

## D04H

**MAKING TEXTILE FABRICS, e.g. FROM FIBRES OR FILAMENTARY MATERIAL (weaving [D03](#); knitting [D04B](#); braiding [D04C](#); net-making [D04G](#); sewing [D05B](#); tufting [D05C](#); finishing non-woven fabrics [D06](#)); FABRICS MADE BY SUCH PROCESSES OR APPARATUS, e.g. FELTS, NON-WOVEN FABRICS; COTTON-WOOL; WADDING {; NON-WOVEN FABRICS FROM STAPLE FIBRES, FILAMENTS OR YARNS, BONDED WITH AT LEAST ONE WEB-LIKE MATERIAL DURING THEIR CONSOLIDATION} (non-woven fabrics having an intermediate or external layer of a different kind, e.g. of woven fabric, [B32B](#))**

### Definition statement

*This place covers:*

- Felts, cotton wool and wadding;
- Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres;
- Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length;
- Non-woven fabrics formed of mixtures of relatively-short fibres and yarns or like filamentary material of substantial length;
- Non-woven pile fabrics;
- Other non-woven fabrics;
- Methods or apparatus for making these products;
- Felting apparatus;
- Needling machine.

### Relationships with other classification places

Some of the non-woven fabrics can also be regarded as "layered products" within the meaning of subclass [B32B](#), and further classification in that subclass should be considered in accordance with the notes thereto.

In cases where the making of non-woven fabrics involves the use of particular chemical compounds or compositions, e.g. for treating or bonding fibres, filaments, or yarns, further classification in other appropriate subclasses should also be considered.

By varying the proportions of fibers or threads, and the chemical compounds or compositions, the non-woven may be given the appearance of paper, cardboard, leather or the like.

The following operations also make reference to non-wovens: sewing ([D05B](#)), tufting ([D05C](#)) and finishing non-woven fabrics ([D06](#)).

Non-wovens can be found in a wide variety of applications:

- in personal care : absorbent articles, cosmetic cleaning pads.
- in clothing and footwear : shoes, industrial headwear and footwear, protective garments.
- in household: wipes, vacuum cleaner bag.
- in home furnishing : carpet underlay, wall coverings.
- in the medical field: face masks, surgical drapes, sterilization aids.
- in specific industrial applications : filtration, abrasives, insulating tapes, electronics, satellite dishes.
- in buildings: insulation, roofing, covers for acoustic ceilings.
- in civil engineering: road and rail building, drainage, geotextiles, soil stabilization, golf and sport surfaces.
- in vehicles: insulation materials, battery separators, break discs, filters.

Relationships with other classification places

- in the aviation industry: for protection or for having light structures with strength.
- in agriculture and horticulture: crop and plant protection, capillary mats, greenhouse shading.

## References

### Limiting references

*This place does not cover:*

Non-woven fabrics having an intermediate or external layer of a different kind, e.g. of woven fabric	<a href="#">B23B</a>
Weaving	<a href="#">D03</a>
Knitting	<a href="#">D04B</a>
Braiding or lace making	<a href="#">D04C</a>
Net-making or making knotted carpets	<a href="#">D04G</a>
Sewing	<a href="#">D05B</a>
Tufting	<a href="#">D05C</a>
Finishing non-woven fabrics	<a href="#">D06</a>

### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Non-woven fabrics for use in absorbent articles, e.g. topsheet, backsheet	<a href="#">A61F 13/15</a>
Filtering material for liquid or gaseous fluids	<a href="#">B01D 39/00</a>

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Wearing apparel	<a href="#">A41D</a>
Manufacturing of hats	<a href="#">A42C</a>
Laying carpeting or carpet tiles; Carpet underlay	<a href="#">A47G 27/04</a>
Shaped articles from mixed fibres	<a href="#">B28B 1/00</a>
Making or treating glass wool or mineral wool	<a href="#">C03B 37/00</a>
Compounding ingredients used as filler for mortars and like	<a href="#">C04B</a>
Sintering plastic particles	<a href="#">C08J</a>
Fibre reinforced materials	<a href="#">C08J 5/04</a> , <a href="#">B29C 70/00</a>
Formation of filaments, threads, or the like	<a href="#">D01D 5/00</a>
Carding	<a href="#">D01G</a>
Lap-forming devices	<a href="#">D01G 25/00</a>
Curling or crimping of fibres, filaments, or yarns	<a href="#">D02G 1/00</a>
Cellulose production or pulping	<a href="#">D21C</a>
Paper web-making by wet methods	<a href="#">D21F</a>
Paper or pulp	<a href="#">D21H 1/00</a> - <a href="#">D21H 15/00</a> , <a href="#">D21H 21/00</a> , <a href="#">D21H 27/00</a>

Pulp compositions and coating or treatment of paper	<a href="#">D21H 17/00-D21H 19/00</a> , <a href="#">D21H 23/00-D21H 25/00</a>
Making shaped products from liquid suspensions of cellulose	<a href="#">D21J</a>
Roof coverings or underlay	<a href="#">E04D 5/00</a> , <a href="#">E04D 12/002</a>

### Special rules of classification

Looping references between [D04H](#) and [D05C](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: non-woven fabric products having pile or tufts formed by the methods of [D05C 1/00](#) - [D05C 15/00](#) and resultant products of [D05C 17/00](#) would be classified in [D05C](#).

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Carded thermal bonded and resin bonded staples	fabrics formed by processing textile staple fibers over a card and bonding by resin or thermal means.
Air laid	fabrics formed by air laying and bonding pulp or staple fibers.
Wet laid	fabrics that contain long (longer than pulp) fibers and are made by papermaking techniques.
Needle punched staples	fabrics formed by processing staple fibers over a card or other web forming device and entangling them by penetrating the fabric with multiple barbed needles.
Spun laced or hydro entangled	fabrics formed by carding, air laying or other web forming techniques and consolidated by hydraulic needling.
Spun bonded	fabrics formed by in-line melt extrusion spinning of filaments of conventional textile denier.
Melt blown	fabrics formed by in-line melt extrusion spinning of very fine fiber diameter, less than one denier.
Non-woven fabrics	fabrics formed wholly or partly of textile material by processes comprising operations other than the weaving, knitting, braiding, lacing, or knotting of yarns, threads, or filaments for which provision is made in other subclasses of Section <a href="#">D</a> . This expression includes felts, cotton-wool, and wadding.
Composite fibres	Conjugated fibres that are manufactured by composite spinning of two or more kinds of immiscible resins, of which the resins form such phase structures as side-by-side, sheath-core, sea-island, wood grain pattern, multi-layered, radial or mosaic in the cross section surface vertical to the fibre axis.
Mixed fibres	Mixture of two or more kinds of fibres made of different substances.
Fleece	Non-woven
Pile	Upright loop or nap raised from the surface of fabrics.
Welding	bonding of fibres or filaments using heat and/or pressure or solvent bonding, i.e. autogenously bonding

## Synonyms and Keywords

*In patent documents, the following abbreviations are often used:*

SMS	spunbond-meltblown-spunbond
-----	-----------------------------

In patent documents the following words "spun lace", "hydro entangling" "hydro needling" "hydro enhancement" "hydro bonding" and "water needling" are often used as synonyms.

*In patent documents, the following words/expressions are often used with the meaning indicated:*

filament	fibre
----------	-------

## D04H 1/00

**Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres**

### Definition statement

*This place covers:*

Non-woven fabrics formed from fibres or filaments which have been specifically cut to a length less than continuous.

## D04H 1/02

**Cotton wool; Wadding**

### Definition statement

*This place covers:*

Non-woven fabrics of short fibers are composed of cotton-wool or wadding (could be useful to look at carding [D01G](#)) and are used to make cosmetic pads, absorbent pads, quilting materials etc.

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Wadding	A heap of voluminous and low-density fibre for use as fillers in furniture or quilting.
---------	---

## D04H 1/04

**from fleeces or layers composed of fibres having existing or potential cohesive properties, e.g. natural fibres, prestretched or fibrillated artificial fibres (felting apparatus [D04H 17/00](#))**

### Definition statement

*This place covers:*

Fleeces and webs, or layers of these, are composed of fibers having existing or potential cohesive properties and are consolidated by mechanical means such as natural fibers like wool or fibrillated artificial fibers. The fibers are crimped or crinkly and will entangle easily with each other (could be useful to look at felting apparatus [D04H 17/00](#)).

**D04H 1/06****by treatment to produce shrinking, swelling, crimping or curling of fibres****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Producing crimped or curled fibres, filaments, yarns, or threads, giving them latent characteristics	<a href="#">D02G 1/00</a>
--	---------------------------

**D04H 1/067****Regenerated cellulose series****Definition statement***This place covers:*

Fleeces and webs, or layers of these, composed of fibers of regenerated cellulose.

**D04H 1/073****Acrylonitrile series****Definition statement***This place covers:*

Fleeces and webs, or layers of these, composed of fibers from the acrylonitrile series.

**D04H 1/08****and hardened by felting; Felts or felted products****Definition statement***This place covers:*

Fleeces and webs, or layers of these, hardened by a felting technique including also felts and products made from felts.

**D04H 1/09****Silk****Definition statement***This place covers:*

Fleeces and webs, or layers of these, hardened by a felting technique including also felts and products made from felts and the fibers are made of silk.

## **D04H 1/10**

### **Felts made from mixtures of fibres**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of felts made from a mixture of different types of fibres.

## **D04H 1/12**

### **and incorporating artificial organic fibres**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of felts made from a mixture of different types of fibres and incorporate artificial organic fibres.

## **D04H 1/14**

### **and incorporating inorganic fibres**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of felts made from a mixture of different types of fibers and incorporate inorganic fibers.

## **D04H 1/26**

### **Wood pulp**

#### **Definition statement**

*This place covers:*

Non-woven fabrics of short fibers having existing or potential mechanical cohesive properties are fleeces and webs, or layers of these, made of wood pulp.

## **D04H 1/28**

### **Regenerated cellulose series**

#### **Definition statement**

*This place covers:*

Non-woven fabrics of short fibers having existing or potential mechanical cohesive properties are fleeces and webs or layers of these, made of regenerated cellulose series.

**D04H 1/30****Collagen****Definition statement**

*This place covers:*

Non-woven fabrics of short fibers having existing or potential mechanical cohesive properties are fleeces and webs, or layers of these, made of fibers of collagen.

**D04H 1/32****Synthetic pulp****Definition statement**

*This place covers:*

Non-woven fabrics of short fibers having existing or potential mechanical cohesive properties are fleeces and webs, or layers of these, made of synthetic pulp.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Synthetic pulp	typically comprised of a thermoplastic polymer such as polyolefins or some polyamides and having a structure resembling wood pulp. That is, the synthetic pulp has a microfibrillar structure comprised of microfibrils exhibiting a high surface area as contrasted with the smooth, rod-like morphology of synthetic short staple fibers
----------------	--

**D04H 1/40****from fleeces or layers composed of fibres without existing or potential cohesive properties****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties.

**D04H 1/407****containing absorbing substances, e.g. activated carbon****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties containing absorbing substances, e.g. activated carbon.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Absorbing substances	water-absorbing agents such as water-absorbing polymer, deodorant or humidity absorbing agents such as activated carbon
----------------------	---

**D04H 1/413****containing granules other than absorbent substances****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties containing granules other than absorbent substances.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Granules	for example, those having antibiotic properties or granular substances with flame retardant properties.
----------	---

**D04H 1/42****characterised by the use of certain kinds of fibres insofar as this use has no preponderant influence on the consolidation of the fleece****Definition statement**

*This place covers:*

Fleeces, webs or layers of fleeces or webs composed of fibres without existing or potential mechanical cohesive properties characterised by the fibres having particular fibre features, e.g. chemical composition, fineness or shape, regardless of the method of manufacturing the fleeces, webs or layers.

**D04H 1/4209****Inorganic fibres****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, are inorganic fibers.

**D04H 1/4218****Glass fibres****Definition statement**

*This place covers:*

Fleeces and webs or layers of these are inorganic glass fibers.

**D04H 1/4226****characterised by the apparatus for manufacturing the glass fleece****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, are inorganic glass fibers and are characterized by the apparatus for manufacturing the glass fleece.



## D04H 1/4234

### Metal fibres

#### Definition statement

*This place covers:*

Fleeces and webs or layers of these are inorganic metal fibres.

## D04H 1/4242

### Carbon fibres

#### Definition statement

*This place covers:*

Fleeces and webs, or layers of these, are inorganic carbon fibres.

#### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Carbon fibres	a kind of inorganic fibre. Polyacrylonitrile (PAN) -based, pitch-based or rayon-based Carbon fibers are included.
---------------	---

## D04H 1/425

### Cellulose series

#### Definition statement

*This place covers:*

Fleeces and webs, or layers of these, are fibers belonging to the cellulose series e.g. cotton, kapok, linen, jute, flax, ramie, sisal, hemp, kenaf, industrial hemp, rattan, vine fibers, fique, banana and agave.

## D04H 1/4258

### Regenerated cellulose series

#### Definition statement

*This place covers:*

Fleeces and webs, or layers of these, are fibers belonging to the regenerated cellulose series e.g. rayon, acetate, triacetate, bamboo fibers, rayon, lyocell, Tencel, Modal and Viscose.

## D04H 1/4266

### Natural fibres not provided for in group [D04H 1/425](#)

#### Definition statement

*This place covers:*

Fleeces and webs, or layers of these, are natural fibers not provided for in group [D04H 1/425](#) e.g. wool, silk (and other protein fibers).

## **D04H 1/4274**

### **Rags; Fabric scraps**

#### **Definition statement**

*This place covers:*

Non-woven fabrics which are composed of the fibres obtained and reused by cutting or fibreizing wastes or garnets, and which are also included in the scope of the upper group, namely, formed wholly or mainly of staple fibres or like relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties insofar as this use has no preponderant influence on the consolidation of the fleece. Fleeces and webs, or layers of these, made from rags; Fabric scraps.

## **D04H 1/4282**

### **Addition polymers**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from addition polymers. (e.g. PVC)

## **D04H 1/4291**

### **Olefin series**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from addition polymers from the olefin series.

## **D04H 1/43**

### **Acrylonitrile series**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from addition polymers from the acrylonitrile series.

## **D04H 1/4309**

### **Polyvinyl alcohol**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from addition polymers of polyvinyl alcohol.

## **D04H 1/4318**

### **Fluorine series**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from addition polymers from the fluorine series.

## **D04H 1/4326**

### **Condensation or reaction polymers**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, made from fibers made from condensation or reaction polymers.

## **D04H 1/4334**

### **Polyamides**

#### **Definition statement**

*This place covers:*

These condensation polymers being polyamides.

## **D04H 1/4342**

### **Aromatic polyamides**

#### **Definition statement**

*This place covers:*

Condensation polymers being aromatic polyamides.

## **D04H 1/435**

### **Polyesters**

#### **Definition statement**

*This place covers:*

Condensation polymers being polyesters.

## **D04H 1/4358**

### **Polyurethanes**

#### **Definition statement**

*This place covers:*

Reaction polymers being polyurethanes.

**D04H 1/4366****Phenol series****Definition statement**

*This place covers:*

Reaction polymers belonging to the phenol series.

**D04H 1/4374****using different kinds of webs, e.g. by layering webs****Definition statement**

*This place covers:*

Non-woven fabrics which are composed of mixture of different kind of webs, including multi-layered non-woven fabrics in which layers are made continuously and each layer is composed of different kind of fibres, and which are also included in the scope of the upper group, namely, formed wholly or mainly of staple fibres or like relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties insofar as this use has no preponderant influence on the consolidation of the fleece. Fleeces and webs, or layers of these, made using different kinds of webs, e.g. by layering webs.

**D04H 1/4382****Stretched reticular film fibres; Composite fibres; Mixed fibres; Ultrafine fibres; Fibres for artificial leather****Definition statement**

*This place covers:*

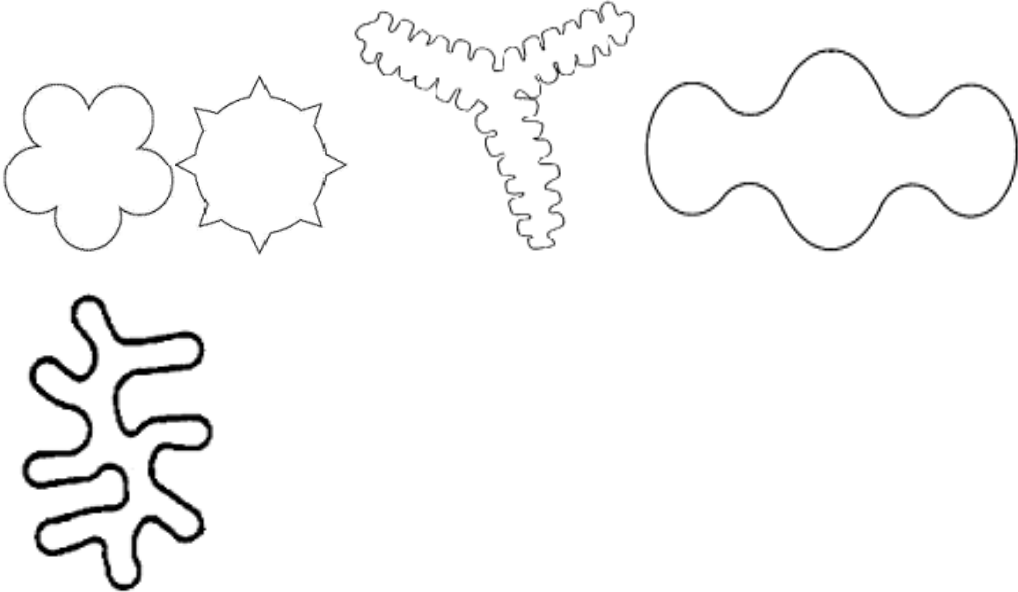
- Fleeces and webs, or layers of these, made from stretched reticular film fibres, composite fibres, mixed fibres, or ultrafine fibres (including splittable fibres).
- Fleeces and webs or layers of these made from fibres for artificial leather regardless of the fibre length. The fibres for artificial leather can be short fibres or long fibres.

**D04H 1/4391****characterised by the shape of the fibres****Definition statement**

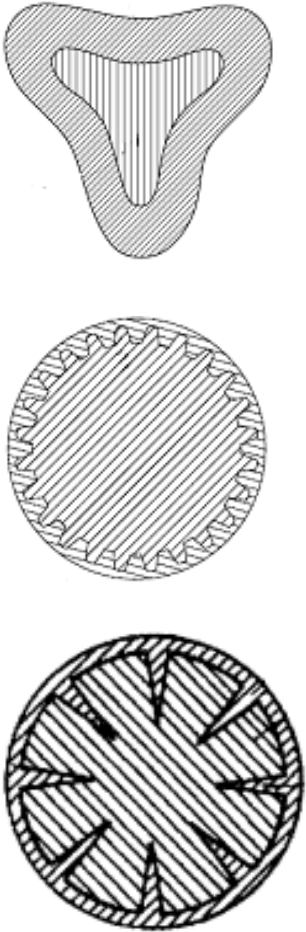
*This place covers:*

Non-woven fabrics characterised by the shape of the fibres used to form the non-woven fabric. These fibres generally have configurations that deviate from a smooth round fibre shape. For example, the fibres can have modified external cross-sections, e.g. noncircular cross-sections, modified internal cross-sections, e.g. circular or noncircular hollow fibre cores and noncircular internal fibre cores, or the fibres can have nonlinear configurations such as crimped fibres on which specific crimps are given.

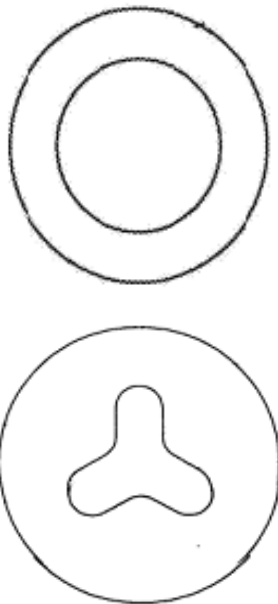
Examples of fibres having modified external cross-sections:



Examples of fibres having modified internal cross-sections:



Examples of fibres having hollow internal cross-sections:



The non-woven fabrics are formed wholly or mainly of staple fibres or the like or relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties insofar as this use has no preponderant influence on the consolidation of the fleece. Fleeces and webs, or layers of these, are made from fibres which are characterized by their shape.

## References

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Characterised by the shape of yarns or filaments	<a href="#">D04H 3/018</a>
--	----------------------------

## D04H 1/44

**the fleeces or layers being consolidated by mechanical means, e.g. by rolling**

### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties and are consolidated by mechanical means, e.g. by rolling.

## D04H 1/45

**by forming intermeshing loops or stitches from some of the fibres**

### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by forming intermeshing loops or stitches from some of the fibers. Fibers are pulled out from the structure of the web and then pushed back into it to bind the web. No additional yarn material is added to the web. (Is not related to knitting [D04B](#); or sewing [D05B](#))

**D04H 1/46**

**by needling or like operations to cause entanglement of fibres ([D04H 1/45](#) takes precedence; needling machines [D04H 18/00](#))**

**Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers. The needling is done by stabbing or punching with barbed needles which pull out and push in the fibers of the web many consecutive times. (Needling machines [D04H 18/00](#))

**References****Limiting references**

*This place does not cover:*

Forming intermeshing loops or stitches from some of the fibres	<a href="#">D04H 1/45</a>
--	---------------------------

**D04H 1/48**

**in combination with at least one other method of consolidation**

**Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers in combination with at least one other preceding or subsequent method of consolidation.

**D04H 1/482**

**in combination with shrinkage**

**Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers in combination with shrinkage.

**D04H 1/485**

**in combination with weld-bonding**

**Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers in combination with weld-bonding.

**D04H 1/488****in combination with bonding agents****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers in combination with bonding agents.

**D04H 1/49****entanglement by fluid jet in combination with another consolidation means****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers in combination with entanglement by fluid jet, e.g. by hydro entangling/ hydro needling/ spun lace methods with water jets).

**D04H 1/492****by fluid jet ([D04H 1/49](#) takes precedence)****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, are mechanically consolidated only by fluid jet (usually this is with water e.g. by hydro entangling/ hydro needling/ spun lace methods or can be gas/air).

**References****Limiting references**

*This place does not cover:*

Entanglement by fluid jet in combination with another consolidation means	<a href="#">D04H 1/49</a>
---	---------------------------

**D04H 1/495****for formation of patterns, e.g. drilling or rearrangement****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, mechanically consolidated only by fluid jet for the formation of patterns, e.g. drilling or rearrangement of the fibers.



**D04H 1/498****entanglement of layered webs****Definition statement**

*This place covers:*

Multi-layered non-woven fabrics which are entangled by needling or like operations, and which are also included in the scope of the upper group, namely, formed wholly or mainly of staple fibres or like relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties. Fleeces and webs, or layers of these, mechanically consolidated by needling or like operations to cause entanglement of fibers. Specifically for the entanglement of layered webs.

**D04H 1/50****by treatment to produce shrinking, swelling, crimping or curling of fibres (in combination with needling [D04H 1/482](#))****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties and are consolidated by mechanical means by using a treatment to produce shrinking, swelling, crimping, or curling of fibers.

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

curling or crimping of fibres, filaments, or yarns	<a href="#">D02G 1/00</a>
--	---------------------------

**D04H 1/52****by applying or inserting filamentary binding elements****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, composed of fibers without existing or potential mechanical cohesive properties and are consolidated by mechanical means by applying or inserting filamentary binding elements, e.g. threads or yarns are used as an extra stitching element. (Knitting [D04B](#); Sewing [D05B](#))

**D04H 1/54****by welding together the fibres, e.g. by partially melting or dissolving (in combination with needling [D04H 1/485](#))****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, are composed of fibers having existing or potential cohesive properties and are consolidated by welding together the fibers, e.g. by partially melting or dissolving (if in combination with needling then [D04H 1/48](#)).

**D04H 1/541****Composite fibres, e.g. sheath-core, sea-island or side-by-side; Mixed fibres****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these are welded together and are composite fibers e.g. sheath-core, sea-island or side-by-side; Mixed fibers.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Mixed fibres	Mixed fibres refers to the case when different kinds of fibres exist and one of them melts or softens first
--------------	---

**D04H 1/542****Adhesive fibres****Definition statement**

*This place covers:*

Fleeces and webs, or layers of these welded together and are adhesive fibers i.e thermoplastic.

**D04H 1/544****Olefin series****Definition statement**

*This place covers:*

Where the adhesive fibers belong to the olefin series.

**D04H 1/545****Polyvinyl alcohol****Definition statement**

*This place covers:*

Where the adhesive fibers are polyvinyl alcohol.

**D04H 1/546****Polyvinyl acetate****Definition statement**

*This place covers:*

Where the adhesive fibers are polyvinyl acetate.

## **D04H 1/548**

### **Acrylonitrile series**

#### **Definition statement**

*This place covers:*

Where the adhesive fibers belong to the acrylonitrile series.

## **D04H 1/549**

### **Polyamides**

#### **Definition statement**

*This place covers:*

Where the adhesive fibers are polyamides.

## **D04H 1/55**

### **Polyesters**

#### **Definition statement**

*This place covers:*

Where the adhesive fibers are polyesters.

## **D04H 1/551**

### **Resins thereof not provided for in groups [D04H 1/544](#) - [D04H 1/55](#)**

#### **Definition statement**

*This place covers:*

Where the adhesive fibers are resins not provided for in groups [D04H 1/544](#)-[D04H 1/55](#).

## **D04H 1/552**

### **by applying solvents or auxiliary agents**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, welded together by applying solvents or auxiliary agents which promote welding by dissolving the fibers.

## **D04H 1/554**

### **by radio-frequency heating**

#### **Definition statement**

*This place covers:*

Fleeces and webs, or layers of these, welded together by radio-frequency heating.

**D04H 1/555****by ultrasonic heating****Definition statement***This place covers:*

Fleeces and webs, or layers of these, welded together by ultrasonic heating.

**D04H 1/556****by infrared heating****Definition statement***This place covers:*

Fleeces and webs, or layers of these, welded together by infrared heating.

**D04H 1/558****in combination with mechanical or physical treatments other than embossing****Definition statement***This place covers:*

Fleeces and webs, or layers of these, welded together in combination with mechanical or physical treatments other than embossing.

**D04H 1/559****the fibres being within layered webs****Definition statement***This place covers:*

Multi-layered non-woven fabrics using bonding fibres in which layers are made continuously, and which are also included in the scope of the upper group, namely, formed wholly or mainly of staple fibres or like relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties. Fleeces and webs welded together the fibers being within layered webs.

**D04H 1/56****in association with fibre formation, e.g. immediately following extrusion of staple fibres****Definition statement***This place covers:*

Fleeces and webs are welded together in association with fiber formation, e.g. immediately following extrusion of staple fibers.

**D04H 1/587****characterised by the bonding agents used****Definition statement***This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents characterized by the bonding agents used.

**D04H 1/593****to layered webs****Definition statement***This place covers:*

Multi-layered non-woven fabrics using chemical or thermoplastic bonding agents in which layers are made continuously, and which are also included in the scope of the upper group, namely, formed wholly or mainly of staple fibres or like relatively short fibres and formed from fleeces or layers composed of fibres without existing or potential cohesive properties. Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents in layered webs.

**D04H 1/60****the bonding agent being applied in dry state, e.g. thermo-activatable agents in solid or molten state, and heat being applied subsequently****Definition statement***This place covers:*

Fleeces and webs consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in a dry state, e.g. thermo-activatable agents in solid or molten state, and heat being applied subsequently.

**D04H 1/62****at spaced points or locations****Definition statement***This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in a dry state at spaced points or locations.

**D04H 1/64****the bonding agent being applied in wet state, e.g. chemical agents in dispersions or solutions****Definition statement***This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in wet state, e.g. chemical agents in dispersions or solutions

**D04H 1/645****Impregnation followed by a solidification process****Definition statement**

*This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in wet state i.e impregnation and is then followed by a solidification process.

**D04H 1/65****using mixed or composite fibres****Definition statement**

*This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in wet state i.e impregnation and is then followed by a solidification process and using mixed or composite fibres.

**D04H 1/655****characterised by the apparatus for applying bonding agents****Definition statement**

*This place covers:*

Fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in a wet state characterised by the apparatus for applying bonding agents.

**D04H 1/66****at spaced points or locations ([D04H 1/68](#) takes precedence)****References****Limiting references**

*This place does not cover:*

The bonding agent being applied in the form of foam	<a href="#">D04H 1/68</a>
---	---------------------------

**D04H 1/68****the bonding agent being applied in the form of foam****Definition statement**

*This place covers:*

Where the fleeces and webs are consolidated by applying, incorporating, or activating chemical or thermoplastic bonding agents the bonding agent being applied in a wet state in the form of foam.

**D04H 1/70**

**characterised by the method of forming fleeces or layers, e.g. reorientation of fibres**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Characterised by the method of forming fleeces or layers, e.g. reorientation of yarns or filaments	<a href="#">D04H 3/02</a>
--	---------------------------

**D04H 1/72**

**the fibres being randomly arranged**

**Definition statement**

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, causing the fibres to be randomly arranged i.e. isotropic fleeces.

**D04H 1/724**

**forming webs during fibre formation, e.g. flash-spinning**

**Definition statement**

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, where the fibres are randomly arranged during fibre formation, e.g. flash-spinning.

**D04H 1/732**

**by fluid current, e.g. air-lay**

**Definition statement**

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, where the fibers are randomly arranged by fluid current, e.g. air-lay

**D04H 1/736**

**characterised by the apparatus for arranging fibres ([D04H 1/728](#), [D04H 1/732](#) take precedence)**

**Definition statement**

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, where the fibers are randomly arranged and characterized by the apparatus for randomly arranging the fibres.

## References

### Limiting references

*This place does not cover:*

By electro-spinning	<a href="#">D04H 1/728</a>
By fluid current	<a href="#">D04H 1/732</a>

## D04H 1/74

**the fibres being orientated, e.g. in parallel {(anisotropic fleeces)}**

### Definition statement

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, where the fibers are orientated, e.g. in parallel as in anisotropic fleeces.

## D04H 1/76

**otherwise than in a plane, e.g. in a tubular way**

### Definition statement

*This place covers:*

Method for forming non-woven fleeces or webs, or layers of these, where the fibers are orientated otherwise than in a plane, e.g. in a tubular way

## References

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Characterised by the method of forming fleeces or layers, e.g. reorientation of yarns or filaments, otherwise than in a plane	<a href="#">D04H 3/07</a>
---	---------------------------

## D04H 3/00

**Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length**

### Definition statement

*This place covers:*

Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length. The term continuous filament is used.



**D04H 3/002****Inorganic yarns or filaments****Definition statement**

*This place covers:*

Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length i.e continuous filament.

**D04H 3/004****Glass yarns or filaments****Definition statement**

*This place covers:*

Where the web of continuous inorganic filament is made of glass.

**D04H 3/005****Synthetic yarns or filaments ([D04H 3/013](#) takes precedence)****Definition statement**

*This place covers:*

Where the web of continuous filament is synthetic.

**References****Limiting references**

*This place does not cover:*

Regenerated cellulose series	<a href="#">D04H 3/013</a>
------------------------------	----------------------------

**D04H 3/007****Addition polymers****Definition statement**

*This place covers:*

Where the web of continuous filament is synthetic made from addition polymers e.g. olefin series, acrylonitrile series, polyvinyl alcohol (PVA), fluorine series, PVC.

**D04H 3/009****Condensation or reaction polymers****Definition statement**

*This place covers:*

Where the web of continuous filament is synthetic formed from condensation or reaction polymers e.g. PLA, Ppolyacetals, polyamides.

**D04H 3/011****Polyesters****Definition statement**

*This place covers:*

Where the web of continuous filament is formed from a condensation polymer specifically from polyesters.

**D04H 3/013****Regenerated cellulose series****Definition statement**

*This place covers:*

Where the web of continuous filament is made from the regenerated cellulose series e.g. rayon, acetate, triacetate, bamboo fibres, rayon, lyocell, Tencel, Modal and Viscose.

**Special rules of classification**

It is sufficient for classification within this group that there is some regenerated cellulose filaments or yarn in the fleece web or layer.

**D04H 3/015****Natural yarns or filaments****Definition statement**

*This place covers:*

Where the web of continuous filament is made natural yarns or filaments e.g. silk.

**D04H 3/016****characterised by the fineness****Definition statement**

*This place covers:*

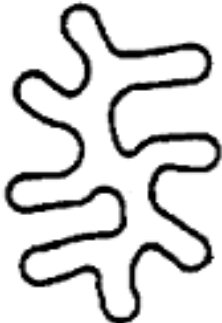
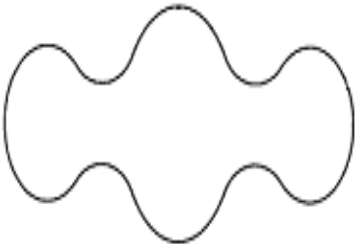
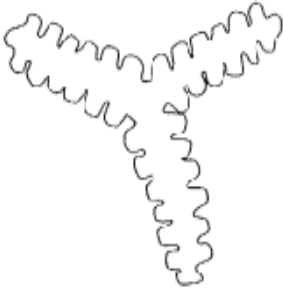
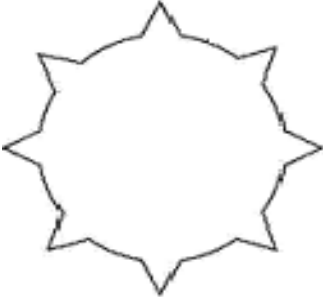
Where the web of continuous filament is characterized by its fineness.

**D04H 3/018****characterised by the shape****Definition statement**

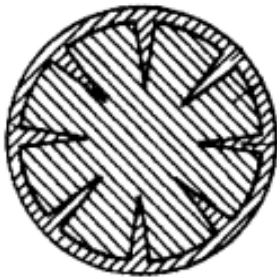
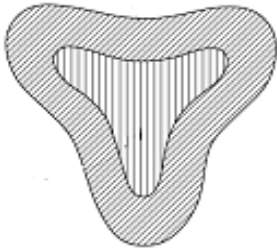
*This place covers:*

Non-woven fabrics characterised by the shape of the yarns or like filamentary material used to form the non-woven fabric. For example, the filamentary material can have modified external cross-sections, e.g. noncircular cross-sections, modified internal cross-sections, e.g. circular or noncircular hollow fibre cores and noncircular internal fibre cores, or the yarns or like filamentary material can have nonlinear configurations such as crimped yarns or like filamentary material on which specific crimps are given.

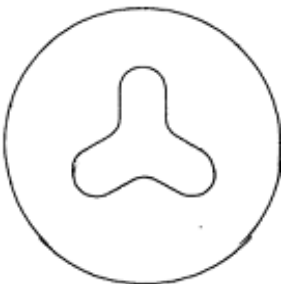
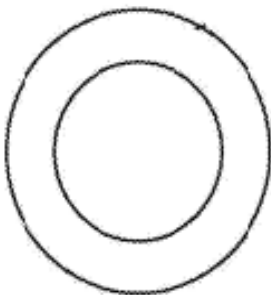
Examples of filamentary materials having modified external cross-sections:



Examples of filamentary materials having modified internal cross-sections:



Examples of filamentary materials having hollow internal cross-sections:



The non-woven fabrics are formed wholly or mainly of yarns or like filamentary material of substantial length and where a web of continuous filaments is characterised by the shape of the filaments.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Characterised by the shape of fibres	<a href="#">D04H 1/4391-</a> <a href="#">D04H 1/43918</a>
--------------------------------------	--

## D04H 3/02

**characterised by the method of forming fleeces or layers, e.g. reorientation of yarns or filaments**

### Definition statement

*This place covers:*

Where the non-woven fabric formed of continuous filament is characterized by the method of forming fleeces, webs or layers of these e.g. reorientation of yarns or filaments (lap-forming devices [D01G 25/00](#); paper web-making by wet methods [D21F](#), [D21H](#)).

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Characterised by the method of forming fleeces or layers, e.g. reorientation of fibres	<a href="#">D04H 1/70</a>
--	---------------------------

## D04H 3/03

**at random**

### Definition statement

*This place covers:*

Where the method forms webs or layers of webs of randomly laid continuous filaments.

## D04H 3/033

**reorientation immediately after yarn or filament formation**

### Definition statement

*This place covers:*

Non-woven fabrics to which the means for changing the orientation of yarns or like filamentary material are given after the formation of yarns or like filamentary material, and which are also included in the scope of the upper group, namely, formed wholly or mainly of yarns or like filamentary material of substantial length. Where the method forms webs or layers of webs and lays the continuous filaments at random and reorientation takes place immediately after yarn or filament formation.

**D04H 3/037****reorientation by liquid****Definition statement**

*This place covers:*

Where the method forms webs or layers of webs by randomly laying continuous filaments and reorientation is achieved by liquid.

**D04H 3/04****in rectilinear paths, e.g. crossing at right angles****Definition statement**

*This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid in rectilinear paths, e.g. crossing at right angles.

**D04H 3/045****for net manufacturing****Definition statement**

*This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid in rectilinear paths, crossing at right angles for net manufacturing.

**D04H 3/05****in another pattern, e.g. zig-zag, sinusoidal {(D04H 3/04 takes precedence)}****Definition statement**

*This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid in another pattern, e.g. zigzag, sinusoidal, and wavy.

**References****Limiting references**

*This place does not cover:*

Characterised by the method of forming fleeces or layers in rectilinear paths	<a href="#">D04H 3/04</a>
---	---------------------------

**D04H 3/07****otherwise than in a plane, e.g. in a tubular way****Definition statement***This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid in otherwise than in a plane, e.g. in a tubular way.

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Characterised by the method of forming fleeces or layers, e.g. reorientation of fibres, otherwise than in a plane	<a href="#">D04H 1/76</a>
---	---------------------------

**D04H 3/073****Hollow cylinder shaped****Definition statement***This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid otherwise than in a plane so that they are hollow and cylindrically shaped.

**D04H 3/077****Stick, rod or solid cylinder shaped****Definition statement***This place covers:*

Where the method forms webs or layers of webs of continuous filaments laid otherwise than in a plane so that the web is formed as a stick, rod or a solid cylinder.

**D04H 3/08****characterised by the method of strengthening or consolidating****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length i.e. continuous filaments characterized by the method of strengthening or consolidating the web.

**D04H 3/10****with bonds between yarns or filaments made mechanically****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds made mechanically.

**D04H 3/105****by needling (needling machines [D04H 18/00](#))****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made mechanically (needling machines [D04H 18/00](#); knitting [D04B](#); sewing [D05B](#)).

**References****Limiting references***This place does not cover:*

Needling machines	<a href="#">D04H 18/00</a>
-------------------	----------------------------

**D04H 3/11****by fluid jet****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by fluid jet.

**D04H 3/115****by applying or inserting filamentary binding elements****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by applying or inserting filamentary binding elements i.e. by stitching.

**D04H 3/12****with filaments or yarns secured together by chemical or thermo-activatable bonding agents, e.g. adhesives, applied or incorporated in liquid or solid form****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by filaments or yarns secured together by chemical or thermo-activatable bonding agents, e.g. adhesives, applied or incorporated in liquid or solid form.



**D04H 3/14****with bonds between thermoplastic yarns or filaments produced by welding****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by filaments or yarns secured together by bonds between thermoplastic yarns or filaments produced by welding.

**D04H 3/147****Composite yarns or filaments****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by filaments or yarns secured together by bonds between thermoplastic yarns or filaments produced by welding using composite yarns or filaments i.e. bicomponent, multicomponent filaments.

**D04H 3/153****Mixed yarns or filaments****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by filaments or yarns secured together by bonds between thermoplastic yarns or filaments produced by welding using mixed yarns or filaments i.e. where some of the filaments are thermoplast and some are not.

**D04H 3/16****with bonds between thermoplastic filaments produced in association with filament formation, e.g. immediately following extrusion****Definition statement***This place covers:*

Non-woven fabrics formed wholly or mainly of continuous filaments with bonds between yarns or filaments made by filaments or yarns secured together by bonds between thermoplastic yarns or filaments produced in association with filament formation, e.g. immediately following extrusion i.e. melt spinning.

**D04H 5/00**

**Non woven fabrics formed of mixtures of relatively short fibres and yarns or like filamentary material of substantial length**

**Definition statement**

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length

**D04H 5/02**

**strengthened or consolidated by mechanical methods, e.g. needling (needling machines [D04H 18/00](#))**

**References****Limiting references**

*This place does not cover:*

Needling machines	<a href="#">D04H 18/00</a>
-------------------	----------------------------

**D04H 5/04**

**strengthened or consolidated by applying or incorporating chemical or thermo-activatable bonding agents in solid or liquid form**

**Definition statement**

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length and strengthened or consolidated by applying or incorporating chemical or thermo-activatable bonding agents in solid or liquid form.

**D04H 5/06**

**strengthened or consolidated by welding-together thermoplastic fibres, filaments, or yarns**

**Definition statement**

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length and strengthened or consolidated by welding-together thermoplastic fibers, filaments, or yarns.

## D04H 5/08

**characterised by the method of forming fleeces or layers, e.g. reorientation of fibres or yarns**

### Definition statement

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length characterized by the method of forming fleeces or layers, e.g. reorientation of fibers or yarns (lap-forming devices [D01G 25/00](#); paper web-making by wet methods [D21E](#), [D21H](#)).

## D04H 5/10

**otherwise than in a plane, e.g. in a tubular way**

### Definition statement

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length characterized by the method of forming fleeces or layers otherwise than in a plane, e.g. in a tubular way.

## D04H 5/12

**Glass fibres**

### Definition statement

*This place covers:*

Non-woven fabrics formed of mixtures of relatively-short fibers and yarns or like filamentary material of substantial length using glass fibers.

## D04H 11/00

**Non-woven pile fabrics (layered products forming non-woven pile fabrics [B32B](#))**

### Definition statement

*This place covers:*

Non-woven pile fabrics - the pile is formed from upstanding fibers. (Layered products forming non-woven pile fabrics are classified in [B32B](#); woven pile fabrics [D03D](#); tufting [D05C](#), e.g. [D05C 15/04](#); made by knotting [D04G 3/00](#); by knitting [D04B 1/00](#), [D04B 21/00](#))

## D04H 11/04

**formed by zig-zag folding of a fleece or layer of staple fibres, filaments, or yarns, strengthened or consolidated at the folds**

### Definition statement

*This place covers:*

Non-woven pile fabrics formed by zigzag folding of a fleece or layer of staple fibers, filaments, or yarns, strengthened or consolidated at the folds.

## **D04H 11/08**

**formed by creation of a pile on at least one surface of a non-woven fabric without addition of pile-forming material, e.g. by needling, by differential shrinking (needling machines [D04H 18/00](#))**

### **Definition statement**

*This place covers:*

Non-woven pile fabrics formed by the creation of a pile on at least one surface of a non-woven fabric without the addition of pile-forming material, e.g. by needling, by differential shrinking (needling machines [D04H 18/00](#))

## **D04H 13/00**

**Other non-woven fabrics**

### **Definition statement**

*This place covers:*

Other non-woven fabrics not accounted for in the previous groups.

## **D04H 13/02**

**Production of non-woven fabrics by partial defibrillation of oriented thermoplastics films**

### **Definition statement**

*This place covers:*

Other non-woven fabrics produced by partial defibrillation of oriented thermoplastics films.

## **D04H 18/00**

**Needling machines**

### **Definition statement**

*This place covers:*

Needling machines e.g. needle punching machines.

## **D04H 18/02**

**with needles**

### **Definition statement**

*This place covers:*

Needling machines with barbed needles.

## **D04H 18/04**

### **with water jets**

#### **Definition statement**

*This place covers:*

Needling machines using water jets e.g. spunlace machines.