

Title (en)  
IMPROVED NEEDLING PROCESS

Publication  
**EP 0388072 A3 19901031 (EN)**

Application  
**EP 90302428 A 19900307**

Priority  
GB 8905789 A 19890314

Abstract (en)  
[origin: EP0388072A2] A method of strengthening and/or densifying a non-woven batt which comprises at least 5% by weight of melt or bicomponent fibres by a combination of thermal and mechanical bonding is described. Thermal and mechanical bonding are carried out in a single operation, by needling the non-woven batt in a needleloom provided with barbed or forked needles, at an elevated temperature of at least the softening temperature of the melt or bicomponent fibres. The properties of the non-woven batt which has been strengthened and/or densified by the method according to the invention can be adapted as required by varying the processing conditions.

IPC 1-7  
**D04H 1/48**; **D04H 18/00**

IPC 8 full level  
**D04H 1/48** (2012.01); **D04H 1/485** (2012.01); **D04H 1/541** (2012.01); **D04H 1/544** (2012.01); **D04H 1/549** (2012.01); **D04H 1/55** (2012.01); **D04H 18/00** (2012.01)

CPC (source: EP US)  
**D04H 1/48** (2013.01 - EP); **D04H 1/485** (2013.01 - EP US); **D04H 1/5412** (2020.05 - EP US); **D04H 1/5418** (2020.05 - EP US); **D04H 1/544** (2013.01 - EP); **D04H 1/549** (2013.01 - EP); **D04H 1/55** (2013.01 - EP); **D04H 18/02** (2013.01 - EP); **D04H 1/5414** (2020.05 - EP US)

Citation (search report)  
• [X] GB 1229921 A 19710428  
• [X] AT 304097 B 19721227 - FEHRER ERNST  
• [A] EP 0046834 A1 19820310 - FREUDENBERG CARL FA [DE]

Cited by  
CN1095891C; EP0990730A3; EP1624099A1; GB2333783A; FR2763345A1; US5879487A; US5677028A; CN104532477A; GB2313383A; GB2313383B; US5371928A; US5547731A; US5707906A; CN112726026A; GB2299350A; EP0531680A1; US5307546A; US6555490B1; US7114226B2; WO9828476A1; WO9322486A1; WO9824959A1; WO9324695A1; WO9324696A1; EP2963204B1

Designated contracting state (EPC)  
AT BE CH DE FR GB IT LI

DOCDB simple family (publication)  
**EP 0388072 A2 19900919**; **EP 0388072 A3 19901031**; GB 8905789 D0 19890426

DOCDB simple family (application)  
**EP 90302428 A 19900307**; GB 8905789 A 19890314