CLAIMS

1. A thermally insulating liner comprising one or more layers of perforated corrugated cardboard stacked to form an insulating pad and an outer sealing film covering the insulating pad,

wherein a layer of the perforated corrugated cardboard is more compressible in a direction perpendicular to a major surface of the perforated corrugated cardboard compared to a layer of non-perforated corrugated cardboard from which the perforated corrugated cardboard is derived; and

wherein a layer of perforated corrugated cardboard comprises slits which penetrate the major surfaces of the layer.

2. The thermally insulating liner according to claim 1, wherein the one or more layers of perforated corrugated cardboard are derived from one or more of single or multiple fluted corrugated cardboard.

3. The thermally insulating liner according to claim 1 or claim 2, wherein the one or more layers of perforated corrugated cardboard are derived from one or more of single fluted, double fluted, and triple fluted corrugated cardboard.

4. The thermally insulating liner according to any one of claims 1 to 3, wherein perforated corrugated cardboard is produced on a commercial cardboard perforating machine.

5. The thermally insulating liner according to any one of claims 1 to 4, wherein a layer of perforated corrugated cardboard has a thickness from 0.5 mm to 10 mm.

6. The thermally insulating liner according to any one of claims 1 to 5, wherein the insulating pad has a thickness from 10 mm to 150 mm.

7. The thermally insulating liner according to any one of claims 1 to 6, wherein the insulating pad comprises at least two layers of perforated corrugated cardboard.

8. The thermally insulating liner according to any one of claims 1 to 7, wherein the insulating pad comprises at least two layers of perforated corrugated cardboard

derived from corrugated cardboard having different flute designs.

9. The thermally insulating liner according to any one of claims 1 to 8, wherein a layer of perforated corrugated cardboard comprises regions across the major outside surfaces of the layer which are raised and lowered relative to each other.

10. The thermally insulating liner according to any one of claims 1 to 9, wherein the insulating pad is more compressible in a direction perpendicular to a major surface of the insulating pad compared to an insulating pad comprising non-perforated corrugated cardboard.

11. The thermally insulating liner according to any one of claims 1 to 10, wherein the outer sealing film comprises a moisture proof or water proof sealing film.

12. The thermally insulating liner according to any one of claims 1 to 11, wherein the insulating pad has an R value less than 0.52 m^2.K/W per 2.54 cm.

13. A thermal storage container for storing or transporting thermally sensitive articles within a predefined temperature range comprising:

an outer structure comprising one or more walls defining an inner container space, said inner container space comprising a thermally sensitive article location space;

one or more thermally insulating liners according to any one of claims 1 to 12, positioned within the inner container space, and configured to cover at least part of one or more inner surfaces of the walls of the outer structure.

14. The thermal storage container according to claim 13, further comprising a source of cooling located between the thermally insulating liner and the thermally sensitive article location space.

15. The thermal storage container according to claim 13 or claim 14, wherein the outer structure comprises a box, a pouch or an envelope.

16. The thermal storage container according to any one of claims 13 to 15 further comprising one or more slotted dividers located within the inner container space

and configured to separate the cooling source from the thermally sensitive article location space.

17. The thermal storage container according to claim 16, wherein the one or more slotted dividers enable fluid communication between the cooling source and the thermally sensitive article location space.

18. The thermal storage container according to claim 17, wherein the thermally sensitive article comprises one or more of pharmaceuticals, vaccines, biologics, laboratory samples, diagnostic materials, chemicals, food, and beverages.

19. A method of storing or transporting thermally sensitive articles within a predefined temperature range, the method comprising placing one or more temperature sensitive articles in the article location space of the thermal storage container according to any one of claims 13 to 17.

20. The method according to claim 19, wherein the predefined temperature range is from -30°C to 25°C.