

ISO and CEN definition of nonwovens

Nonwovens are defined by ISO standard 9092 and CEN EN 29092. These two documents, identical in their content, are the internationally acknowledged definition of Nonwovens. As industry, trade and technology have evolved since their first publication in 1988, these standards are regularly being updated by experts to better reflect the present understanding of Nonwovens. The following text, prepared by the leading nonwovens trade associations, reflects the current definition of nonwovens and the related terminology.

A nonwoven is an engineered fibrous assembly, primarily planar, which has been given a designed level of structural integrity by physical and/or chemical means, excluding weaving, knitting or paper making.

Supplement A: Relative Terminology Defined

1. Fibrous Assembly

A predetermined amount and arrangement of natural or manufactured fibrous material such as, but not limited to fibres, continuous filaments, or chopped yarns of any length or cross-section. It can be a two- or three-dimensional alignment of fibrous materials made by a web forming process.

2. Engineered

An application of science to design, plan and manufacture products to utility specifications.

3. Structural Integrity

A measurable level of added tensile strength.

4. Physical and/or Chemical Means

Bonding technologies that result in frictional forces between fibres (through entanglement) or adhesive forces between fibres (with or without the use of binders).

5. Paper making

Paper making, in this context, is regarded as the process of producing a thin material by pressing together, short, refined cellulose fibres formed on a screen from a water suspension of these fibres, and drying them, with hydrogen bonding as the predominant mechanism holding the web together.

The refined fibres plus the self-bonding that occurs between cellulose fibres during drying distinguish paper from wet-laid nonwovens.

When re-wet, the hydrogen bonds between fibres are broken, and paper typically loses almost all of its strength.

6. Wet laid process that is not paper making

In a wet laid process where cellulose or other fibres are engineered to a level of structural integrity primarily by physical and/or chemical means other than hydrogen bonding, the resulting assembly is considered a nonwoven.

Note: most materials made through a papermaking process are classified as paper products per ISO 4046-3, but some might be classified as nonwovens, particularly where clear differentiation between the primary means of bonding is not possible.

Supplement B: Distinction between nonwovens and related materials

1. Films

Films cast, blown or extruded from polymers, which then through physical or chemical means are made into fibrous assemblies, can be considered nonwovens if the L/D ratio of the fibrous elements is over 30.

2. Stitchbond

These materials are classified as nonwovens. They are primarily fibrous and engineered to a given level of integrity by physical means for specific applications. The warp or circular knit stitching is the additional bonding technology.

3. Wadding

Waddings are high-loft assemblies, primarily fibrous, engineered to a given level of integrity by physical means for specific applications. Waddings are not woven or knitted and can be considered a high-loft nonwoven when bonded throughout the assembly.

4. Nonwoven composites and nonwovens in multi-component structures

Generally, nonwoven composites (hybrid nonwovens) and nonwovens that are combined with other discrete materials are to be considered as nonwovens.

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