

Title (en)  
Heat exchanger

Title (de)  
Wärmetauscher

Title (fr)  
Echangeur de chaleur

Publication  
**EP 1439365 A3 20051102 (EN)**

Application  
**EP 03024821 A 20031031**

Priority  
KR 20030002700 A 20030115

Abstract (en)  
[origin: EP1439365A2] Disclosed herein is a heat exchanger in which a header in the heat exchanger is made of a material of plastic so that a regulator plate to define a passage of pipe can be formed freely. Also, not only a passage between pipes but also a passage between fine tubes in the same pipe can be formed. Accordingly, formation of a passage to accomplish maximal heat exchange efficiency is possible. <??>In addition, the heat exchange performance is improved by forming a more number of fine tubes having a less small diameter, compared to the pipes of the material of aluminum, using the pipes of the material of plastic. <??>The heat exchanger according to the present invention constructed as above can accomplish the improvement of heat exchange performance by the maximum of 30% over the heat exchanger of the material of aluminum.  
<IMAGE>

IPC 1-7  
**F28F 9/02**

IPC 8 full level  
**F25B 39/00** (2006.01); **F28D 1/047** (2006.01); **F28D 1/053** (2006.01); **F28F 1/02** (2006.01); **F28F 9/02** (2006.01); **F28F 19/04** (2006.01); **F28F 21/06** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP KR US)  
**F28D 1/0478** (2013.01 - EP US); **F28D 1/05341** (2013.01 - EP US); **F28D 1/05375** (2013.01 - EP US); **F28F 9/0204** (2013.01 - EP US); **F28F 19/04** (2013.01 - KR); **F28F 21/062** (2013.01 - EP US); **F28F 21/084** (2013.01 - EP US)

Citation (search report)  
• [X] DE 3720483 A1 19880128 - SHOWA ALUMINIUM CO LTD [JP]  
• [X] US 5203407 A 19930420 - NAGASAKA YOSHIKIYO [JP]  
• [XA] US 2002088526 A1 20020711 - LEE JANG SEOK [KR]  
• [A] EP 0768197 A2 19970416 - DENSO CORP [JP]  
• [A] FR 2214874 A1 19740819 - SUEDEDEUTSCHE KUEHLER BEHR [DE]

Cited by  
EP2341301A3; AU2009299104B2; AU2009299103B2; WO2010037164A1; WO2010037165A1; US9222483B2; US10337746B2

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)  
**EP 1439365 A2 20040721**; **EP 1439365 A3 20051102**; AU 2003261553 A1 20040805; CN 1517660 A 20040804; JP 2004219052 A 20040805; KR 20040065626 A 20040723; US 2004188076 A1 20040930

DOCDB simple family (application)  
**EP 03024821 A 20031031**; AU 2003261553 A 20031110; CN 200310116137 A 20031117; JP 2003372621 A 20031031; KR 20030002700 A 20030115; US 70355503 A 20031110