CLAIMS

1. A plate (1) for a heat exchanger (30), which comprises a plurality of unit cells (10), each one of said unit cells (10) comprising a first face (11) and a second face (12) which is opposite said first face (11), said first face (11) and said second face (12) having a plurality of spacers (14, 16) which are arranged so as to produce mutually perpendicular directions of flow between said first face (11) and said second face (12), said spacers (14, 16) differing between said first face (11) and said second face (12) in terms of number and/or shape and/or size, said plate (1) being characterized in that it is made of a material with a low Young's modulus, said low Young's modulus being of the order of magnitude of thousands of Mpa.

2. The plate (1) according to claim 1, characterized in that each one of said unit cells (10) has a quadrangular profile and in that said first face (11) and said second face (12) have a corrugation.

3. The plate (1) according to claim 1, characterized in that it is made of plastic material such as PVC and/or PP and/or PET.

4. The plate (1) according to one or more of the preceding claims, characterized in that it is made of a material with a Young's modulus substantially comprised between 1000 MPa and 3000 MPa.

5. The plate (1) according to one or more of the preceding claims, characterized in that each one of said spacers (14, 16) has an elevation at right angles to the plane of the respective face (11, 12) and is made in a single piece with the rest of said plate (1).

6. The plate (1) according to one or more of the preceding claims, characterized in that:

- at each one of said spacers (14) of said first face (11) there is a complementary cavity/shaped portion (17) on said second face (12),

- at each one of said spacers (16) of said second face (12) there is a complementary cavity/shaped portion (18) on said first face (11).

7. The plate (1) according to claim 6, characterized in that, considering a first axis (X) of each one of said unit cells (10), which is substantially central and perpendicular to the direction of said corrugation:

- said first face (11) comprises two portions:

- a first portion (13a),

- a second portion (13b),

- said second face (12) comprises two portions:

- a third portion (15a), which corresponds to and is opposite said first portion (13a),

- a fourth portion (15b), which corresponds to and is opposite said second portion (13b).

8. The plate (1) according to claim 7, characterized in that said first face (11) has a longitudinal first protrusion (19) which extends along said first axis (X), two first spacers (20a, 20b) rising from said first protrusion (19), said two first spacers (20a, 20b) being substantially mirror-symmetrical with respect to a plane of symmetry that is perpendicular to said first axis (X) and which passes through a second axis (Y) of each one of said unit cells (10), which is substantially central and parallel to the direction of said corrugation.

9. The plate (1) according to claim 8, characterized in that said first face (11) has two longitudinal end protrusions (21a, 21b), which extend parallel to said first axis (X), each one at a perimetric edge of each one of said unit cells (10), respectively:

- a second protrusion (21a), two second spacers (22a, 22b) rising from said second protrusion (21a) and being substantially mirror-symmetrical with respect to said plane of symmetry that is perpendicular to said first axis (X) and passes through said second axis (Y),

- a third protrusion (21b), two third spacers (23a, 23b) rising from said third protrusion (21b) and being substantially mirror-symmetrical with

respect to said plane of symmetry that is perpendicular to said first axis (X) and passes through said second axis (Y).

10. The plate (1) according to claim 9, characterized in that said first portion (13a) has two fourth protrusions (24a, 24b), each one of which extends along a substantially central axis thereof, which is parallel to said first axis (X), a fourth spacer (25a, 25b) extending from each one of said fourth protrusions (24a, 24b) at the respective perimetric edge of each one of said unit cells (10) that is parallel to said second axis (Y).

11. The plate (1) according to claim 10, characterized in that said second portion (13b) has a longitudinal fifth protrusion (26), which extends along a substantially central axis thereof that is parallel to said first axis (X), a fifth spacer (27) rising from said fifth protrusion (26) at said second axis (Y).

12. The plate (1) according to claim 11, characterized in that said third portion (15a) has a sixth spacer (28) which extends along said second axis (Y).

13. The plate (1) according to claim 12, characterized in that said fourth portion (15b) has two seventh spacers (29a, 29b), each one at a perimetric edge of each one of said unit cells (10) that is parallel to said second axis (Y).

14. The plate (1) according to claim 13, characterized in that said protrusions (19, 21a, 21b, 24a, 24b, 26) are provided in a single piece with the rest of said plate (1).

15. The plate (1) according to claim 14, characterized in that at each protrusion (19, 21a, 21b, 24a, 24b, 26) of said first face (11) there is a complementary groove/shaped portion on said second face (12).

16. The plate (1) according to claim 15, characterized in that:

- all the spacers (14) of said first face (11) have the same elevation with respect to said first face,

- all the spacers (16) of said second face (12) have the same elevation with respect to said second face.

17. The plate (1) according to claim 16, characterized in that each one of said unit cells (10) has a surface shape that defines:

- in said first portion (13a) and said corresponding third portion (15a), a dome (100) with an elliptical profile,

- in said second portion (13b) and said corresponding fourth portion (15b), two half-domes (100a, 100b) with a semi-elliptical profile, which are mirror-symmetrical with respect to said second axis (Y), said dome (100) and said half-domes (100a, 100b) providing projections toward said second face (12).

18. A heat exchanger (30) of the plate type, characterized in that it comprises a plurality of plates (1), each one of them being a plate (1) according to one or more of the preceding claims.

19. The exchanger (30) according to claim 18, characterized in that said plates (1) are coupled so as to mutually face the same first (11) or second (12) face of the respective unit cells (10), and so that:

- each spacer (14) of said first face (11) of a unit cell (10) faces and is in contact with the corresponding spacer (14) of said first face (11) of the next unit cell (10),

- and/or each spacer (16) of said second face (12) of a unit cell (10) faces and is in contact with the corresponding spacer (16) of said second face (12) of the next unit cell (10).

20. The exchanger (30) according to claim 18 or 19, characterized in that said plates (1) are arranged mutually rotated by 180° with respect to their own plane of arrangement.

21. The exchanger (30) according to claim 20, characterized in that the coupling between said plates (1) is obtained in such a way that only said spacers (14, 16) and the corresponding edges of two successive plates (1) are

in contact.

22. The exchanger (30) according to one or more of claims 19 to 21, characterized in that it has conduits (81) for a hot fluid and conduits (80) for a cold fluid, which are arranged on mutually parallel planes, in directions at 90° with respect to each other.

23. The exchanger (30) according to claim 22, characterized in that said conduits (80, 81) are hexagonal in cross-section as a result of coupling two successive plates (1) by being directed toward the same face (11, 12) of them.

24. The exchanger (30) according to claim 23, characterized in that said hexagonal cross-section of said conduits (80, 81) has two mutually opposite elongated sides (82a, 82b, 83a, 83b) and the other four sides (84a, 84b, 84c, 84d, 85a, 85b, 85c, 85d) are inclined with respect to the preceding sides and are tapered toward the points (86, 87) of mutual support/contact between two successive ones of said plates (1).