

Title (en)
STERILISATION OF LIQUIDS IN HERMETICALLY CLOSED VESSELS

Title (de)
STERILISIERUNG VON FLÜSSIGKEITEN IN HERMETISCH VERSCHLOSSENEN GEFÄßEN

Title (fr)
STERILISATION DE LIQUIDES DANS DES RECIPIENTS HERMETIQUEMENT FERMES

Publication
EP 2139352 A2 20100106 (FR)

Application
EP 08737321 A 20080320

Priority
• IB 2008000671 W 20080320
• EP 07005762 A 20070321
• EP 08737321 A 20080320

Abstract (en)
[origin: EP1972211A1] The process for sterilizing or pasteurizing a liquid (3) contained in a hermetically closed container, comprises transporting the container to a treatment zone in which the container is submerged in an external fluid flow, simultaneously heating the liquid by electromagnetic waves at a rate of greater than 30[deg] C per second up to a treatment temperature (T) of 20-66[deg] C and agitating the container, and applying a pulsed alternating electric field (5) and a pause to the liquid up to 10-100 microseconds for electroporation treatment depending on the value of the treatment temperature. The process for sterilizing or pasteurizing a liquid (3) contained in a hermetically closed container, comprises transporting the container to a treatment zone in which the container is submerged in an external fluid flow, simultaneously heating the liquid by electromagnetic waves at a rate of greater than 30[deg] C per second up to a treatment temperature (T) of 20-66[deg] C and agitating the container, and applying a pulsed alternating electric field (5) and a pause to the liquid up to 10-100 microseconds for electroporation treatment depending on the value of the treatment temperature. Total heat energy provided to the liquid by electric field pulse is less than 0.05 J/cm³. The electric field has an oscillation frequency of 100-1000 KHz and a pulse repetition frequency of 10-100 Hz. Amplitude (E) of the alternating electric field in V/cm is given from the equation, $C(T) = \log(E + 1) = B(T)$, where $B(T) = -2.340 \times 10^{-5} T^3 + 1.290 \times 10^{-3} T^2 - 3.110 \times 10^{-2} T + 5$ and $C(T) = -4.503 \times 10^{-5} T^3 + 2.888 \times 10^{-3} T^2 - 5.900 \times 10^{-2} T + 4$. The transport liquid is turbulized in rotation around the container. Static pressure developed in the treatment zone is created by pumping and locking system and by a liquid column constituting an external fluid overhanging in the treatment zone of the container. The transport fluid is water or water-based liquid. An independent claim is included for a device for sterilizing or pasteurizing a liquid to be treated.

IPC 8 full level
A23L 3/01 (2006.01); **A23L 2/48** (2006.01); **A23L 2/50** (2006.01); **A23L 3/02** (2006.01); **A23L 3/32** (2006.01)

CPC (source: EP KR US)
A01N 1/00 (2013.01 - US); **A23L 2/48** (2013.01 - EP KR US); **A23L 2/50** (2013.01 - KR); **A23L 3/01** (2013.01 - EP KR US); **A23L 3/02** (2013.01 - KR); **A23L 3/022** (2013.01 - EP US); **A23L 3/04** (2013.01 - EP US); **A23L 3/32** (2013.01 - EP US); **A23L 3/00** (2013.01 - US); **A61L 2/00** (2013.01 - US); **C12H 1/06** (2013.01 - US); **C12H 1/08** (2013.01 - US); **C12H 1/18** (2013.01 - US)

Citation (search report)
See references of WO 2008114136A2

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

DOCDB simple family (publication)
EP 1972211 A1 20080924; **EP 1972211 B1 20100428**; AT E465647 T1 20100515; BR PI0809012 A2 20140916; BR PI0809012 B1 20180116; CA 2682115 A1 20080925; CN 101674737 A 20100317; CN 101674737 B 20140219; DE 602007006154 D1 20100610; EA 015711 B1 20111031; EA 200901134 A1 20100430; EP 2139352 A2 20100106; ES 2345060 T3 20100914; JP 2011515063 A 20110519; JP 5015317 B2 20120829; KR 20100015776 A 20100212; MX 2009009990 A 20091014; PL 1972211 T3 20110331; US 2011123690 A1 20110526; US 8734717 B2 20140527; WO 2008114136 A2 20080925; WO 2008114136 A3 20081113; WO 2008114136 A8 20091105; ZA 200906672 B 20100630

DOCDB simple family (application)
EP 07005762 A 20070321; AT 07005762 T 20070321; BR PI0809012 A 20080320; CA 2682115 A 20080320; CN 200880014495 A 20080320; DE 602007006154 T 20070321; EA 200901134 A 20080320; EP 08737321 A 20080320; ES 07005762 T 20070321; IB 2008000671 W 20080320; JP 2010500378 A 20080320; KR 20097021995 A 20080320; MX 2009009990 A 20080320; PL 07005762 T 20070321; US 45025708 A 20080320; ZA 200906672 A 20090923