

Annex 17

Advanced thermal energy storage through phase change materials and chemical reactions - feasibility studies and demonstration projects

Title of the project Thermal Protection in Catering using Molecular Alloys

Keywords (max 3 words) phase change materials, thermal protection, catering

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Institutions involved / Industry collaboration: **Universitat de Barcelona**
Université Bordeaux I
Utrecht University
Centro Tecnológico Gaiker
Walter-Pack
Gastronomia Baska

Type of project: Demonstration project
(mark the appropriate) feasibility study
 experimental work
 simulation study
other (specify):

Purpose (max 100 words)

thermal protection of hot food during transport

Budget (including: governmental grant / industry collaboration / manwork / rental of room and utilities)

Summary (max 250 words, you may include pictures)

We propose the design, construction and test of a prototype using molecular alloys as phase change materials. These materials will act as a thermal protection from the environment. Foods will remain under a fixed range of temperature during a certain time depending on the alloy used and its quantity. We will use molecular alloys with a high latent heat of melting in a double wall of the transportation box. The melted alloy will store all the supply of frigories from the environment during its crystallization. During this process, the temperature inside of the box remains practically constant. The crystallization can be cyclic if we melt the alloy again. This project represents a continuity of the study of molecular alloy as phase change materials. Several applications has been already developed and commercialized. The consortium of the project is formed by a University laboratory, a technological center and two industries from the catering sector. Together, we will formulate and characterize the alloy to be used, and search materials of low cost. We will also design and construct the prototype, and determine its mechanical behaviour. Finally, will test the prototype in real conditions of use.

Economical evaluation

