurance companies	Z: administration, trade..
L: aeronautics & space	

The classification index is a means used in France for classification by class (example letter A: metallurgy) and subclass (example 3): ferrous alloy products).

- A standard of European origin must be transposed into a national standard by each of the nineteen CEN member countries, including France, with the prefix NF EN.
- A standard of international origin (ISO) may or may not be adopted as a national standard.
- A standard of international origin may or may not be adopted as a European standard. If it is adopted as a European standard, it is therefore necessarily also adopted as a national standard by each of the nineteen CEN member countries.
- Everything that is valid for the NF prefix for France with regard to European standards is replaced by the DIN prefix for Germany, BSI for the United Kingdom, NNI for the Netherlands, etc.
  Example 7: DIN EN 1563, BS EN ISO 9001.

5- International Classes of Standards:

Internationally, another classification is used (ISC).

The ISC is a hierarchical classification made up of three levels.

Level 1 covers 40 standardization areas, for example: road vehicles, agriculture, metallurgy. Each domain is identified by a two-digit number,

For example: 43 ROAD VEHICLES

6-The main categories of the ISC classification:

These areas are subdivided into 392 groups (level 2). The code of a group consists of the number corresponding to the domain, followed by a period and a three-digit number,

For example: 43.040 Automotive systems.

144 of the 392 groups are subdivided into 909 subgroups (level 3). The code of a subgroup consists of the group code, followed by a period and a two-digit number,

For example: 43.040.20 lighting, signalling and warning devices

7- Rules for using the ISC:

The latest edition of the ICS with the subsequent issues of the ICS Update should be used for indexing standards and other normative documents and their drafts. Before indexing standards for the first time, the indexer should first carefully study the present rules and the ICS structure.

Standards should be classified according to their subjects. The indexer should first identify the appropriate field for a given subject, then allocate the appropriate group notation, and, further, the sub-group's notation if the group is subdivided.

For example, the standard ISO 3412:1992, Road vehicles – Screened and waterproof spark-plugs and their connections – Types 1A and 1B belongs to the field

You can download for more details at the website:

https://www.iso.org/fr/publication/PUB100033.html

8- The missions of the ALGERIAN STANDARDIZATION INSTITUTE (ASI-IANOR):

IANOR-ASI: Algerian Standardization Institute was created in 1998, it is a national standardization organization, and it is responsible in particular for:

- Ensure the development of national standards in coordination with other sectors

- Identify national standards needs

- Ensure the implementation of the national standardization plan

-Ensure the distribution of information relating to standardization

- Manage the mark of conformity to Algerian standards.

- The application of international conventions and agreements in the areas of standardization to which Algeria is a party.

- Provides the secretariat of the National Standardization Council (CNN) and the Technical Standardization Committees.

IANOR-ASI- helps socio-economic actors to develop the normative standards they need for their strategic and commercial development, by facilitating their access to the standardization process, to information and by providing support services.

The Algerian Institute of Standardization is also the Algerian information point on Technical Barriers to Trade (WTO) in accordance with the World Trade Organization WTO agreement.

1-Helping actors access normative standards:

IANOR-ASI- designs and develops a range of targeted information products and services through supports using the most recent techniques.

2-Help actors apply normative standards:

Through training, audit, advice and support services, IANOR-ASI- helps companies to integrate the benchmark approach and progress approaches into their strategy and into their daily life.

3-Submit a certification offer:

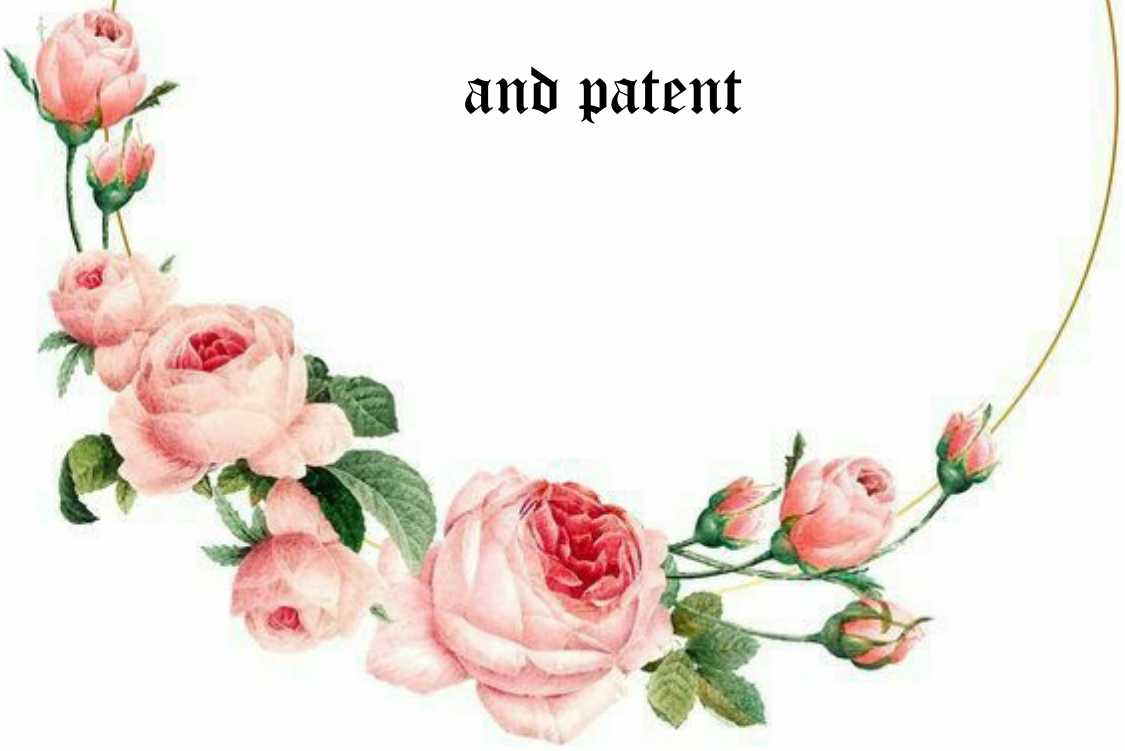
Faced with the proliferation of offers, product certification is increasingly becoming a commercial and marketing argument for increasingly informed consumers. IANOR-ASI- offers product certification (TEDJ brand), based on Algerian normative standards.

Figure.9. Product Certification of THE “TEDJ” BRAND.

These missions involve IANOR (ASI) in all economic sectors, and in particular in all areas in addition to new technologies, based on new standards, building the world of tomorrow.

Chapitre VIII:

Cultural-industrial property and patent



Industrial property: Objects and fundamental principles:

Industrial property means a set of prerogatives which have the common characteristic of conferring on their holders exclusive rights of exploitation, protected by law which are similar to real monopolies.

As such, these rights tend to provide their holder with the means of creating and maintaining a clientele which constitutes an essential element of goodwill, but they can also be detached from this notion and then constitute assets which have a value in themselves, because they are a source of profit in the heritage of merchants and industrialists.

This value is all the greater in the current era, which is characterized by a rapid evolution of techniques, the expansion of markets and the incessant appearance of new products or services.

Industrial property rights are divided into two groups:

On the one hand, those is relating to distinctive signs, mainly trademarks, and on the other hand, those relating to industrial creations, mainly patents and industrial designs and models.

A. 1. TRADEMARKS "THE COMPANY MAKES THE PRODUCT AND THE CONSUMER BUYS THE MARK"

Article 15 of the Agreement on Intellectual Property Rights (TRIPS Agreement), defines a trademark as "any sign, or any combination of signs capable of distinguishing the goods or services of one enterprise from those of others. Companies will be capable of constituting a trademark or trade mark. Such signs, in particular words including the names of persons, letters, numbers, figurative elements and color combinations, as well as any combination of these signs, will be liable to be registered as trademarks or trade".

Thus, the trademark, whether it is of manufacture, trade or service, is a distinctive sign whose purpose is to distinguish the marketed products and services of a company from those of competitors.

The trademark participates in a certain protection of the public, while allowing it to identify the product or service in question and to distinguish it from other products or services. It guarantees its origin and provides information to the consumer who can make an informed decision.

Ultimately, it appears that the purpose of the trademark is to protect both its owner and the recipient of the products and services.

All the requirements of trademark law have developed with regard to these two functions..

The patent:

The invention patent provides protection for the technical creation of the process and constitutes a kind of compromise between the interests of the inventor and those of society. In exchange for the disclosure of his invention, the inventor is granted an exclusive right to exploit it for a maximum period of 20 years in return for the payment of annual royalties.

The invention patent is a title issued by the State which confers on its owner a temporary monopoly on the exploitation of an invention, allowing him to prohibit during the duration of this monopoly any unauthorized use.

Any invention may benefit from the protection of patent rights. Conversely, the filing of a patent is not mandatory. The inventor is free to prefer secrecy.

Article 24 of the TRIPS Agreement provides:

"A patent may be obtained by any product or process invention, in all technological fields, provided that it:

• Either new

• In involves an inventive step

• Is capable of industrial application

o New invention

A new invention is considered new if it is not included in the state of the art on the day the application or priority is filed.

The state of the art means all the information accessible to the public before the date of filing of the patent application.

The place, date and form of the disclosure are irrelevant.

It is therefore an absolute novelty: any disclosure in any place and any time whatsoever is destructive of novelty and this may even be the fact of the inventor who had not taken measures sufficient discretion.

The only practical exceptions relate to the assumption of disclosure resulting from abuse by a third party.

o An invention involving an inventive step

An invention is considered to involve an inventive step if, for a person skilled in the art, it does not derive, on the date of filing of the application, in an obvious manner from the state of the art.

This condition is intended to exclude from the scope of patentability an invention that does not exceed the competence of a simple performer using his ordinary knowledge.

The invention must not be obvious to "one skilled in the art".

This formula designates a reference person considered to be a technician who has general scientific knowledge and also has a good command of the specific knowledge to which the invention relates and it is in relation to him that the inventive step will be assessed.

o An invention capable of industrial application

An invention is considered susceptible of industrial application if, on the day the patent application is filed, its object can be manufactured or used in any type of industry, including agriculture.

The technical and usable nature of the invention is in question. Indeed, the patent essentially aims to obtain an exclusive right of use, which implies that the inventor can be exploited.

o Not belong to one of the fields excluded from patentability

- Discoveries, scientific theories and mathematical methods.

Discoveries are not patentable. Indeed the discoverer was content to express in words and signs a pre-existing natural phenomenon. However, when the manifestation of a natural phenomenon necessarily involves the intervention of man, patentability is possible.

This is the case with highlighting the therapeutic properties of a natural product.

Scientific theories and mathematical methods also escape any form of appropriation, in the absence of immediate industrial application. On the other hand, their technical implementation may be the subject of an exclusive right. The monopoly granted by the patent will however be limited to this precise application.

- Plans, principles and methods in the exercise of intellectual activities, in matters of gambling or in the field of economic activities, as well as computer programs.

Plans, principles and methods are excluded from patentability by virtue of the principle that ideas are in essence and by destination free-range.

Belonging to the public domain, they must remain freely available to everyone.

o Fields excluded from patentability

Inventions which infringe:

- The dignity of the human person

- To public order

- Of good morals

In particular, the following are not patentable:

- Processes for cloning human beings

- Processes for modifying the genetic identity of human beings

- The uses of human embryos for industrial and commercial purposes.

These express exclusions from the scope of patentability respond to ethical considerations.

The creations in question fulfill a priori the eligibility criteria for protection by patent law.

Plant varieties rather protected by the UPOV Convention of 1961. Plant variety certificate.

Similarly, essentially biological processes for obtaining plants and animals are not patentable. The action of nature is then decisive so that man plays only a secondary role in determining or controlling the result.

o Claims

They now constitute the central element of the patent application as they contain the object of the invention as well as its technical characteristics. They therefore delimit what the plaintiff intends to protect. They determine the extent of the protection claimed.

o Exceptions to the rights conferred

Once the patentability conditions have been met, the owner of the invention is granted a patent. A title that gives him a temporary monopoly on the exploitation of his invention, allowing him to prohibit any unauthorized use for the duration of this monopoly.

However, according to Article 30 of the TRIPS Agreement "Members may provide for limited exceptions to the exclusive rights conferred by a patent, provided that these do not unreasonably conflict with the normal exploitation of the patent or unreasonably prejudice the legitimate interests of the patentee, taking into account the legitimate interests of third parties".

Article 31 clarifies certain circumstances of use without the authorization of the owner: "Where the law of a Member permits other uses of the subject matter of a patent without the authorization of the owner of the right, including use by public authorities or third parties authorized by them, the following provisions will be observed. »

o Legal licenses

Required licenses for failure to operate

Obligatory dependency licenses (advanced)

Office licenses

II. THE FUNDAMENTAL PRINCIPLES

We sometimes qualify intellectual property as a set of prerogatives which have the common characteristic of conferring on their holder exclusive rights of exploitation legally protected which are similar to real monopolies.

These rights, materialized by a title deed, are issued by a national or sub-regional administration acting on behalf of the Member States, for example OAPI.

a) The principle of territoriality

The monopoly conferred by intellectual property rights is subject to the principle of territoriality. If the holder of the rights is omnipotent on the territory of the State which conferred them on him, his exclusive right finds its limits with the borders of the State.

b) The principle of independence

The geographical limitation of the scope of the monopoly has as its corollary the principle of independence of national intellectual property rights. Thus the cancellation of a patent in one country does not presage, a priori, the validity of the same patent filed in another.

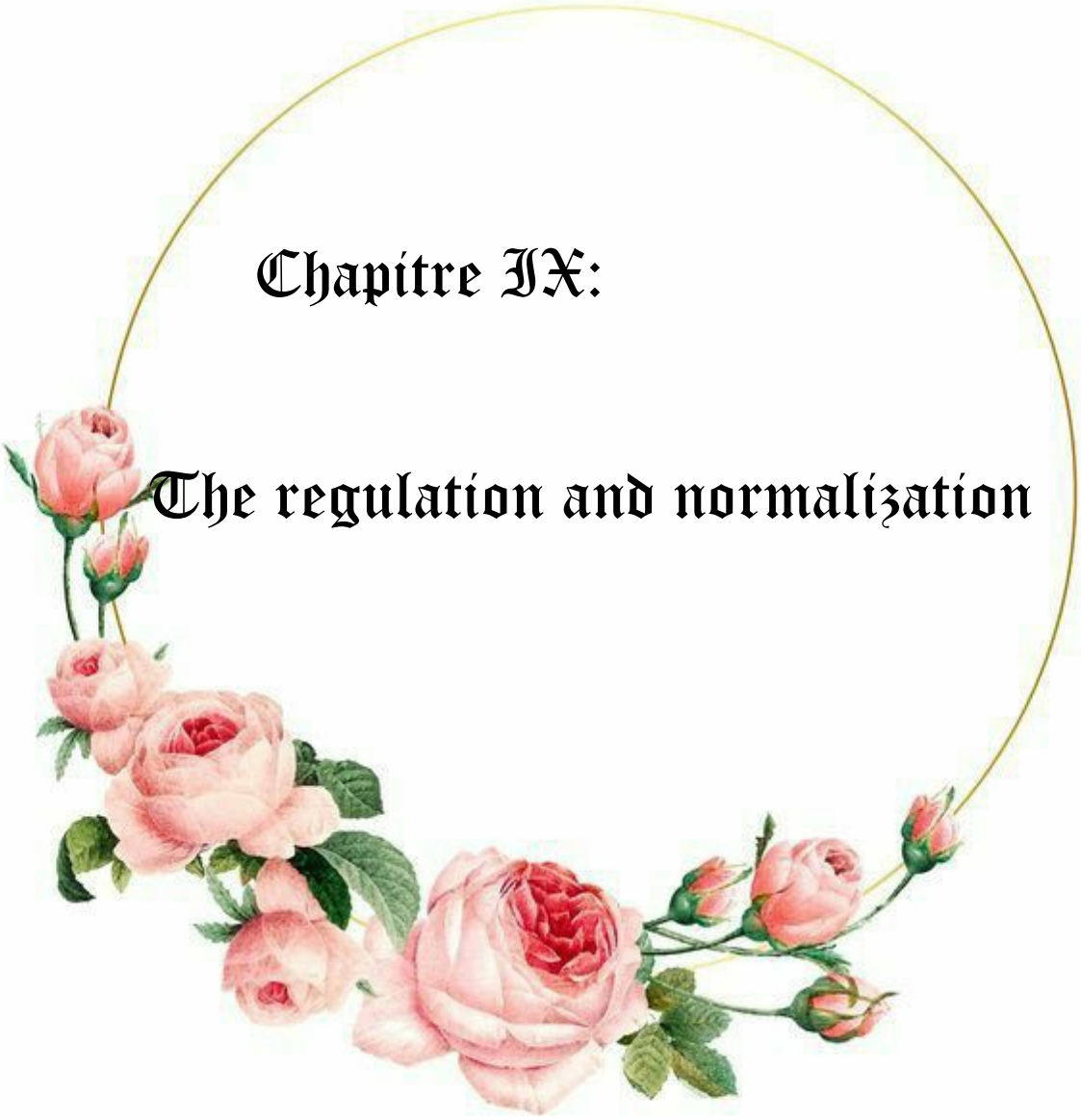
c) An inventor who wishes to be protected in several countries cannot materially make a simultaneous deposit in each of them. This is why a system has been put in place that prevents the first application from being published and de facto destroys the novelty of those that follow in other countries. Thus the inventor may, within a period of 12 months from the filing of the first application, file applications in the other member countries of the Paris Convention of March 20, 1883. Subsequent filings are deemed to have taken place on the date of first filing and the state of the art to be taken into consideration is that which then prevailed.

- Condition of reciprocity

- Identical and relates to the same invention.

Chapitre IX:

The regulation and normalization



THE REGULATIONS: These are legislative texts (Decrees or Ministerial Orders) they set minimum levels of requirements in products and services (safety, comfort, energy saving, etc.)

THE Norms (de jure STANDARDS): are documents which define for a traditional material for example: - Certain characteristics (mechanical, thermal, acoustic, etc.) - Test methods.

Regulation and normalization refer to two very distinct approaches.

What legal significance?

Regulatory text = Mandatory application

The norms = Voluntary application (Except in special cases).

The norms are voluntary; however, they may be made compulsory by order signed by the ministry responsible for industry and the minister(s) concerned.

Regulations are the result of decisions taken by national public authorities or by international organisms, the application of which is obligatory.

Normalization, for its part, is the result of a consensus between socio-economic actors (Companies, professional federations, unions, NGOs, consumer associations, research centers, control organisms, public and private users, public authorities …); it is voluntary.

Regulation is essential to regulate the life of socio-economic actors, citizens, businesses, in a country. With regard to businesses, it makes it possible, for example, to contain negative externalities, such as pollution for example, generated by certain industrial activities.

Regulation is essential to regulate the life of socio-economic actors, citizens, businesses, in a country. With regard to businesses, it makes it possible, for example, to contain negative externalities, such as pollution for example, generated by certain industrial activities.

Finally, rules and standards carry quality signals which affect products, services, customer-supplier relationships, processes, etc. They are therefore a significant means of structuring the market towards an offering of products and quality services.

The regulations are issued by the public authorities; companies have an obligation to apply it. It can take the form of laws passed by Parliament, decrees signed by the President of the Republic or the Prime Minister, orders emanating from another administrative authority (ministers, prefects, mayors, presidents of departmental or regional councils).) or circulars specifying the terms of application of these decisions. Regulations are determined at national, European or international level.

It can be specific to the manufacturing industry as a sector (exposure to chemical agents dangerous to humans, for example) or applicable to a broader set of companies (regulation of redundancies, for example). Decrees, orders and laws form the legislative and regulatory environment in which companies operate.

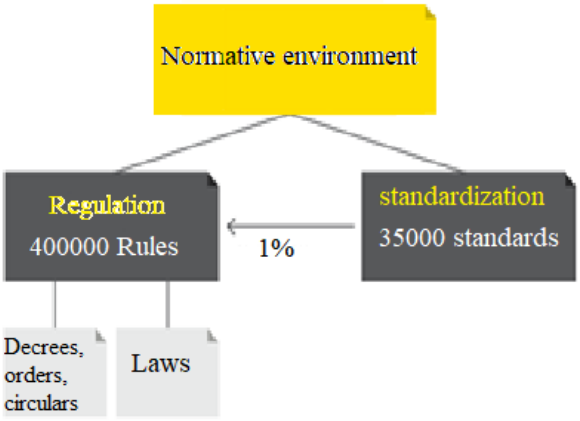


Figure.10. The regulations and the norms in France.

The legal scope of the standards:

The norms have variable legal scope.

The reference to these norms is, in this case, of an indicative nature. In certain activities, economic actors develop standards for the benefit of the general interest. Regulations or acts of public authorities refer to standards in an indicative manner, simply citing these standards without giving them binding effect, and without conferring on them a presumption of conformity either.

As an exception, standards can be binding either because they are made mandatory by a national text (there are approximately 300 standards (of exclusively French origin) with mandatory application).

+ agreement	+ judicial
Norms (De jure standards) : certified experimental	 FS (NF) XP
standards documents documentation booklet (informative content)	 DB (FD)
other reference documents application guide agreement best practices repository	 AG (GA) A (Ac) BP (BP)
- agreement	- judicial

Use of the norms in regulations:

To ensure safety, health, environmental protection, or fair transactions, the State may impose compliance with specific obligations:

Performance, manufacturing or analysis methods, compositions, conservation conditions, storage, labeling, disposal conditions, etc. At the same time, economic actors and more broadly, stakeholders can voluntarily develop rules to facilitate trade. Thus, optional rules and regulation can simply coexist. However, globalization, the expansion of markets, the challenges of disseminating innovation as well as the expectations of civil society lead to strengthening the complementarities between norms and regulations.

The use of the norms in regulations is in no way obligatory and the reasons leading to the search for complementarities between the regulatory corpus and technical standards are varied.

Reference to the norms in regulations can help administrations deal with technical constraints of general interest necessary to achieve the purposes falling within their competence. Indeed, administrations must comply with various community or international requirements and simplify regulations so that they remain readable and refocus them on public policy objectives.

	regulations	standards
initiators and stakeholders	central administration of ministries	construction stakeholders (project owners, project managers, construction companies, inspection offices, manufacturers, etc.)
Elaboration	central administration of ministries	standardization commissions managed by standardization offices which operate under delegation from AFNOR.
adoption	by the ministry(ies) after consultation with stakeholders in the sector	following consensus between the stakeholders concerned and the public inquiry
formalization	regulatory texts (decrees, orders)	**AFNOR standard:** Execution standards: Calculation standard: Eurocodes Product standard Test standard
application	Obligatory	**voluntary (**unless the standard is part of the mandatory application standards)
publication	Official Journal	**AFNOR**
access to texts	Free	**paid** (but free consultation if the standard is mandatory)

Attention: not all standards cited in regulatory texts are mandatory!

Sometimes they are simply mentioned for information purposes, as one means among others to achieve the requirements required by the regulations.

THE LAW: voted by the National Assembly, it defines objectives to be achieved.

It is promulgated by the President of the Republic after adoption by Parliament, and after advice from the Council of State;

THE DECREE: it results from a law and is signed:

- either by the President of the Republic, President of the Council of Ministers - or by the Head of Government on the proposal of the Minister of the government concerned, it specifies the goals to be achieved.

THE ORDER (ordonnance) : It is signed either by the head of government or by the president of the republic.

THE ORDER (Arrêté): it is signed by the minister of the government concerned, it specifies the means.

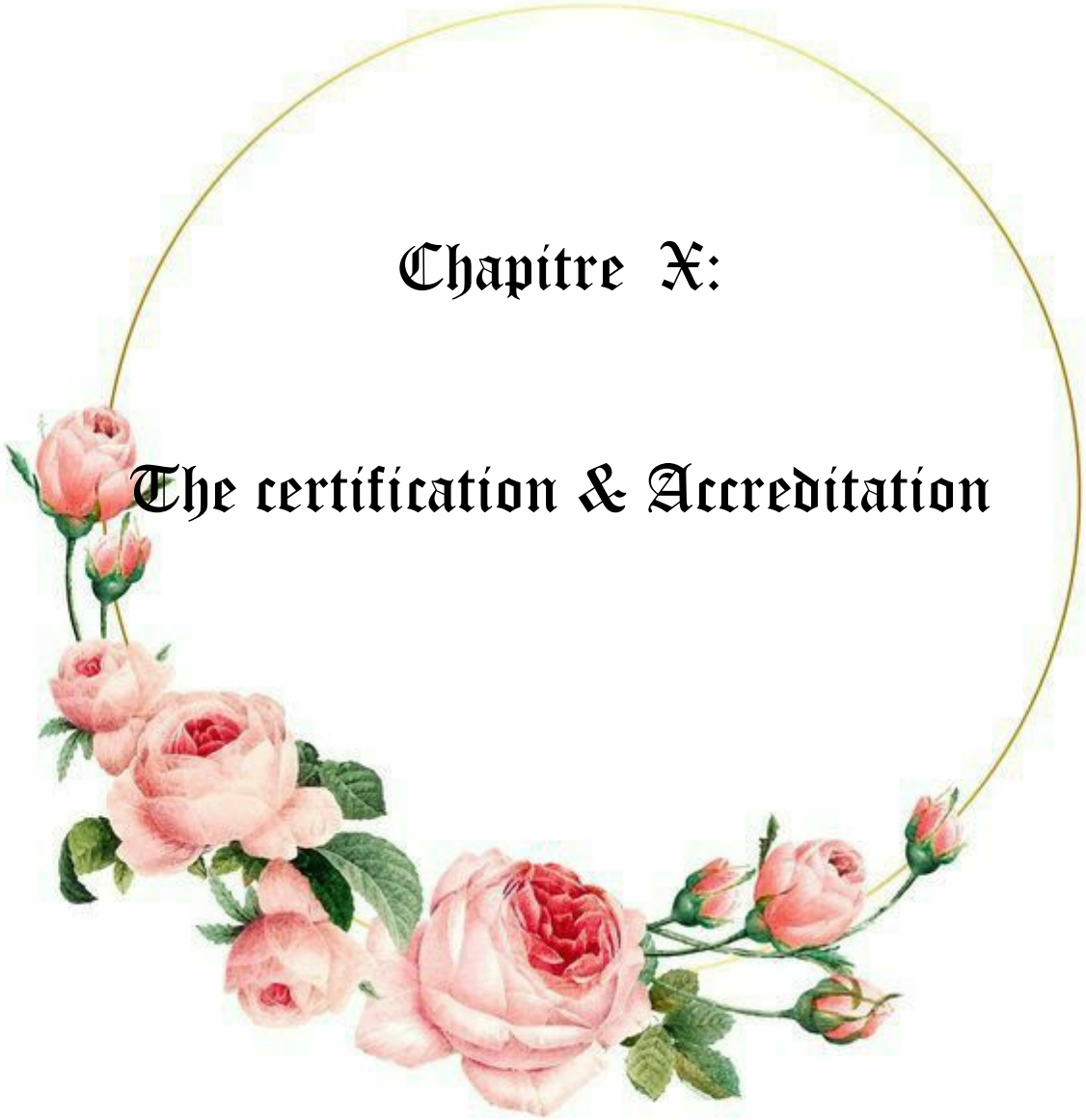
THE CIRCULAR: issued by the ministries, it is intended for civil servants; it analyzes the texts and determines a line of action.

THE TECHNICAL NOTE: issued by the ministries, it gives a technical interpretation of a particular point.

https://snisolation.fr/reglementation-normalisation/

Chapitre X:

The certification & Accreditation



We may wonder why the notion of quality, an integral part of the manufacturing process of a product, has become so important today in the study of the production phases, that an international organization has issued a series of standards on this subject. It is enough to understand the evolution of the producer/purchaser relationship to explain this appearance of the notion of quality in the economic world.

From 1975:

Japanese products are flooding the markets with better quality for a lower price. Customers are becoming more and more demanding. And as supply is greater than demand, you have to fight on all fronts to sell. Particularly on quality, this becomes a factor of competitiveness and a commercial argument. The quality is now global. From a vague intuitive notion of the idea of a job well done, it is now a priority in the notion of production. At the company level, it concerns all activities, all professions, all people, all times.

Quality and quality assurance:

The principle of quality is very widespread today in the industrial world and this in all areas. In the health sector, for example, the notion of “zero defects” is essential. At the level of biology laboratories, the "client" is in this case the "prescribing doctor" who requests the fastest possible analysis result, and whose reliability cannot be doubted. This notion is all the more sensitive as it affects human health. According to the World Health Organization, "hundreds of thousands of deaths and serious illnesses worldwide each year are attributable to inaccuracies or errors in clinical and public health laboratories." This lack of reliability is often due to the absence of quality assurance.

Implementing quality does not mean checking at the final stage whether the product complies with requirements, but rather monitoring this quality at all stages to seek to achieve “zero defects”.

Beyond these (relatively airtight) definitions, we can define quality assurance by:

• Describe what we do

•Describe how things will be done

•Do what has been described

•Handle errors

•Continuity of quality (internal audit).

Approach to setting up a quality assurance system:

To implement a quality approach, the essential aspect must be integrated: the general principles of the PDCA cycle (acronym for Plan Do Check Act), also called the Deming wheel, was developed in the 1950s. It constitutes a four-step model which supports the dynamic of continuous improvement of a product, service, project or system. It’s about achieving objectives by capitalizing on experience through a cycle that rotates continuously.

Figure.11.The PDCA cycle.

Certification is a procedure by which a third party provides written assurance that a product, process or service (ISO 1996 guide) conforms to specified requirements (ISO 9000):

1. In industry, certification consists of involving a third-party and independent body to certify the conformity of its product to a technical reference (standard).
2. This organism verifies both the conformity of the product and the quality of its production on an industrial scale.
3. The product recognized as compliant benefits from the right to use as quality mark.

The certification relates to its performance regarding the safety of the product for consumption or use. Certification is a voluntary act that can provide businesses with a competitive advantage. Product certification is generally voluntary, unless the state requires it, based on the fact that the product is sensitive to consumer safety.

It is issued by certifying organisms independent of certified companies as well as public authorities.

The mark of conformity to Algerian Standards delivered by IANOR is materialized by a certificate and a monogram which includes two Arabic letters (TEDJ) arranged in the form of a crown and delimited by a circle 30 products are TEDJ certified (HDPE tubes, cements, bags woven, pressure cookers, etc.).

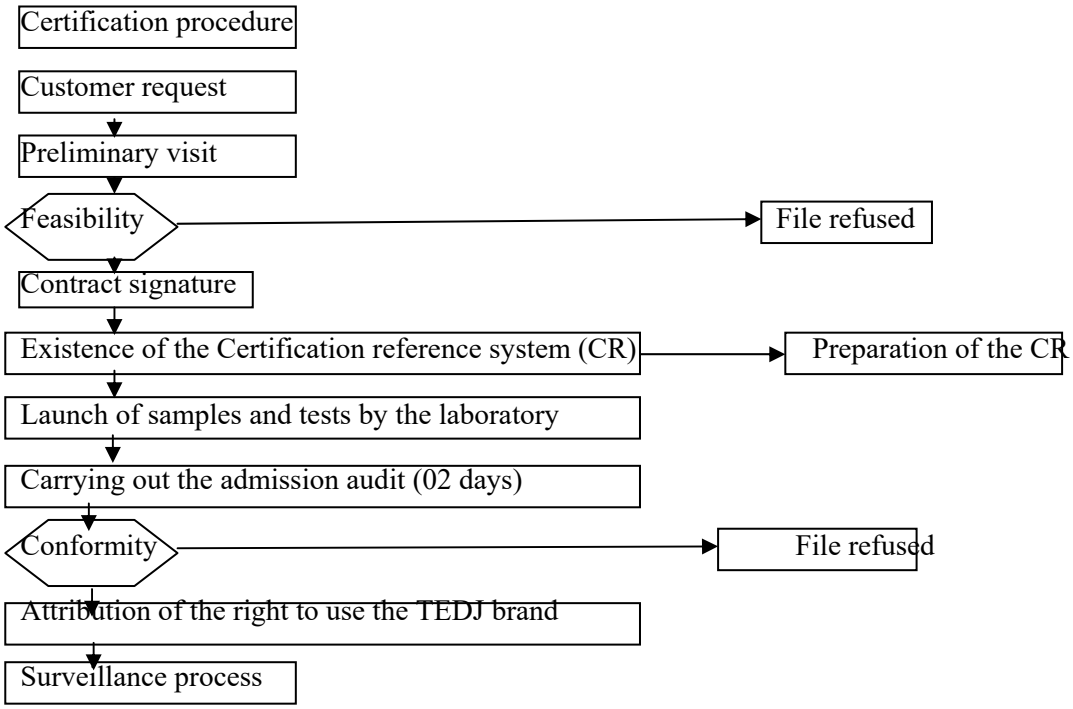
The steps of certification:

1. Certification request needs analysis, personalized offer depending on the field and scope of certification
2. Preparation of the audit Provision of practical guides, Technical contract review, documentary preparation or on site
3. Certification audit Conducting the on-site audit, audit report and analysis of corrective actions
4. Certification decision taken by a certification committee, delivery of a certificate for a period of 3 years
5. Retention of the certificate Adapted frequency of the follow-up audit (with at least one audit per year), renewal audit every three years.

Some certification organisms approved in Algeria (see lists of organizations approved by Algerac- Algerian Accredition Body AAB):

Alicef, Vinçotte Algeria, AFAQ AFNOR, IANOR, Bureau Veritas Algeria , Moody international, SGS.

Certification procedure in Algeria (IANOR):



Different types of certification:

Most common voluntary certifications

• The ISO 9001 quality management system

• The ISO 14001 environmental management system

• The OHSAS 18001 workplace health and safety management system

• The ISO 22000 food management system

Figure.12.The certification symbols.

Accreditation:

The ISO/IEC 17000 standard defines accreditation as a certificate issued by a third party, relating to a conformity assessment organism, constituting formal recognition of the competence of the latter to carry out specific conformity assessment activities.

It is the certification of the skills of laboratories, certifying organisms and inspection organisms to carry out calibration, testing, inspection and certification activities.

Accreditation provides confidence in the services provided by these organizations.

Accrediting organisms must meet certain requirements such as impartiality, independence, transparency and competence.

Accreditation = verification of the competence of an organization carrying out the control

Certification = verification of conformity according to specific requirements.

Accrediting organisms (COFRAC, ALGRAC,..)

↓ **Accreditation according to standards**

Certification organism

↓ **Certificate according to the standard**

Company

↓

Product, service, staff

Figure .13. Accreditation certificate.

Chapitre XI:

Manufacturing standards

Common ISO standards in manufacturing;

In a highly competitive business world, companies must continually produce high-quality, durable products to stay relevant. Many terminal companies only work with certified suppliers, regardless of their location. Organizations must be internationally accredited to meet quality and safety standards to build customer trust and loyalty. Certification inspires confidence and proves that a company has achieved the highest standards in the industry.

ISO standards ensure quality products and services while minimizing defects and recalls. There are many types of ISO standards used in various industries and targeting specific aspects of production such as occupational hazards and customs security. Read on to learn about the main ISO standards and how manufacturers and end users benefit from manufacturing industry standards.

Figure.14. ISO acronym.

What are ISO standards in manufacturing?

ISO standards are guidelines and specifications established by the International Organization for Standardization (IOS) that ensure that all aspects of a business meet the highest quality standards. These standards ensure accuracy, consistent product quality, and end-user safety. ISO is a non-governmental organization that has existed since 1946. It is composed of representatives of the national standards organizations of member countries.

ISO has over 25,000 business, proprietary, and industry standards that cover healthcare, technology, agriculture, and food. Note that ISO itself does not certify companies. The organization develops the standard while a third party provides certification and issues quality confirmation certificates. Obtaining ISO certification for manufacturing does not stop there. Audits and monitoring are conducted regularly to ensure that organizations that are already certified do not default.

What are the standards used in the manufacturing industry?

ISO publishes standards for different industries and sectors. These standards ensure that products are manufactured and services are provided in the correct and most appropriate manner. Here are the most common ISO standards for manufacturing companies.

ISO 9001

It is the most widespread among the ISO 9000 family. The ISO 9001 standard specifies the guidelines for establishing, implementing, maintaining and improving the quality management system in an organization. Being

“ISO 9001 certified” means that your company meets customer and legal requirements. This ISO certification for manufacturing references other standards and is globally recognized for quality management.

There are some misconceptions about ISO 9001. Many believe that it is only for large companies and organizations. ISO 9001 helps small businesses as well. It only sets the minimum quality standards that can be tailored to meet the needs of each organization. Implementing ISO 9001 helps streamline operations, resolve complaints in a timely manner, and increase customer satisfaction.

Although established in 1987, the ISO 9001 standard is subject to regular revisions. The recent version, ISO 9001:2015, focuses on 7 principles of quality management (QM)

Customer orientation

The customer is the “boss” of an organization and must be at the center of its concerns. Organizations must treat each customer differently, identify their needs and exceed their expectations. This approach helps build long-term relationships and improve the reputation of companies.

Direction

Leadership is essential to the implementation of this standard. They set goals and provide sufficient resources to effectively achieve the goals. Strong leadership ensures effective communication at different levels of the organization.

People engagement

All people involved must understand their role and the consequences of their actions. Team members must have a sense of belonging and be properly motivated.

Process approach

A business may provide services, deliver products, or both. Organizations must have a clear understanding of the interdependent processes or sub-activities required to operate. They define and assign responsibilities for each step.

Training

The ISO9001 standard emphasizes continuous improvement. Companies assess customer satisfaction and measure their performance using relevant KPIs (key performance indicators).

Evidence-based decision making

The organizational approach to decision making must be fact-based and nothing less. Collecting and analyzing relevant data will minimize risks and produce better results.

Relationship management

Businesses need to build quality relationships with important stakeholders such as suppliers, customers, investors and banks.

ISO 14001

ISO 14001 is a set of standards that specify guidelines for planning, implementing, reviewing, and maintaining a company's environmental management system. This involves several aspects, including the efficient use of resources, proper disposal of waste, and performance monitoring. ISO 14001 helps organizations provide services and achieve efficient production while protecting the environment and minimizing pollution. As a result, compliance with ISOl 14001 results in a safer environment for employees and the general population.

Like many manufacturing standards, ISO 14001 is based on the Plan To Do Act (PTDA) methodology. Organizations determine relevant environmental aspects and identify how their products or services interact with the environment. With this, they set SMART targets and objectives. Companies then establish programs and policies, provide necessary resources, and train employees. The success of EMS(emergency medical service) depends on active involvement and communication among employees. The final step is to measure and monitor progress to ensure that environmental goals are met. Based on the results, a company identifies gaps, makes corrections, and moves the EMS forward.

IATF 16949

IATF 16949 is a globally recognized standard that establishes QMS (Quality Management System) requirements for the automotive sector. The first edition was ISO/TS 16949 developed by the International Automotive Task Force (IATF). It is a technical specification with limited alignment with ISO 9001:2015.

The latest IATF 16949 standard aims to prevent waste and reduce the incidence of defects and variations at all stages of the automotive product development cycle. However, IATF 16949 cannot stand alone and is based on ISO 9001. The seven principles of quality management are also the basis of IATF 16949, as they help automotive organizations achieve sustainable success.

Note that the IATF group regularly updates this manufacturing industry standard to ensure that it quickly meets the needs of the automotive industry. There are over 70,000 IATF 16949 certified organizations with Zintillon standing at the forefront. This new edition focuses on continuous improvement and aims to adequately and efficiently meet the requirements of end users.

ISO 13485

La norme ISO 13485 spécifie les exigences des clients et les exigences réglementaires pour les organisations qui conçoivent, fabriquent, distribuent ou installent des dispositifs médicaux et des services associés. Bien qu'elle puisse être autonome, elle est meilleure lorsqu'elle est utilisée conjointement avec la norme ISO 9001. Alors que la norme ISO 13485 certifie qu'une organisation met en œuvre et maintient un système qualité, la norme ISO 9001 garantit que l'organisation fait l'objet d'une amélioration continue. La norme ISO 13485 aide les fabricants de produits médicaux à identifier et à éviter les risques à un stade précoce, et à produire des produits sûrs pour une meilleure satisfaction des clients.

AS9100D

This is the standard for quality management systems in organizations that design products or provide services in the aviation, space and defense sectors. It focuses on product safety and service quality and takes into account customer needs. The requirements of AS9100D complement ISO 9001:2015. Using both standards ensures that organizations comply with both general and sector-specific requirements.

In addition to this general aerospace standard, there are more specific ones; AS9110 and AS9120. AS9110 focuses on aircraft repair and maintenance, while AS9120 provides requirements for organizations that assemble, distribute, and resell aerospace products. AS9100 certification gives a company global recognition as a reputable supplier. It reduces waste, lowers operating costs, and allows organizations to make data-driven decisions.

Why ISO Certification is Required in Manufacturing Companies?

The process of obtaining the different types of ISO certification can be rigorous and take years. However, it shows that organizations have taken the time to comply with global standards. ISO certification is not mandatory but is a necessary requirement. Here are some reasons why it is important to obtain ISO certification for manufacturing companies.

Gain a competitive advantage

ISO certification for manufacturing is important if organizations want to stand out in local and international markets. When a terminal company is considering a supplier, there is no doubt that the one that is certified will have an advantage. It shows that the organization is committed to quality and has built a management system that a non-ISO certified company lacks.

Additionally, ISO certification plays a role in international trade and partnerships. Many large aerospace organizations require certification from third-party companies before collaborating and signing business contracts.

Increase sales and profits

Many organizations consider the process of achieving industry standards to be costly and time-consuming. However, consider it as an investment with a high ROI (Return On Investment). ISO certification helps boost sales and increase revenue in several ways. It improves employee performance and confidence. They feel more fulfilled knowing that they are giving up everything related to quality.

In addition, customers have more confidence due to the worldwide recognition of quality, regardless of the size of the organization. Not only do they continue to use certified products and services, but they also market the company for free and attract new customers. This will increase the level of profit and the company will run smoothly, without problems.

Recognition of government and legislation

Although ISO is a non-governmental organization, it is respected by government and legislative bodies. Many notable organizations, including the WHO(World Health Organization) and the UN (United Nations), work in cooperation with ISO for manufacturing companies. In addition, many ISO members are also involved in the development of laws in their respective countries.

Therefore, these standards often align with regulatory requirements. This reduces the time required for government inspections and audits.

Benefits of ISO Certifications for Manufacturing Companies and Customers

ISO certification benefits both manufacturers and end customers.

For manufacturers

Here are some benefits that manufacturers and producers get from being ISO certified

Strive to improve yourself

ISO standards for manufacturing companies enable continuous improvement. They regularly evaluate their operations, discover lagging areas and work on them. These results in improved quality of products and services rendered.

Improving safety and health at work

Implementing industry standards helps protect employees from workplace hazards and injuries. ISO 45001 prevents workplace deaths and health problems. This standard provides a safer and healthier working environment.

More relevance

ISO standards for manufacturing industries ensure consistency in all aspects of production. This ensures that products are consistently high quality and prevents recalls.

Expanded market access

ISO manufacturing standards give organizations global recognition. It is like a badge showing that your products and services are tested and approved in every corner of the world. This paves the way for local industries to access the global market and discover new business opportunities.

For customers

End users benefit from the following by using ISO certified products and services:

Top quality

Implementing ISO standards ensures that customers get the highest quality products possible. Identifying potential errors maintains quality and prevents defects. This leads to increased customer satisfaction, trust and loyalty.

Best product performance

Quality control and management ensure that products perform as they should. Organizations study the changing needs and preferences of end users. Through this, they can strategize and optimize their processes and operations.

Improved supplier relationships

Customers will always choose to work with ISO certified companies. When customers get value for their money, they always come back for more. Implementing manufacturing standards avoids lengthy discussions, improves supply chain performance, and builds stronger relationships.

https://www.zintilon.com/fr/blog/common-iso-standards-in-manufacturing/

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