
Lepila - Izrazi in definicije

Adhesives - Terms and definitions

Klebstoffe - Benennungen und Definitionen

Adhésifs - Termes et définitions

Ta slovenski standard je istoveten z: EN 923:1998

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Adhesives - Terms and definitions

Adhésifs - Termes et définitions

Klebstoffe - Benennungen und Definitionen

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This European Standard comprises terms peculiar to, or in general use in, the adhesive and adhesive processing industry.

The terms defined have been classified so that, as far as possible, related concepts (adhesives, functional adhesive components, chemical base products, adherends, adhesives properties, bonding, and bond properties) are grouped together. All definitions are numbered and an alphabetical index which includes all terms is provided at the end of this standard.

The numbering of the individual definitions is the same in all three versions (English, French and German) of this standard. Consequently this European Standard can be used as a dictionary, combined with one or both of the other versions as a help for translation of terms into French or German, as a source of information about related concepts in the adhesive industry or to provide a term for a concept.

In order to find:

- a) **the definition of a term;** look up the term in the alphabetical index at the end of this standard. The index will refer to the number in the standard. The definition, the term and any synonyms appear by the number;
- b) **information about related terms;** look up the term in the alphabetical index to find its number in the standard. When the term has been located in the standard, the related concepts are to be found in the same subdivision;
- c) **the translation of a term into the French or German language;** look up the number of this term in this standard and locate the translation of the term and the definition under the same number in the standard of the foreign version.

1 Scope

This European Standard defines terms used in the adhesive industry and terms relating to adhesives in those industries that use adhesives.

2 Terms and definitions

2.1 Adhesives

2.1.1 adhesive: non-metallic substance capable of joining materials by surface bonding (adhesion), and the bond possessing adequate internal strength (cohesion).

NOTE: Many adhesives names refer to their main functional components;

- the physical nature of the adhesive.

Table A.1 lists main binders, temperature and mode of setting of these adhesives and the number of parts that have to be mixed before use. Some other names refer to

- the method of application, or

- mode of setting.

Furthermore adhesives are named according to points of less significance:

- field of application (eg footwear adhesive, construction adhesive, packaging adhesive),

- material to bond (eg paper adhesive, wood adhesive, wall paper adhesive, rubber adhesive),

- place of application (eg in situ adhesive)

- speed of setting (eg instant adhesive)

- bond properties (eg structural adhesive)

- shape (eg powder adhesive, pearl glue, table glue for solid glue, adhesive film for shaped adhesive, or stick adhesive for stick shaped adhesives), or

- aspect (eg white glue).

2.1.2 water-borne adhesive; aqueous adhesive: adhesive in which the solvent, or the continuous phase is water.

2.1.3 glue: aqueous adhesive specifically designed for bonding of wood and other porous substrates (see Annex A)

NOTE: A glue can be based on a natural product like protein or synthetic resins (UF, PF or PVAC, see 2.3.51, 2.3.52 and 2.3.30 respectively)

2.1.4 paste adhesive: adhesive of a non-stringy, highly viscous nature (see Annex A)

NOTE: Paste adhesives based on starch or cellulose ethers are usually applied for paper bonding (eg paper bags or wall paper), based on synthetic polymers for bonding floorcoverings.

2.1.5 dispersion adhesive: adhesive consisting of a stable dispersion of a polymer in a liquid continuous phase, usually water (see Annex A)

NOTE: Dispersion adhesives containing an elastomer as polymer conventionally are often termed "latex".

2.1.6 emulsion adhesive: adhesive consisting of a stable emulsion of a liquid hydrophobic resin in water.

2.1.7 solvent-borne adhesive; solution adhesive; solvent based adhesive: adhesive in which the binder is dissolved in a volatile organic solvent.

NOTE: In practice solvents used for solvent-borne adhesives have boiling points below 170°C at 101,3 kPa, and a vapour pressure greater than 50 Pa at 20 °C and, if flammable, a flash point below 55°C.

2.1.8 solvent free adhesive: adhesive that is substantially free from organic solvents (see 2.1.7).

NOTE: "Substantially free" means that organic solvents have neither been added in the basic elements of an adhesive nor during its process of manufacture out of these basic elements. "Low solvent adhesives" contain at most 5 % of solvents based on total weight of the adhesive.

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2.1.9 plastisol adhesive: adhesive material formed by the dispersion of a polymer in a plasticizer such that, when the dispersion is heated, the polymer dissolves irreversibly in the plasticizer to form a solution that solidifies on cooling.

2.1.10 toughened adhesive: adhesive which by virtue of its physical structure discourages propagation of cracks.

NOTE: The toughening can be achieved, for example, by the creation of a discrete elastomeric phase within the adhesive matrix.

2.1.11 spray adhesive: adhesive that is projected in small particles by means of a pressure medium.

2.1.12 gap-filling adhesive: adhesive designed for filling wider gaps between uneven surfaces.

NOTE: For high strength load-bearing purposes, e.g. in the car industry, the adhesive will provide satisfactory bondstrength in bondlines up to 1 mm in thickness. For the construction industry, high solid adhesives designed for use between uneven surfaces and to bond satisfactorily in gaps up to 6 mm are used.

2.1.13 sealant: adhesive material, used to fill gaps where movement can occur in service and which, when set, has elastic properties.

NOTE: The term "sealant" is also used for a material filling a void against the ingress or egress of a fluid under pressure.

2.1.14 film adhesive: adhesive in film form, with or without a carrier.

NOTE: Film adhesives set usually by means of heat under pressure.

2.1.15 foaming adhesive: adhesive designed to foam in situ, after application, in order to provide extensive gap-filling properties.

2.1.16 unsupported film adhesive: adhesive supplied in sheet, film or web, without an incorporated carrier.

2.1.17 supported film adhesive: adhesive supplied in sheet or film form with an incorporated carrier that remains in the bond when the adhesive is applied and used.

NOTE: The carrier can be woven or non-woven material consisting of organic or inorganic fibres.

2.1.18 adhesive tape: flexible backing or carrier coated with a pressure-sensitive, remoistenable, or heat-activatable adhesive.

2.1.19 transfer tape: carrier coated with a pressure-sensitive adhesive which, when detached from the substrate, permits the carrier to be removed leaving only the adhesive.

2.1.20 double coated adhesive tape; double sided adhesive tape: tape where the adhesive is applied on both sides of the carrier.

2.1.21 multiple layer adhesive: film adhesive, usually supported with a different adhesive composition on each side.

NOTE: Multiple-layer adhesives are designed to bond dissimilar materials.

2.1.22 encapsulated adhesive: adhesive in which particles or droplets of the adhesive or an adhesive component are enclosed in a protective film (microcapsules) usually to prevent crosslinking until the film is destroyed by suitable means.

2.1.23 one-way stick adhesive: adhesive that is applied to only one of the adherends.

2.1.24 separate application adhesive: adhesive consisting of different components which are applied separately to adherends.

NOTE: Pressing together the components initiates a chemical reaction curing the bondline.

2.1.25 two way stick adhesive; double spread adhesive: adhesive that is applied to both adherends.

2.1.26 one part adhesive: adhesive ready for use.

NOTE: A one-part adhesive can require the addition of water or the presence of ambient moisture for setting.

2.1.27 two part adhesive: adhesive that consist of two separate reactive components that are mixed before use.

2.1.28 multi-part adhesive: adhesive that consists of two or more separate reactive components that are mixed before use.

2.1.29 contact adhesive: adhesive that is applied to both adherends and when allowed to become apparently dry will instantly develop a firm bond when a firm but not sustained pressure is applied.

NOTE: "apparently dry" means that the adhesive coats are "dry to touch" at some stage in the evaporation of volatile constituents.

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2.1.30 hot melt adhesive: adhesive that is applied in the molten state and forms a bond on cooling to a solid state (see Annex A)

2.1.31 heat activated adhesive: adhesive pre-applied to the adherends that is rendered tacky prior to use by application of heat and forms a bond on cooling under pressure.

2.1.32 heat sealing adhesive: adhesive pre-applied to one or both adherends that is activated by the application of heat and forms a bond on cooling.

NOTE: Heat-sealing adhesives are commonly used in the packaging industry.

2.1.33 solvent activated adhesive: adhesive pre-applied to an adherend that is rendered tacky immediately prior to use by the application of solvent.

2.1.34 pressure sensitive adhesive: adhesive which in a dry state is permanently tacky at room temperature and adheres readily to surfaces under light and brief pressure.

NOTE: Pressure-sensitive adhesives are used among other things for the manufacture of pressure sensitive tapes.

2.1.35 cold setting adhesive (cold glue, deprecated): adhesive that sets without the application of heat.

2.1.36 hot setting adhesive: adhesive that sets only with the application of heat.

2.1.37 reaction adhesive; reactive adhesive: adhesive that sets by a chemical reaction of its components and/or the action of external agents (see Annex A).

2.1.38 cold curing adhesive: adhesive that cures without the application of heat.

2.1.39 hot curing adhesive: adhesive that cures only with the application of heat.

2.1.40 self curing adhesive: adhesive that cures, after application, under specified conditions

2.1.41 anaerobic adhesive: adhesive that cures in absence of oxygen, curing being inhibited by the presence of oxygen and catalysed by metal ions.

2.1.42 moisture curing adhesive: adhesive that cures by reaction of water from the air or from an adherend.

2.1.43 conductive adhesive: adhesive especially designed to either avoid the accumulation of an electrical charge or to conduct an electrical current.

2.1.44 adhesive batch: quantity of a particular adhesive (or component of an adhesive) manufactured in a single location at a defined, limited time and under uniform conditions.

NOTE: "Lot" is a commonly used commercial term. A lot can consist of less or more than one batch.

2.2 Functional adhesive components

2.2.1 binder: component of an adhesive that is primarily responsible for the adhesion and cohesion.

2.2.2 monomer: chemical compound, usually of low molecular mass, that can be converted into a polymer by combining with itself or with other chemical compounds

2.2.3 polymer: substance composed of molecules characterized by the multiple repetition of one or more species of atoms or groups of atoms (constitutional units) linked to each other in amounts sufficient to provide a set of properties that do not markedly vary with the addition or removal of one or a few of the constitutional units.

NOTE : The nature of these constitutional units, their order and the average number per molecule influence the physical and mechanical properties of the polymer.

2.2.4 copolymer: polymer derived from more than one species of monomer.

2.2.5 elastomer: macromolecular material which returns rapidly to approximately its initial dimensions and shape after substantial deformation by a weak stress and release of the stress at room temperature.

2.2.6 resin: solid, semi solid or liquid, usually organic material that has an indefinite molecular mass and, when solid, usually has a softening or melting range and gives conchoidal fracture.

NOTE: In a broader sense, the term is used to designate any polymer that is basic material for plastics. Bitumen, pitches and waxes are excluded by convention.

2.2.7 synthetic resin: resin based on a synthetic monomer.

2.2.8 thermoplastic resin; thermoplast: polymer or copolymer capable of being softened by heating and hardened by cooling.

NOTE: Softening and hardening are repeatable. Many thermoplastic materials can become thermoset by appropriate treatment to induce crosslinking, e.g. by the addition of a suitable chemical crosslinking agent or by irradiation.

2.2.9 thermosetting resin; thermoset: monomer, polymer or copolymer, which when cured, changes into a substantially infusible and insoluble product.

NOTE: The setting of a thermosetting resin undergoes three different stages: the "A-stage" at which the material is still fusible and still soluble. The intermediate pseudo-stable "B-stage" at which it is fusible and partially soluble. The "B-stage" is converted to the final crosslinked, insoluble and infusible "C-stage" by application of heat and, usually, pressure.

2.2.10 crosslinking agent: substance that causes, promotes or regulates the formation of intermolecular covalent or ionic bonds resulting in a three dimensional molecular network.

NOTE: Crosslinking can occur either between polymer chains or by reaction of simple functional molecules (e.g. two part polyurethane or epoxy adhesives). Crosslinking can also be produced by radiation. The terms "hardener" and "curing agent" are often used synonymously with crosslinking agent.

2.2.11 adhesion promotor; coupling agent: substance used in small proportions to increase the adhesion to specific substrates.

2.2.12 accelerator: substance used in small proportions to increase the rate of a chemical reaction.

2.2.13 catalyst: substance generally used in small proportions that changes the rate of a chemical reaction, and in theory remains unchanged chemically at the end of the reaction.

2.2.14 inhibitor: substance used in small proportions to suppress a chemical reaction.

2.2.15 retarder: substance used in small proportions to reduce the reaction rate of a chemical system.

2.2.16 antioxidant: substance used to retard deterioration caused by oxidation.

2.2.17 flexibilizer; internal plasticizer: co-reactant which, when incorporated into a polymer confers improved flexibility and resilience to the polymer.

NOTE: A flexibilizer provides to the adhesive film a greater extension at break, a lower modulus and a lower temperature at which it becomes brittle. A flexibilizer is not extractable and will not migrate from the adhesive film.

2.2.18 plasticizer; external plasticizer: non-reactive substance incorporated into an adhesive to improve flexibility and resilience of its bond.

NOTE: A plasticizer provides to the adhesive film a greater extension at break, a lower modulus and a lower temperature at which it becomes brittle. A plasticizer can be soluble and can migrate from the adhesive film.

2.2.19 solvent: liquid or mixture of liquids that are used in the manufacture of adhesives to dissolve or to dilute the binder without chemical change.

NOTE: Solvents are used to control the consistency and character of the adhesive and can regulate application properties.

2.2.20 diluent (*thinner, deprecated*): liquid whose sole function is to reduce the concentration of solids and viscosity of an adhesive.

2.2.21 reactive diluent: low-viscosity liquid added to a high-viscosity solvent-free adhesive which reacts chemically with the adhesive during setting.

NOTE: A reactive diluent is usually monofunctional and reduces the viscosity of the adhesive with acceptable changes in other properties.

2.2.22 filler: particulate solid which can improve the working properties, permanence, strength or other quality of an adhesive.

NOTE 1: Two classes of fillers are used:

- chemically inert fillers, e.g. china clay or woodflour;
- reinforcing fillers like silicates, carbon black, fibrous materials or aluminium powder that markedly enhance the performance of a polymer.

NOTE 2: A filler only used to reduce cost is termed "extender". An extender can also be a liquid.

2.2.23 matrix: part of an adhesive that surrounds or engulfs embedded filler or reinforcing particles and filaments.

2.2.24 modifier: ingredient which, when added to an adhesive, changes its properties.

NOTE: The term "modifier" includes fillers, diluents, plasticizers and tackifiers.

2.2.25 stabilizer: substance used in an adhesive to assist in maintaining the properties of the adhesive during storage and processing and of its bonds under service conditions.

NOTE: Special stabilizers are used to prevent or slow down undesirable effects such as coagulation, excessive reactivity, absorption by adherends or destruction of adherends.

2.2.26 emulsifier; emulsifying agent; dispersant: surface-active substance that promotes and maintains the dispersion of two incomplete miscible liquids or a solid and a liquid by reducing the interfacial tension between the two phases.

2.2.27 tackifier: substance intended to enhance the tack or the tack range of an adhesive coat.

2.3 Chemical base products

2.3.1 soluble silicate: silicate obtained by melting a purified silica with an alkali salt.

2.3.2 hydraulic cement: inorganic adhesive material that sets and hardens by chemical interaction with water and that is capable of doing so under water.

NOTE 1: Hydraulic cements set chemically by "hydration" thus forming compounds with strength-producing properties. There are several types of hydraulic cements:

- "portland cement", produced by pulverizing partially fused "clinker" consisting primarily of hydrated calcium silicates, and usually containing calcium sulfate in any hydration state (anhydrite, gypsum, hemihydrate);
- "natural cement", produced by calcining a naturally occurring argillaceous limestone at a temperature below the sintering

point and then grinding to a fine powder;

- "slag cement", consisting mostly of an intimate and uniform blend of granulated blast-furnace slag and hydrated lime in which the slag constituent is more than a specified minimum percentage. Blast-furnace slag is the non-metallic product consisting essentially of silicates and aluminosilicates of calcium and other bases that is developed in a molten condition simultaneously with iron in a blast furnace;

- "Portland-Pozzolan cement", consisting of an intimate and uniform blend of portland cement or portland blast-furnace slag cement and fine pozzolan, in which the amount of the pozzolan constituent is within specified limits. Pozzolan is a siliceous and aluminous material which in itself possesses little or no cementitious value but which will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.

NOTE 2: Concrete is composite material that consists essentially of a binder (e.g. hydrated cement and water) within which are embedded particles of fragments or aggregates.

NOTE 3: The term "cement" is also used as a synonym for organic adhesives but its use is strongly deprecated.

2.3.3 protein: natural product having the repeating linkage -NH-CO-.

NOTE: Some examples are:

- Soya bean protein is obtained from soya bean seeds. When compounded with other reactants it is used as an adhesive, mostly in plywood.

- "Casein" is protein precipitated from skimmed milk by the action of rennet or acid. When compounded with other reactants it is used as an adhesive for wood and packaging applications.

- "Collagen" is produced from collagenous animal materials like skin, bone and connective tissue.

- "Gelatine" is a soluble protein derived from collagen.

- "Animal glue" is an impure protein obtained by hydrolysis of collagenous materials by various methods and are predominantly used for bonding of wood and other porous substrates.

2.3.4 starch: vegetable carbohydrate occurring in the granular form in certain plants and corresponding to a polymer composed almost exclusively of anhydroalpha-D-glucose groups.

2.3.5 starch ether: modified starch in which the hydroxyl groups of the starch have been totally or partially etherified.