

BUSINESS PLAN

CEN/TC 193 ADHESIVES

EXECUTIVE SUMMARY

The scope of TC 193 is the standardization of all adhesives to produce standards on vocabulary and classification, characterization (by means of physico-chemical and mechanical test methods) and methods of test for adhesives and performance standards for specific applications.

In this field Europe represents near 32% of adhesives of the world market, which is divided in the following main application sectors: assembly operations, paper, board and related products (packaging), building, construction, civil engineering, craftsmen, woodworking and joinery, transportation and footwear/leather.

The parties involved are industry at national and international level, both producers (e.g. raw materials supplier) and users for whom adhesive is a raw material for further fabrication, laboratories, research and testing institutes, Public authorities, consumers and non-governmental organisations as for example "green organisations".

The benefits obtained from the standardization of adhesives are the harmonization at European, and also at international level by means of the parallel work with ISO, of a set of standards that establish a common terminology and test methods for the sector. With regard to this, since 1992 more than 100 standards have been published.

According to this the priorities of CEN/TC 193 are to make European standards available related to:

- harmonize the terms of reference in the sector thus facilitating understanding between the parties and eliminating trade barriers;
- harmonize test methods at European level, if possible at international level working in co-ordination with ISO;
- answer the three mandates involved and related to Construction Products Regulation: M127, M131 and M136;
- give orientation to manufacturers on how to meet legislation requirements in relation to areas of growing interest like safety, and health and environment protection in particular.

Giving standards international diffusion thus favouring the global market is also a TC 193 priority.

1 BUSINESS ENVIRONMENT OF THE CEN/TC 193

1.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal, societal and/or international dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this CEN/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards.

1.1.1 General

Adhesives are world-wide used products intended for joining materials by surface bonding (adhesion) and the bond possessing adequate internal strength (cohesion).

Users vary from the individual child at school using a bar of adhesive or a roll of self adhesive tape to stick/join two pieces of paper together to the technical engineer who builds up aeroplanes.

Adhesives and adhesive tapes compete in the market with other joining systems, e.g. mechanical fasteners, welding and soldering and standardization improves their image and so, favours their usage.

1.1.2 Interested parties

Interested parties in the standardisation process are all industries at national and international level, both adhesives producers (e. g. raw material suppliers) and users for whom adhesive is a raw material for further production; public authorities, institutes, laboratories, consumers representatives, and other non-governmental organisations as for example "green organisations". All of them are interested in having a set of standards that establish a common terminology for the sector, describe the tests that define the adhesive characteristics and fix the requirements to be met.

Already taking part in the standardisation activity within CEN/TC 193 are multinational and national companies, raw material suppliers, research and testing institutes, FEICA, ECAP, national standards organisations that represent a national point of view, and others.

FEICA (Association of the European Adhesive & Sealant Industry) which represents the national Adhesives Manufacturers Associations of 14 European countries is already carrying out pre-standardisation activities through its working groups. FEICA members are the same as CEN members except: Czech Republic, Greece, Iceland, Ireland and Luxembourg.

ECAP (European Consortium of Anchors Producers) is the consortium of Small and Medium-sized European Producers of mechanical, chemical and plastic anchors, wood screws, concrete screws, powder actuated tools (PATs) and related nails and fixing cartridges. ECAP is a non-profit Consortium, 100% self-financed by its members, which are entirely Small and Medium-sized Enterprises (SMEs).

1.1.3 Political, economical, social, technical, legal and international factors

1.1.3.1 General

Political, economical, social, technical, legal and international factors that either directly require some or all of the standardisation activities proposed by the CEN/TC, or significantly influence the way these activities are carried out are the following.

Most adhesives are dangerous preparations, consequently there are aspects related to safety, health and the environment which have to be carefully dealt with during the whole chain of the product life: production, package, transport, storage, application by final user, life after application, or any other relevant stage.

1.1.3.2 Legal factors

European Directives more and more regulate those matters but also standards are recognised as being a key component of the European single market.

Adhesives are affected by a number of European directives that do not regulate the product itself that is, do not define product specifications, but that establish safety and environmental requirements to be met by industry.

1.1.3.2.1 Directives and regulations

European directives and regulations affecting adhesives are the following:

a) Chemicals:

- REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- CLP-Regulation - Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food
- Construction Products Regulation n°305/2011
- Transport of dangerous goods by road (ADR, Directive 94/55/EC and amendments) and by rail (RID, Directive 96/49/EC and amendments)
- Import and export of dangerous chemicals (Commission Regulation (CE) N° 1213/2003)

b) Environment:

- Packaging and packaging waste (Directive 94/62/CE)
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

c) Safety at the work place:

- Introduction of measures to encourage improvements in the safety and health of workers at work (Framework Directive 89/391/CEE)
- Minimum safety and health requirements for the workplace (Individual Directive 89/654/EEC)
- Protection of the health and safety of the workers from the risks related to chemical agents at work (Individual Directive 98/24/CE)
- List of indicative occupational exposure limit values (Directive 2000/39/CE)
- Protection of workers from the risks related to exposure to carcinogens or mutagens at work (Individual Directive 2004/37/CE)
- Introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (Individual Directive 92/85/CEE)
- European schedule of occupational diseases (Commission Recommendation 2003/670/EC)

d) Others:

- Sale of consumer goods and associated guarantees (Directive 1999/44/CE)

1.1.3.2.2 Mandates

Related to Construction Products Regulation n°305/2011 there are three mandates that affect directly CEN/TC 193. These mandates are intended to lay down provisions for the development and the quality of harmonized European Standards in order, on the one hand, to make “approximation “of national laws, regulations and administrative provisions possible and, on the other hand, to allow products conforming to them to be presumed to be fit for their intended use as defined in the Regulation.

The performance characteristics to be covered by the harmonised standards are:

- Mechanical resistance and stability: bond strength, tensile strength, fatigue strength, impact strength, heat resistance and creep;
- Reaction to fire;
- Release of dangerous substances.

The relevant mandates and standards are the following:

a) M127 Construction adhesives

Reference	Title
EN 302-1:2013	Adhesives for load-bearing timber structures - Test methods - Part 1: Determination of longitudinal tensile shear strength. (Supporting standard)
EN 302-2:2013	Adhesives for load-bearing timber structures. Test methods - Part 2: Determination of

	resistance to delamination. (Supporting standard)
EN 302-3:2013	Adhesives for load-bearing timber structures - Test methods - Part 3: Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength.
EN 302-4:2013	Adhesives for load-bearing timber structures. Test methods. Part 4: Determination of the effects of wood shrinkage on the shear strength. (Supporting standard)
EN 1464:2010	Adhesives - Determination of peel resistance of adhesive bonds - Floating roller method. (Supporting standard)
EN 13999-1: 2013	Adhesives. Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application. Part 1: General procedure. (Supporting standard)
EN 13999-2: 2013	Adhesives. Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application. Part 2: Determination of volatile organic compounds. (Supporting standard)
EN 13999-3:2007+A1:2009	Adhesives. Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application. Part 3: Determination of volatile aldehydes. (Supporting standard)
EN 13999-4:2007+A1:2009	Adhesives. Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application. Part 4: Determination of volatile diisocyanates. (Supporting standard)
EN 14022:2010	Structural Adhesives - Determination of the pot life (working life) of multi-component adhesives. (Supporting standard)
EN 14258:2004	Structural adhesives. Mechanical behaviour of bonded joints subjected to short and long terms exposure at specified conditions of temperature. (Supporting standard)
EN 14678:2005	Adhesives - Determination of resistance to flow (sagging) (ISO 14678:2005). (Supporting standard)
EN 15274:2015	General purpose adhesives for structural assembly. Requirements and test methods. (Harmonized standard)
EN 15275:2015	Structural adhesives. Characterisation of anaerobic adhesives for co-axial metallic assembly in building and civil engineering structures. (Harmonized Standard)
EN 15336:2007	Adhesives - Determination of the time to rupture of bonded joints under static load (ISO 15109:1998 modified). (Supporting standard)
EN 15337:2007	Adhesives - Determination of shear strength of anaerobic adhesives using pin-and-collar specimens (ISO 10123:1990 modified). (Supporting standard)
EN 15416-2:2007	Adhesives for load bearing timber structures other than phenolic and aminoplastic - Test methods - Part 2: Static load test of multiple bondline specimens in compression shear. (Supporting standard)
EN 15416-3:2007+A1:2010	Adhesives for load bearing timber structures other than phenolic and aminoplastic - Test methods - Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear. (Supporting standard)
CEN/TS 16516:2013	Construction products — Assessment of release of dangerous substances — Determination of emissions into indoor air

b) M131 Pipes, tanks and ancillaries not in contact with water intended for human consumption

Reference	Title
EN ISO 9311-2:2011	Adhesives for thermoplastic piping systems. Part 2: Determination of shear strength (ISO 9311-2:2011). (Supporting standard)
EN ISO 9311-3:2005	Adhesives for thermoplastic piping systems – Part 3: Test method for the determination of resistance to internal pressure (ISO 9311-3:2005). (Supporting standard).
EN 14680:2015	Adhesives for non-pressure thermoplastic piping systems. Specifications (harmonized standard)
EN 14814:2007	Adhesives for thermoplastic piping systems for fluids under pressure. Specifications (harmonized standard)

c) M136 Construction products in contact with water intended for human consumption

The work proposed under the response to M131 will also serve to fulfil all the requirements of Mandate M136, except for the characteristic “Fitness for contact with drinking water”. That topic will now be dealt with by use of the proposed Model Annex Z/EAS that is to be issued by CEN, and will include the appropriate reference to attestation and evaluation of conformity for products covered by M136. Since it is not known when the Model Annex Z/EAS will be issued, it is not possible to say when the draft ENs will be prepared for approval. This information will be provided when the Annex Z/EAS is available.

1.1.3.3 Technical factors

Multinational corporations are more and more predominant. Recent acquisition moves by the major players has led to a concentration of the suppliers of the key markets but leaves a section of the market to be considered by the smaller companies. These are the speciality markets ignored by the larger companies. In order to survive and supply these market segments, smaller companies are often compelled to specialise in core technologies.

Technical evolution of the sector largely depends upon request of the industrial users of adhesives who present new needs for new applications therefore introducing technological progress in this sector.

Due to the advances in analytical instrumentation there are less “secrets” on formulations and it is being recognised that there must be more co-operation between formulators and suppliers as well as between individual suppliers. In line with this new view, standardisation is seen as a key component of the European single market where adequate standards for assessment of materials are an essential adjunct to quality assurance. Here is a sphere where co-operation between raw material suppliers and formulators must happen.

1.1.3.4 Economical factors

An interesting economical piece of information is that a growing number of manufacturers in various adhesive industries have reallocated their production facilities to parts of Eastern Europe where labour is cheaper, so that they can compete more effectively. Another interpretation of this fact is that they have moved to open new markets in Eastern Europe.

For the adhesives manufacturer, implementation of standards usually bears the need to install complementary equipment and therefore new investments, sometimes of relevance. It is a fact that the standardisation brings harmonisation to the market and eventually that will redound to the company’s advantage but economical data is not available.

Another element affecting the European market is the commercialisation within the EU of products coming from third countries, which neither comply with the same legal requirements nor the quality Standards, therefore producing cheaper. European standards establishing quality specifications would help to differentiate from those products.

1.1.3.5 International standardisation

There is international standardisation activity under ISO/TC 61/SC 11 with which liaison is firmly established.

1.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the CEN /TC:

1.2.1 Type and size of companies

It can be assessed , in a very general sense, that a 30% of the manufacturers of adhesives and tapes are multinational companies and the other 70% are small and medium companies (with a maximum of 250 employees, maximum of 50 million Euros/year).

Production however is distributed the other way round. Generally speaking, a 30% of the industries are responsible for a 70% of the production.

1.2.2 Market share and figures

The following are figures as obtained by FEICA (www.feica.com) for 2013.

a) World Market:

The Total market for adhesives (incl. tapes) has been estimated at 50 Bn € with the following territorial distribution:

- Europe: 30%
- North America: 30%
- Asia: 33%
- South America: 5%
- Africa: 2%

b) European market

The adhesives Industry in Europe figures are the following:

- Number of manufacturers: >1.000
- Number of employees: >40.000
- Sales volume: 10.5 Bn €
- Economic added value: >1.000 Bn €

c) There are two commonly ways to organise the market, that is:

- by market segment
- by product group

The total European adhesives market can be divided by market segments, also called end-use sectors as follows, as for 2013:

- Assembly operations: 20%
- Paper/board: 28%
- Building/construction: 18.5%
- Woodworking/joinery: 10% 10.5%
- Transportation: 9.5%
- Footwear/leather: 2%
- Consumer/DIY: 11.5%

The distribution by product groups in Europe is as follows:

- Natural Polymers: 4%
- Dispersions: 29%
- Hot-melts: 14%
- Solvent-based: 12%
- Reactive: 38%
- Water soluble polymers: 2%
- Other adhesives: 1%

1.2.3 Market growth

Expected growth in the worldwide adhesives market until 2016 is 3 % - 4 % per year.

2 BENEFITS EXPECTED FROM THE WORK OF THE CEN/TC 193

The benefits obtained from the standardization of adhesives are the harmonization at European, and also at international level by means of the parallel work with ISO when possible, of a set of standards that establish a common terminology and test methods for the sector. With regard to this, since 1992 more than 100 standards have been published.

By means of these standards it will be possible:

- to harmonize the terms of reference in the sector thus facilitating understanding between the parties and eliminating trade barriers;
- to harmonize test methods at European level, if it possible at international level working in co-ordination with ISO;
- to answer the three mandates related to construction Products Directive involved: M127, M131 and M136;
- to give orientation to manufacturers on how to meet legislation requirements in relation to areas of growing interest like safety, and health and environment protection in particular;
- to contribute to eliminate trade barriers;
- to give standards international diffusion thus favouring the global market.

3 PARTICIPATION IN THE CEN/TC 193

All the CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as

observers of recognized European or international organizations is also possible under certain conditions. To participate in the activities of this CEN/TC, please contact the national standards organization in your country.

4 OBJECTIVES OF THE CEN/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

4.1 Defined objectives of the CEN/TC 193

The objectives of the CEN/TC 193 are:

- To elaborate standards on adhesives for any application with the exception of those used in the installation of ceramic tiles, and adhesive tapes with exception of adhesive tapes for medical, pharmaceutical and electrical industries, in every area of the sector (terminology, analysis, performance, requirements);
- To adjust the work programme to meet market needs;
- To work in co-ordination with ISO;
- To response the relevant European Commission Mandates related to Construction Product Regulation.

4.2 Identified strategies to achieve the CEN/TCs defined objectives

4.2.1 Meetings

The TC is having meetings yearly. In between, WGs have their own meetings and all other matters are solved by correspondence.

4.2.2 CEN/TC 193 Structure

The strategy of CEN/TC 193 to develop an increasing number of projects which are of very different adhesives field is to be based in a wide structure that allows to assign and develop projects in an efficient way.

CEN/TC 193 is made up of seven working groups and one sub-committee.

WGs are established as drafting bodies that present the results of their work to the plenary TC, which introduces the national points of view through the national delegations.

Criteria for the creation of WGs is clear as each of them cover a well defined market sector for adhesives applications which call for specific tests or requirements to be defined.

TC 193/SC 1 was established as a mirror of the previously existing CEN/TC 103 when this was incorporated into TC 193 in order to rationalise the necessary resources by keeping all adhesives work under the same technical body. The SC provides co-ordination to 5 active WGs.

In the same way, CEN/TC 193/WG 7 was recently created to include the former CEN/TC 253 "Self adhesive tapes" committee, which elaborated 21 European standards in the field of self adhesive tapes. The test methods for peel adhesion (EN 1939), static shear adhesion (EN 1943) and breaking strength and elongation at break (EN 14410) are also available as ISO standards since 2007 under the following references:

ISO 29862:2007, *Self adhesive tapes – Determination of peel adhesion properties*;

ISO 29863:2007, *Self adhesive tapes – Measurement of static shear adhesion*;
ISO 29864:2007, *Self adhesive tapes – Measurement of breaking strength and elongation at break*.

4.2.3 Liaisons

At present CEN/TC 193 maintains liaisons with the following bodies:

- ISO/TC 61 "Plastics"/SC 11 "Products";
- CEN/TC 349 "Sealants for joints in building constructions";
- CEN/TC 351 "Construction products – Assessment of release of dangerous substances";
- CEN/TC 303 "Floor screeds and screed materials";
- CEN/TC 124 "Timber structures";
- FEICA;
- ECAP.

Also CEN/TC 193/WGs work together with other organisations or standardisation bodies depending on the scope of each Work Item, for example AFERA (Association of European Self Adhesive Tapes Manufacturers) in WG7.

4.2.4 Standard on terminology

This TC elaborated a standard on terminology, which is considered a basic document for the sector. This standard has been recently revised in order to keep it updated.

4.2.5 Standards on specifications standards

During the first working years, through the work programme and the list of published ENs mainly documents describing test methods could be found and only a few for product classifications and specifications.

The need for product certification gave impulse to the elaboration of more projects of product requirements. The three mandates TC 193 has received demanded the publication of product specification standards that became first priority for the TC.

New proposals are based on existing reference documents as ISO, EN or other, FEICA, ECAP for example, if available, but if a WI is considered necessary and no reference document exists, the project is entirely developed by the WG assigned.

CEN/TC 193 structure is presented in the following table:

SC/WG	Name
CEN/TC 193/WG 1	General terminology. General physical and chemical tests
CEN/TC 193/WG 2	Structural adhesives
CEN/TC 193/WG 3	Adhesives for paper and board, packaging and disposable sanitary products
CEN/TC 193/WG 4	Building adhesives
CEN/TC 193/WG 5	Adhesives for leather and footwear
CEN/TC 193/WG 6	Adhesives for thermoplastic piping systems
CEN/TC 193/WG 7	Self adhesive tapes

CEN/TC 193/SC 1	Adhesives for wood and derived timber products
CEN/TC 193/SC 1/WG 1	Casein adhesives (DISBANDED)
CEN/TC 193/SC 1/WG 2	Sustained or static load test (DISBANDED)
CEN/TC 193/SC 1/WG 3	Usable life, open time and pressing time test methods (DISBANDED)
CEN/TC 193/SC 1/WG 4	Tests methods, classification and performance requirements for adhesives other than phenolic and aminoplastic, for load-bearing timber structures
CEN/TC 193/SC 1/WG 5	Test for adhesives for edge banding materials (DISBANDED)
CEN/TC 193/SC 1/WG 6	Test methods and requirements for adhesives for glued-in rods and on-site repair of load-bearing structures
CEN/TC 193/SC 1/WG 7	Adhesives for finger joints (DISBANDED)
CEN/TC 193/SC 1/WG 8	Revision of EN 301 and EN 302
CEN/TC 193/SC 1/WG 9	Adhesive for use with plywood (DISBANDED)
CEN/TC 193/SC 1/WG 10	Revision of EN 204, EN 205 and EN 12765 (DISBANDED)
CEN/TC 193/SC 1/WG 11	Adhesives for on-site assembly or restoration of timber structures (DISBANDED)
CEN/TC 193/SC 1/WG 12	Adhesives for non-loadbearing timber structures
CEN/TC 193/SC 1/WG 13	Performance of wood adhesives at elevated temperatures – Test methods and evaluation
CEN/TC 193/SC 1/WG 14	Testing and requirements for hardwood bonding and chemically modified wood substrates

4.3 Environmental aspects

The following subjects will be taken into account in the development of the works:

- Regulated Dangerous Substances, according to the work achieved by CEN/TC 351 “Construction Products - Assessment of Release of Dangerous Substances”, with which there is a liaison;
- Construction products in contact with drinking water;
- Construction Product Regulation n°305/2011, taking into account the basic requirement n°7, sustainable use of natural resources;
- Packaging and packaging waste (Directive 94/62/EC);
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE CEN/TC WORK PROGRAMME

There are some general difficulties that affect the implementation of the TC work, for example:

- the timeframe fulfillment: for some projects that require tests and/or ring tests it is difficult to meet deadlines;

- the lack of funding: the mentioned tests and/or ring tests are usually very expensive and there are not sources of funds for not mandated projects;
- the lack of active participants countries: it is more and more difficult to find 5 countries willing to appoint experts to actively work on projects. This problem is particularly serious for WG1 projects (General methods and terminology), because resources are preferably dedicated to items specific to some business than to items of general interest, even if basic like "Terminology";
- the difficulties found in the development of mandated projects: specially for projects under WG 2 Structural adhesives;
- corrigendas are published with a big delay.