

SECTION D — TEXTILES; PAPER

D04 BRAIDING; LACE-MAKING; KNITTING; TRIMMINGS; NON-WOVEN FABRICS

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 having an intermediate or external layer of a different kind, e.g. of woven fabric, B32B)

Note(s)

- In this subclass, the following expression is used with the meaning indicated:
 - "non-woven fabrics" means 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 D. This expression includes felts, cotton-wool and wadding.
- In this subclass:
 - 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 fibres or threads, and the chemical compounds or compositions, the final products may be given the appearance of paper, cardboard, leather, or the like.

Subclass index

TYPES AND CONSTRUCTIONAL FEATURES OF NON-WOVEN FABRICS; APPARATUS AND PROCESSES FOR PRODUCING THEM

From short fibres; from long fibres; from mixture of short and long fibres.....	1/00, 3/00, 5/00
Pile fabrics.....	11/00
Other non-woven fabrics.....	13/00
FELTING APPARATUS; NEEDLING MACHINES.....	17/00, 18/00

Kinds or types of non-woven fabrics; Apparatus or processes for making such products

1/00 Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres

- 1/02 • Cotton-wool; Wadding (carding D01G)
- 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)
- 1/06 • • by treatment to produce shrinking, swelling, crimping, or curling of fibres (curling or crimping of fibres, filaments, or yarns D02G 1/00)
- 1/08 • • and hardened by felting; Felts or felted products
- 1/10 • • • Felts made from mixtures of fibres
- 1/12 • • • and incorporating artificial organic fibres
- 1/14 • • • and incorporating inorganic fibres
- 1/16 • • • Laminated felts in which the separate layers are united by a felting process
- 1/20 • • • Felts incorporating inserts or attachments, e.g. for ornamental purposes
- 1/22 • • • Three-dimensional articles formed by felting processes
- 1/24 • • • Covers felted on to three-dimensional articles

- 1/40 • from fleeces or layers composed of fibres without existing or potential cohesive properties
- 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
- 1/44 • • the fleeces or layers being consolidated by mechanical means, e.g. by rolling
- 1/45 • • • by forming intermeshing loops or stitches from some of the fibres (knitting D04B; sewing D05B) [4]
- 1/46 • • • by needling or like operations to cause entanglement of fibres (D04H 1/45 takes precedence; needling machines D04H 18/00) [4]
- 1/48 • • • in combination with at least one other method of consolidation, e.g. with application of bonding agents
- 1/50 • • • by treatment to produce shrinking, swelling, crimping, or curling of fibres (curling or crimping of fibres, filaments, or yarns D02G 1/00)
- 1/52 • • • by applying or inserting filamentary binding elements (knitting D04B; sewing D05B)
- 1/54 • • by welding together the fibres, e.g. by partially melting or dissolving (in combination with needling D04H 1/48)

- 1/56 • • • in association with fibre formation, e.g. immediately following extrusion of staple fibres
- 1/58 • • by applying, incorporating, or activating chemical or thermoplastic bonding agents, e.g. adhesives (in combination with needling D04H 1/48)
- 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
- 1/62 • • • • at spaced points or locations
- 1/64 • • • the bonding agent being applied in wet state, e.g. chemical agents in dispersions or solutions
- 1/66 • • • • at spaced points or locations (D04H 1/68 takes precedence)
- 1/68 • • • • the bonding agent being applied in the form of foam
- 1/70 • characterised by the method of forming fleeces or layers, e.g. reorientation of fibres (lap-forming devices D01G 25/00; paper web-making by wet methods D21F, D21H) [4]
- 1/72 • • the fibres being randomly arranged
- 1/74 • • the fibres being orientated, e.g. in parallel
- 3/00 Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length**
- 3/02 • characterised by the method of forming fleeces or layers, e.g. reorientation of yarns or filaments (lap-forming devices D01G 25/00; paper web-making by wet methods D21F, D21H) [4]
- 3/03 • • at random
- 3/04 • • in rectilinear paths, e.g. crossing at right angles
- 3/05 • • in another pattern, e.g. zig-zag, sinusoidal
- 3/07 • • otherwise than in a plane, e.g. in a tubular way
- 3/08 • characterised by the method of strengthening or consolidating
- 3/10 • • with bonds between yarns or filaments made mechanically (needling machines D04H 18/00; knitting D04B; sewing D05B)
- 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

- 3/14 • • with bonds between thermoplastic yarns or filaments produced by welding
- 3/16 • • • with bonds between thermoplastic filaments produced in association with filament formation, e.g. immediately following extrusion [4]
- 5/00 Non-woven fabrics formed of mixtures of relatively-short fibres and yarns or like filamentary material of substantial length**
- 5/02 • strengthened or consolidated by mechanical methods, e.g. needling (needling machines D04H 18/00; knitting D04B; sewing D05B)
- 5/04 • strengthened or consolidated by applying or incorporating chemical or thermo-activatable bonding agents in solid or liquid form
- 5/06 • strengthened or consolidated by welding-together thermoplastic fibres, filaments, or yarns
- 5/08 • characterised by the method of forming fleeces or layers, e.g. reorientation of fibres or yarns (lap-forming devices D01G 25/00; paper web-making by wet methods D21F, D21H) [4]
- 11/00 Non-woven pile fabrics** (layered products forming non-woven pile fabrics B32B; woven pile fabrics D03D; tufting D05C)
- 11/04 • formed by zig-zag folding of a fleece or layer of staple fibres, filaments, or yarns, strengthened or consolidated at the folds
- 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)
- 13/00 Other non-woven fabrics**
- 13/02 • Production of non-woven fabrics by partial defibrillating of oriented thermoplastics films [4]

17/00 Felting apparatus

- 17/10 • for felting between rollers, e.g. heated rollers
- 17/12 • • Multi-roller apparatus

18/00 Needling machines