

Title (en)  
HEAT EXCHANGER TUBE

Title (de)  
WÄRMETAUSCHERROHR

Title (fr)  
TUBE D'ÉCHANGEUR DE CHALEUR

Publication  
**EP 4390292 A1 20240626 (EN)**

Application  
**EP 22000266 A 20221222**

Priority  
EP 22000266 A 20221222

Abstract (en)  
Heat exchanger tube with a tube axis, with a tube wall, with a tube outside and with a tube inside, continuously running, axially parallel or helically circling inner ribs being formed out of the tube wall on the tube inside, each inner rib having two rib flanks and a rib tip, a continuously extending groove being formed in each case between adjacent inner ribs. The internal tube surface can be described by the equation:  $\Phi = e^2 / p d_i$  where:  $\Phi$  is a dimensionless parameter, severity-factor,  $e$  is the height of the helical ribs,  $p$  is the helical pitch and  $d_i$  is the tube inside diameter, whereby  $N$  is the number of ribs counted in a cutting plane perpendicular to the tube axis. According to the invention the product  $\Phi N^2$  is greater than 16 and less than 70.

IPC 8 full level  
**F28F 1/42** (2006.01)

CPC (source: EP)  
**F28F 1/422** (2013.01)

Citation (applicant)

- EP 1312885 B1 20051019 - WIELAND WERKE AG [DE]
- CN 101556124 A 20091014 - GOLDEN DRAGON PRECISE COPPER T [CN]
- CN 101556125 A 20091014 - GOLDEN DRAGON PRECISE COPPER T [CN]
- US 5992513 A 19991130 - SUZUKI YOSHIO [JP], et al
- US 6018963 A 20000201 - ITOH MASAOKI [JP], et al
- US 6412549 B1 20020702 - ITOH MASAOKI [JP], et al
- EP 2339283 B1 20160608 - WIELAND WERKE AG [DE]
- US 5697430 A 19971216 - THORS PETUR [US], et al

Citation (search report)

- [A] US 5996686 A 19991207 - THORS PETUR [US], et al
- [A] US 11002497 B1 20210511 - TIWARI RATNESH [US], et al
- [A] US 6173762 B1 20010116 - ISHIDA SEIJI [JP], et al
- [A] US 2009166018 A1 20090702 - LUNDGREEN JAMES M [US]

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA

Designated validation state (EPC)  
KH MA MD TN

DOCDB simple family (publication)  
**EP 4390292 A1 20240626**; TW 202433001 A 20240816; WO 2024132414 A1 20240627

DOCDB simple family (application)  
**EP 22000266 A 20221222**; EP 2023083454 W 20231129; TW 112145571 A 20231124