CLAIMS

1. A set of phase change material (PCM) elements for use in a thermally insulated transportation container that transports temperature sensitive goods, wherein the set of PCM elements includes a plurality of PCM elements arranged to fit together to form a hollow cuboid structure, the hollow cuboid structure having a first side, second side, third side, fourth side, fifth side and sixth side defining an enclosed payload volume that is arranged to receive the temperature sensitive goods, wherein at least one of the PCM elements in the set of PCM elements comprises a sealed or sealable receptacle having at least a first side, a second side and a third side, wherein each of the first side, the second side and the third side of the receptacle comprises an inner wall and an outer wall, the receptacle includes an internal cavity that extends into each of the first side, the second side and the third side, the cavity being located between the inner wall and the outer wall for each of the first side, the second side and the third side of the receptacle, and PCM is stored in the cavity between the inner wall and the outer wall for each of the first side, the second side and the third side of the receptacle.

2. The set of PCM elements of claim 1, wherein for at least one, and preferably each, of the PCM elements is configured such that the first side, the second side, and the third side of the receptacle define a structure having an open side and a recess, and, in a condition wherein the set of PCM elements are fitted together to form the hollow cuboid structure, the recesses and open sides are arranged to face inwards and define the payload volume.

3. The set of PCM elements of claim 1 or 2, wherein for at least one, and preferably each, of the PCM elements, one of the first side, the second side and the third side of the receptacle has a different thickness from the other two of the first side, the second side and the third side, wherein the thickness of the side of the PCM element is the perpendicular distance measured from the outer surface of the outer wall to the inner surface of the inner wall.

4. The set of PCM elements of any one of the preceding claims, wherein for at least one, and preferably each, of the PCM elements, at least one of the first side, the second side, and the third side of the receptacle is triangular in plan; and preferably each of the first side, the second side, and the third side is triangular in plan.

5. The set of PCM elements of any one of the preceding claims, wherein for at least one, and preferably each, of the PCM elements, a first edge of the first side is contiguous with a first edge of the second side, a second edge of the second side is contiguous with a first edge of the third side, and a second edge of the first side is contiguous with a second edge of the third side.

6. The set of PCM elements of any one of the preceding claims, wherein at least one, and preferably each, of the PCM elements comprises a recessed pyramidal shape, which is open at one side.

7. The set of PCM elements of any one of the preceding claims, wherein the set of PCM elements comprises, or consists of, a first PCM element, a second PCM element, a third PCM element and a fourth PCM element; and each of the first PCM element, second PCM element, third PCM element and fourth PCM element comprises one quarter of the hollow cuboid structure.

8. The set of PCM elements of claim 7, wherein, in a condition wherein the PCM elements are fitted together to form the hollow cuboid structure, the PCM elements are configured such that the first side of the first PCM element forms part of a first side of the hollow cuboid structure, the second side of the first PCM element forms part of a second side of the hollow cuboid structure, and the third side of the first PCM element forms part of a third side of the hollow cuboid structure; the first side of the second PCM element forms part of the fourth side of the hollow cuboid structure, the second side of the second PCM element forms part of a third side of the hollow cuboid structure, and the third side of the second PCM element forms part of a fifth side of the hollow cuboid structure; the first side of the third PCM element forms part of the fourth side of the hollow cuboid structure, the second side of the third PCM element forms the second side of the hollow cuboid structure, and the third side of the third PCM element forms part of a sixth side of the hollow cuboid structure; and the first side of the fourth PCM element forms part of the first side of the hollow cuboid structure, the second side of the fourth PCM element forms part of the sixth side of the hollow cuboid structure, and the third side of the fourth PCM element forms part of a fifth side of the hollow cuboid structure.

9. The set of PCM elements of any one of claims 1 to 3, wherein the set of PCM elements comprises, or consists of, a first PCM element and a second PCM element; and

preferably each of the first PCM element and second PCM element comprises one half of the hollow cuboid structure.

10. The set of PCM elements of claim 9, wherein the PCM elements are configured such that, in a condition wherein the first PCM element and the second PCM element are fitted together to form the hollow cuboid structure, the first side of the first PCM element forms the first side of the hollow cuboid structure, the second side of the first PCM element forms the second side of the hollow cuboid structure, and the third side of the first PCM element forms the third side of the hollow cuboid structure; and the first side of the second PCM element forms the fourth side of the hollow cuboid structure, the second side of the second PCM element forms the fifth side of the hollow cuboid structure, and the third side of the second PCM element forms the sixth side of the hollow cuboid structure; a recess is defined by the first side, the second side and the third side.

11. The set of PCM elements of claim 9 or 10, wherein for at least one, and preferably each, of the PCM elements, each of the first side, the second side and the third side is rectangular in plan; a first edge of the first side is contiguous with a first edge of the second side, a second edge of the first side is contiguous with a first edge of the third side, a second edge of the second side is contiguous with a second edge of the third side; the first side of the PCM element is perpendicular to each of the second side and the third side, the second side is perpendicular to the third side; and the PCM element has a recess defined by the first, second and third sides.

12. The set of PCM elements of claim 9 or 10, wherein for at least one, and preferably each, of the PCM elements, the second side and the third side are parallel with one another and the first side is perpendicular to each of the second and third sides.

13. The set of PCM elements of any of claims 1 to 3, wherein for at least one, and preferably each, of the PCM elements the receptacle includes a fourth side, wherein the internal cavity extends into the fourth side, PCM is stored within the cavity in the fourth side; and each of the first side and the second side is rectangular in plan and each of the third side and the fourth side is triangular in plan.

14. The set of PCM elements of claim 13, when dependent on claim 9, wherein for at least one, and preferably each, of the first and second PCM elements, the first side is

perpendicular to the second side, the third side is perpendicular to the first and second sides, the fourth side is perpendicular to the first and second sides, and the third and fourth sides are parallel to one another; a first edge of the first side is contiguous with a first edge of the second side, a first edge of the third side is contiguous with a second edge of the first side, a second edge of the third side is contiguous with a second edge of the second side, a third edge of the third side is located at an open side of the PCM element, a first edge of the fourth side is contiguous with a third edge of the first side, a second edge of the fourth side is contiguous with a third edge of the second side, a third edge of the fourth side is located at the open side of the PCM element, a recess is defined by the first side, the second side, the third side and the fourth side of the PCM element.

15. The set of PCM elements of claim 14, wherein the PCM elements are configured such that, in a condition wherein the PCM elements are fitted together to form the hollow cuboid structure, the first side of the first PCM element forms the first side of the hollow cuboid structure, the second side of the first PCM element forms the second side of the hollow cuboid structure, the third side of the first PCM element forms part of the third side of the hollow cuboid structure, and the fourth side of the first PCM element forms part of the fourth side of the hollow cuboid structure; the first side of the second PCM element forms the fifth side of the hollow cuboid structure, the second side of the second PCM element forms the sixth side of the hollow cuboid structure, the third side of the second PCM element forms part of the third side of the hollow cuboid structure, and the fourth side of the second PCM element forms part of the fourth side of the hollow cuboid structure.

16. A thermally insulated transportation container arranged to transport temperature sensitive goods, said container including: a rigid body having thermally insulated walls that define a storage volume; means for accessing the storage volume; and a set of PCM elements according to any one of the preceding claims arranged to fit within the storage volume in a condition wherein the PCM elements are fitted together to form of the hollow cuboid structure wherein at least one thermally insulated container wall comprises at least one part having a higher thermal insulation zone and at least one part having a lower thermal insulation zone, which is arranged in an elongate rectilinear manner, and the set of PCM elements are located within the storage volume such that rectilinear joints between the PCM elements each have a different orientation from the elongate rectilinear lower thermal insulation zone.

17. The container of claim 16, wherein the container includes a plurality of rectilinear lower thermal insulation zones, and the set of PCM elements are located within the storage volume such that rectilinear joints between the PCM elements each have a different orientation from the elongate rectilinear lower thermal insulation zones; and/or the rectilinear lower thermal insulation zones include vertical edges of thermally insulated walls of the container; and/or the rectilinear lower thermal insulation zones include top edges of thermally insulated walls adjacent a lid of the container.

18. A PCM element for use in a thermally insulated transportation container, the PCM element comprising: a sealed or sealable moulded plastics receptacle having at least a first side, a second side and a third side, wherein each of the first side, the second side and the third side comprises an inner wall and an outer wall, the receptacle includes an internal cavity that extends into each of the first side, the second side and the third side, the cavity being located between the inner wall and the outer wall for each of the first side, the second side and the third side, and PCM is stored in the cavity between the inner wall and the outer wall for each of the first side, the second side and the third side.

19. A PCM element for use in a thermally insulated transportation container, the PCM element comprising: a sealed or sealable moulded plastics receptacle having at least a first triangular side, a second triangular side and a third triangular side, wherein the first triangular side, the second triangular side and the third triangular side form a recessed pyramid shape having an open side, and the receptacle has an internal cavity that extends into each of the first triangular side, the second triangular side and the third triangular side, and PCM is stored within the cavity in each of the first triangular side, the second triangular side and the third triangular side.

20. A PCM element for use in a thermally insulated transportation container, the PCM element comprising a recessed pyramid shape having an open side.

21. A PCM element for use in a thermally insulated transportation container, the PCM element comprising:

a sealed or sealable moulded plastics receptacle having at least a first rectangular side, a second rectangular side and a third rectangular side, wherein the first, second and third rectangular sides form one half a hollow cuboid shape, wherein the first rectangular side is

arranged perpendicularly to the second and third rectangular sides and the second rectangular side is arranged perpendicularly to the third rectangular side, a first edge of the first rectangular side is contiguous with a first edge of the second rectangular side, a second edge of the first rectangular side is contiguous with a first edge of the third rectangular side, a second edge of the second rectangular side is contiguous with a second edge of the third rectangular side, and the receptacle has an internal cavity that extends into each of the first, second and third rectangular sides, and PCM is stored within the cavity in each of the first, second and third rectangular sides; or

a sealed or sealable moulded plastics receptacle having at least a first rectangular side, a second rectangular side and a third rectangular side, wherein the first rectangular side, second rectangular side and third rectangular side form one half of a hollow cuboid shape, wherein the first rectangular side is arranged perpendicularly to the second rectangular side and third rectangular side and the second rectangular side is arranged parallel to the third rectangular side, a first edge of the first rectangular side is contiguous with a first edge of the second rectangular side and a second edge of the first rectangular side is contiguous with a first edge of the third rectangular side to provide a substantially U-shaped structure, and the receptacle has an internal cavity that extends into each of the first rectangular side, second rectangular side and third rectangular side, and PCM is stored within the cavity in each of the first rectangular side, second rectangular side and third rectangular side; or

a sealed or sealable moulded plastics receptacle having at least a first rectangular side, a second rectangular side, a first triangular side and a second triangular side, wherein the first rectangular side, second rectangular side, first triangular side and second triangular side form one half of a hollow cuboid shape, the first rectangular side is arranged perpendicularly to the second rectangular side, the first triangular side is arranged perpendicular to the first rectangular side and second rectangular side, the second triangular side is arranged perpendicular to the first rectangular side and second rectangular side, the first triangular side is arranged parallel to the second triangular side, a first edge of the first rectangular side is contiguous with a first edge of the second rectangular side, a first edge of the first triangular side is contiguous with a second edge of the first rectangular side, a second edge of the first triangular side is contiguous with a second edge of the second rectangular side, a first edge of the second triangular side is contiguous with a third edge of the first rectangular side, a second edge of the second triangular side is contiguous with a third edge of the second

rectangular side, thereby providing an open sided wedge-shaped structure having a recess, and the receptacle has an internal cavity that extends into each of the first rectangular side, second rectangular side, first triangular side and second triangular side, and PCM is stored within the cavity in each of the first rectangular side, second rectangular side, first triangular side and second triangular side; or

a sealed or sealable moulded plastics receptacle having at least a first rectangular side, a second rectangular side, a third rectangular side, a fourth rectangular side and fifth rectangular side, wherein the first rectangular side is arranged perpendicularly to the second rectangular side, third rectangular side, fourth rectangular side and fifth rectangular side, the second rectangular side is arranged parallel to the fourth rectangular side, the third rectangular side is arranged parallel to the fifth rectangular side, the second rectangular side is arranged perpendicular to the third rectangular side and the fifth rectangular side, the fourth rectangular side is arranged perpendicular to the third rectangular side and the fifth rectangular side, the arrangement being such that the first rectangular side, second rectangular side, third rectangular side, fourth rectangular side and fifth rectangular side form one half of a hollow cuboid shape in the form of an open sided box having a recess, and the receptacle has an internal cavity that extends into each of the first rectangular side, second rectangular side, third rectangular side, fourth rectangular side and fifth rectangular side, and PCM is stored within the cavity in each of the first rectangular side, second rectangular side, third rectangular side, fourth rectangular side and fifth rectangular side.