CLAIMS

1. Expanded polypropylene resin beads, which are multilayer resin expanded beads formed by foaming and expanding multilayer resin beads comprising:

a core layer formed of a polypropylene resin, and

a coating layer formed of another polypropylene resin that is different from the polypropylene resin forming the core layer, the another polypropylene resin being capable of being molded at a steam pressure lower than a molding steam pressure of equivalent single layer expanded beads formed by foaming and expanding a single layer of resin beads formed by the polypropylene resin of the core layer,

wherein a resin weight ratio of the coating layer and the core layer (weight of the another polypropylene resin/weight of the polypropylene resin) in the multilayer resin beads is from 0.001 to 0.040, and an average value of a thickness of the coating layer of the expanded polypropylene beads is from 0.1 μm to 3.0 μm.

2. The expanded polypropylene resin beads according to claim 1, wherein a tensile modulus of the polypropylene resin forming the core layer in the multilayer resin beads is 1000 MPa or greater.

3. The expanded polypropylene resin beads according to claim 1, wherein a tensile modulus of the polypropylene resin forming the core layer in the multilayer resin beads is 1200 MPa or greater.

4. The expanded polypropylene resin beads according to claim 1, wherein a melting point of the another polypropylene resin forming the coating layer of the multilayer resin beads is

lower than a melting point of the polypropylene resin forming the core layer.

5. The expanded polypropylene resin beads according to claim 1, wherein a melting initiation temperature of the another polypropylene resin forming the coating layer of the multilayer resin beads is lower than a melting initiation temperature of the polypropylene resin forming the core layer.

6. The expanded polypropylene resin beads according to claim 1, wherein a heat quantity of melting of the another polypropylene resin forming the coating layer of the multilayer resin beads is smaller than a heat quantity of melting of the polypropylene resin forming the core layer.

7. The expanded polypropylene resin beads according to claim 1, wherein a tensile yield strength of the polypropylene resin forming the core layer of the multilayer resin beads is at least 31 MPa.

8. The expanded polypropylene resin beads according to claim 1, wherein the polypropylene resin forming the core layer of the multilayer resin beads is one or a mixture of two or more resins selected from a propylene homopolymer, and a copolymer of propylene and another co-monomer containing 60 mol% or more of a propylene component unit.

9. The expanded polypropylene resin beads according to claim 1, wherein a DSC endothermic curve obtained by a heat flux differential scanning calorimetric analysis of the expanded polypropylene resin beads, exhibits an endothermic curve peak intrinsic to the polypropylene resin and the another polypropylene resin, and an endothermic curve peak on a higher temperature side than the foregoing endothermic curve peak,

and a calorific value of the endothermic curve peak on the higher temperature side is from 5 J/g to 40 J/g.

10. The expanded polypropylene resin beads according to claim 1, wherein a DSC endothermic curve obtained by a heat flux differential scanning calorimetric analysis of the expanded polypropylene resin beads, exhibits an endothermic curve peak intrinsic to the polypropylene resin and the another polypropylene resin, and an endothermic curve peak on a higher temperature side than the foregoing endothermic curve peak, and a calorific value of the endothermic curve peak on the higher temperature side is from 15% to 70% of the sum of the calorific values of all the endothermic curve peaks.

11. The expanded polypropylene resin beads according to claim 1, wherein in a DSC curve obtained by a heat flux differential scanning calorimetric analysis of the polypropylene resin forming the core layer and the another polypropylene resin forming the coating layer of the multilayer resin beads, a partial calorific value Ec (J/g) of an area under a temperature range of from a melting point (Ti) of the polypropylene resin forming the core layer to higher temperatures, and a partial calorific value Es (J/g) of an area under a temperature range of from a melting point (Ti) of the another polypropylene resin forming the coating layer to higher temperatures, satisfy the following expressions (1) and (2):

$$0<Es\leqq 60 \quad (1)$$

$$0<Es/Ec\leqq 0.7 \quad (2).$$

12. A polypropylene resin expanded beads-molded article formed by filling the expanded polypropylene resin beads described in claim 1 in a molding mold, and subjecting the expanded polypropylene resin beads to heat molding.

13. The expanded polypropylene resin beads according to claim 1, wherein:

the multilamultilayer resin expanded beads are formed by extruding laminated molten polypropylene resins through a co-extrusion die and cutting the laminated molten polypropylene resins,

the laminated molten polypropylene resins are formed such that a molten polypropylene resin for forming the coating layer coats a molten polypropylene resin for forming the core layer inside the co-extrusion die, and

a melting point of the polypropylene resin forming the coating layer is lower than a melting point of the polypropylene resin forming the core layer.

CLAIMS

1. An expanded polypropylene resin beads, which are multilayer resin expanded beads formed by foaming and expanding multilayer resin beads comprising a core layer formed of a polypropylene resin and a coating layer formed of a polypropylene resin that is different from the polypropylene resin forming the core layer, and can be molded at a steam pressure lower than the molding steam pressure of equivalent single layer expanded beads formed by foaming and expanding the single layer resin beads formed of the polypropylene resin forming the core layer,

wherein the resin weight ratio of the coating layer and the core layer (weight of the coating layer resin/weight of the core layer resin) in the multilayer resin beads is from 0.001 to 0.040, and the average value of the thickness of the coating layer portion of the expanded beads is from 0.1 μm to 3.0 μm.

2. The expanded polypropylene resin beads according to claim 1, wherein the tensile modulus of the polypropylene resin forming the core layer in the multilayer resin beads is 1000 MPa or greater.

3. The expanded polypropylene resin beads according to claim 1, wherein the tensile modulus of the polypropylene resin forming the core layer in the multilayer resin beads is 1200 MPa or greater.

4. The expanded polypropylene resin beads according to claim 1, wherein the melting point of the polypropylene resin forming the coating layer of the multilayer resin beads is lower than the melting point of the polypropylene resin forming the core layer.

5. The expanded polypropylene resin beads according to claim 1, wherein the melting initiation temperature of the polypropylene resin forming the coating layer of the multilayer resin beads is lower than the melting initiation temperature of the polypropylene resin forming the core layer.

6. The expanded polypropylene resin beads according to claim 1, wherein the heat quantity of melting of the polypropylene resin forming the coating layer of the multilayer resin beads is smaller

than the heat quantity of melting of the polypropylene resin forming the core layer.

7. The expanded polypropylene resin beads according to claim 1, wherein the tensile yield strength of the polypropylene resin forming the core layer of the multilayer resin beads is at least 31 MPa.

8. The expanded polypropylene resin beads according to claim 1, wherein the polypropylene resin forming the core layer of the multilayer resin beads is one or a mixture of two or more selected from a propylene homopolymer, and a copolymer of propylene and another co-monomer containing 60 mol% or more of a propylene component unit.

9. The expanded polypropylene resin beads according to claim 1, wherein the DSC endothermic curve obtained by a heat flux differential scanning calorimetric analysis of the expanded polypropylene resin beads, exhibits an endothermic curve peak intrinsic to the polypropylene resin, and an endothermic curve peak on the higher temperature side than the foregoing endothermic curve peak, and the calorific value of the endothermic curve peak on the higher temperature side is from 5 J/g to 40 J/g.

10. The expanded polypropylene resin beads according to claim 1, wherein the DSC endothermic curve obtained by a heat flux differential scanning calorimetric analysis of the expanded polypropylene resin beads, exhibits an endothermic curve peak intrinsic to the polypropylene resin, and an endothermic curve peak on the higher temperature side than the foregoing endothermic curve peak, and the calorific value of the endothermic curve peak on the higher temperature side is from 15% to 70% of the sum of the calorific values of all the endothermic curve peaks.

11. The expanded polypropylene resin beads according to claim 1, wherein in the DSC curve obtained by a heat flux differential scanning calorimetric analysis of the polypropylene resin forming the core layer and the polypropylene resin forming the coating

layer of the multilayer resin beads, the partial calorific value Ec (J/g) of the area under the temperature range of from the melting point (Ti) of the polypropylene resin forming the core layer to higher temperatures, and the partial calorific value Es (J/g) of the area under the temperature range of from the melting point (Ti) of the polypropylene resin forming the coating layer to higher temperatures, satisfy the following expressions (1) and (2):

$$0 < Es \leq 60 \quad (1)$$

$$0 < Es/Ec \leq 0.7 \quad (2)$$

12. A polypropylene resin expanded beads-molded article formed by filling the expanded polypropylene resin beads described in any one of claims 1 to 11 in a molding mold, and subjecting the expanded polypropylene resin beads to heat molding.