

CLAIMS

1. A portable thermal container (1) for consumer products (2') comprising at least a storing chamber (2) of said consumer products (2') and at least a reaction chamber (4) of a reagent component (5') and of a reactive component (5''), wherein said storing chamber (2) and said reaction chamber (4) are hermetically separated, wherein said reagent component (5') and said reactive component (5'') are separated from each other and able to carry out a chemical heating or cooling reaction when in contact, respectively to heat or to cool said consumer products (2'), and wherein said reaction chamber (4) extends substantially entirely along the dimension of the largest dimension of said portable thermal container (1) and said storing chamber (2) is arranged side-by-side to said reaction chamber (4) to maximize the thermal exchange between said reaction chamber (4) and said storing chamber (2) in a homogeneous way, said container (1) is **characterized in that** said reaction chamber (4) comprises at least a storing portion, each comprising said reagent component (5') and/or said reactive component (5''), and at least an expansion portion, devoid of said reagent component (5') and of said reactive component (5''), and wherein the total volume of said expansion portions is greater than the total volume of said storing portions to allow the safe expansion of the chemical reaction gases in said reaction chamber (4).
2. The portable thermal container (1) according to claim 1, wherein said reaction chamber (4) is made in the central section of said portable thermal container (1), and wherein said storing chamber (2) is arranged perimetrical to said reaction chamber (4) along said largest dimension.
3. The portable thermal container (1) according to claim 2, wherein said storing chamber (2) is arranged perimetrical to said reaction chamber (4) along and perpendicular to said largest dimension.
4. The portable thermal container (1) according to claim 1, wherein said storing chamber (2) is made in the central section of said portable thermal container (1), and

wherein said reaction chamber (4) is arranged perimetrical to said storing chamber (2) along said largest dimension.

5. The portable thermal container (1) according to claim 4, wherein said reaction chamber (4) is arranged perimetrical to said storing chamber (2) along and perpendicular to said largest dimension.
6. The portable thermal container (1) according to one or more claims from 1 to 5, wherein said reaction chamber (4) is symmetric with respect to an axis of symmetry (A) defined along said largest dimension of said thermal container (1).
7. The portable thermal container (1) according to one or more claims from 1 to 6, wherein said reagent component (5') and said reactive component (5'') are adjacent arranged in said storing portion.
8. The portable thermal container (1) according to one or more claims from 1 to 6, wherein said reagent component (5') is arranged in a first storing portion and said reactive component (5'') is arranged in a second storing portion, and wherein said expansion portion is interposed between said first storing portion and said second storing portion.
9. The portable thermal container (1) according to one or more claims from 1 to 8, wherein said storing portion is separated from said expansion portion by a dividing element (5''').
10. The portable thermal container (1) according to one or more claims from 1 to 9, wherein the total volume of said storing portions is less than or equal to 30% of the total volume of said expansion chamber (4), preferably less than or equal to 22% of the total volume of said expansion chamber (4).
11. The portable thermal container (1) according to one or more claims from 1 to 10, wherein said reagent component (5') is operatively connected to actuating means (10) able to arrange said reagent component (5') in contact with said reactive component (5'') for carrying out said chemical reaction.
12. The portable thermal container (1) according to claim 11, wherein said reagent component (5') is contained within a containment element (5) operatively connected to said actuating means (10, 11), and

wherein said actuating means (10, 11) has a predetermined actuating load and is able to arrange said reagent component (5') in contact with said reactive component (5'') for carrying out said chemical reaction upon exceeding said predetermined actuating load.

13. The portable thermal container (1) according to claim 11 or 12, wherein said actuating means (10, 11) is arranged at said opening means (8) of said storing chamber (2).
14. The portable thermal container (1) according to one or more claims from 1 to 13, wherein said portable thermal container (1) comprises a safety valve (6) operatively connected with said reaction chamber (4) for the expulsion of said chemical reaction gases when the pressure inside said reaction chamber (4) exceeds a predetermined pressure value.
15. The portable thermal container (1) according to one or more claims from 1 to 14, wherein said thermal container (1) comprises a perimetrical (20) interspace.