Claims

We Claim:

1. A corrugated construction element 100 having a base profile 101 connected to at least one leg profile 102a or 102b, wherein at least one of the base profile 101 and at least one leg profile 102a or 102b comprise an array of angular corrugations 110 extending across their surface in a non-parallel direction to the principal axis L of the corrugated construction element 100 covering a surface area greater than 25% and less than or equal to 100% of the total surface area of the corrugated construction element 100, wherein the array of angular corrugations 110 on the at least one leg profile 102a or 102b is at an angle Y ranging between 15 ° and 75 ° from the principle axis L of the corrugated construction element 100.

2. The corrugated construction element 100 as claimed in claim 1, wherein the array of angular corrugations 110 cover a surface area greater than 50% and less than 75% of the total surface area of the corrugated construction element 100.

3. The corrugated construction element 100 as claimed in claim 1, wherein the array of angular corrugations 110 is V-shaped, wherein the bottom of the V-shaped corrugations is curved or pointed.

4. The corrugated construction element as 100 claimed in claim 3, wherein the array of V-shaped angular corrugations have an angle X ranging between 30° and 150°.

5. The corrugated construction element 100 as claimed in claim 1, wherein the at least one leg profile 102a or 102b, is non-coplanar to the base profile 101.

6. The corrugated construction element 100 as claimed in claim 1, wherein each corrugation in the array of angular corrugations 110 consists of a V-shaped groove 120.

7. The corrugated construction element 100 as claimed in claim 6, wherein each V-shaped groove 120 consists of peaks 140 and/ or troughs 150 that are sharp, blunt or curved.

8. The corrugated construction element 100 as claimed in claim 1, wherein the array of angular corrugations 110 has a pitch P ranging between 2 mm and 6 mm.

9. The corrugated construction element 100 as claimed in claim 1, wherein one or more V-shaped cross sections of the array of angular corrugations 110 has a height H ranging between 0.1 mm and 1 mm.

10. The corrugated construction element 100 as claimed in claim 1, wherein the first leg profile 102a and the second leg profile 102b have different heights from each other such that two identical corrugated construction elements 100 can be joined to form a rectangular corrugated construction element 200.

11. A wall construction 500 comprising:

a frame 510 comprising:

a plurality of corrugated construction elements 100 as claimed in claim 1;

a floor channel 520 configured to receive a first end of each of the plurality of corrugated construction elements 100; and

a ceiling channel 530 spaced apart from the floor channel 520, wherein the ceiling channel 530 is configured to receive a second end opposite to the first end of each of the corrugated construction elements 100 in a horizontal plane, wherein the floor channel 520 and the ceiling channel 530 are made from corrugated construction element 100 as claimed in claim 1 and wherein the plurality of corrugated construction elements 100 are vertically and/ or horizontally disposed at a predetermined distance between the floor channel 520 and the ceiling channel 530.

12. An apparatus 600 for forming a sheet material 700 into a profile comprising an array of angular corrugations 110 extending across at least 25% of the surface of the profile of the corrugation construction element 100 as claimed in claim 1, the apparatus comprising:

a first roller 610 comprising:

a first corrugation region 630a for forming one part of a first set of angular corrugations (D1); and

a second corrugation region 640a for forming one part of a second set of angular corrugations (D2); and

a second roller 620 comprising:

a third corrugation region 630b for forming the other part of the first set of angular corrugations (D1); and

a fourth corrugation region 640b for forming the other part of the second set of angular corrugations (D2);

wherein the first roller 610 and second roller 620 are configured to mate with each other and wherein the angle between the first set of angular corrugations D1 and the second set of angular corrugations D2 ranges between 30 – 150 degrees.

13. The apparatus 600 as claimed in claim 12, wherein the first and third corrugation regions 630a, 630b are co-operable and consists of V-shaped grooves that correspond with each other.

14. The apparatus 600 as claimed in claim 12, wherein the second and fourth corrugation 640a, 640b regions are co-operable and consists of V-shaped grooves that correspond with each other.

15. A method of manufacturing a profile comprising an array of angular corrugations 110 extending across at least 25% of the surface of the profile of the corrugation construction element 100 as claimed in claim 1, the method 800 comprising

passing a sheet material 770 between the first roller 610 and second roller 620 of the apparatus 600 as claimed in claim 19, wherein the sheet 770 is pressed against the V-shaped grooves present in the corrugation regions 630a, 630b, 640a, 640b of the first roller 610 and second roller 620.