

Title (en)

Heat exchange surface with galvanized microstructures with protrusions

Title (de)

Wärmeübertragungsfläche mit einer aufgalvanisierten Mikrostruktur von Vorsprüngen

Title (fr)

Surface d'échange de chaleur avec microstructures galvanisées avec des protubérances

Publication

EP 1318371 A3 20050713 (DE)

Application

EP 02027031 A 20021203

Priority

DE 10159860 A 20011206

Abstract (en)

[origin: EP1318371A2] The heat transfer surface (3), on a plate or tube body (4), has a galvanized projecting micro-structure extending from the base surface (3a) with a minimum height of 10 μ m. The base surface is covered with projections (6), wholly or partially, as pin-shaped micro-structures. The longitudinal axes (6c) of the micro-pins are either at right angles to the surface or they are pitched at an angle of 30-90 degrees to the surface. The micro-pins have a thickness (d) of 0.2-100.0 μ m, with a pin density of $10^{2-10^{8}}$ per cm^2 . The structures are galvanized on to the surface using a polymer membrane with micro-pores.

IPC 1-7

F28F 13/18

IPC 8 full level

C25D 5/02 (2006.01); **C25D 7/00** (2006.01); **F28F 1/12** (2006.01); **F28F 13/18** (2006.01)

CPC (source: EP US)

C25D 5/022 (2013.01 - EP US); **C25D 7/00** (2013.01 - EP US); **F28F 1/124** (2013.01 - EP US); **F28F 13/187** (2013.01 - EP US); **Y10S 165/905** (2013.01 - EP US)

Citation (search report)

- [XY] US 6197180 B1 20010306 - KELLY KEVIN W [US]
- [Y] DE 19650881 A1 19980610 - SCHWERIONENFORSCH GMBH [DE]
- [X] US 3842474 A 19741022 - SCHLADITZ H
- [A] DE 10021489 A1 20010607 - LIN CHING BIN [TW], et al
- [A] EP 1041407 A1 20001004 - CANON KK [JP]
- [A] PATENT ABSTRACTS OF JAPAN vol. 009, no. 206 (M - 406) 23 August 1985 (1985-08-23)
- [A] PATENT ABSTRACTS OF JAPAN vol. 008, no. 160 (M - 312) 25 July 1984 (1984-07-25)

Cited by

EP2727679A1; EP2260996A1; DE102008030423B4; FR2950134A1; FR2950133A1; EP2423475A3; EP3059541A4; WO2011029918A1; WO2011029917A1; WO2009071501A1; DE102013018203A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SI SK TR

DOCDB simple family (publication)

EP 1318371 A2 20030611; **EP 1318371 A3 20050713**; **EP 1318371 B1 20080116**; AT E384237 T1 20080215; DE 10159860 A1 20030724; DE 10159860 C2 20031204; DE 50211546 D1 20080306; ES 2300414 T3 20080616; PT 1318371 E 20080422; US 2003136547 A1 20030724; US 6736204 B2 20040518

DOCDB simple family (application)

EP 02027031 A 20021203; AT 02027031 T 20021203; DE 10159860 A 20011206; DE 50211546 T 20021203; ES 02027031 T 20021203; PT 02027031 T 20021203; US 30556902 A 20021127