

## THE THREE BASIC LAWS OF SCIENTIFIC GELATO

In 1986, as a Research Chemist at Algida-Unilever in the Industry of Caivano, given the insignificant results obtained on many Gelatos with Nutritional Balancing, I decided to apply the concepts of Overrun and Ice to all Algida formulations, using a simple program in Ms-Dos.

The achievement of a significant improvement in the Structure of all the Gelatos in question, for Texture and Creaminess, was the main reason that prompted me to continue in this research.

In the last 3 decades I have developed many advanced Softwares for Gelato, both Artisanal and Industrial, and, at the same time, I have continued in the study of physical-mathematical algorithms that could predetermine the perfect Structure of a Gelato, in terms of Texture and Creaminess.

For the results obtained on Gelato in the years 2018-2023, such as: numeralization of sensory functions, chemical-physical-thermodynamic analysis, and automatic project of new and innovative formulations, achieved with the FREEZY PLUS and PROGELATO Software, I thought the time had come to identify and promote the laws that govern Scientific Gelato.

  
CHIMICO

## **LAWS**

**1<sup>st</sup>. Gelato is a food foam made up of Air, Water (in both forms, solid and liquid), Inerts and Binders**

**Air** means the air incorporated by the Gelato during the phases of Mixing the Ingredients, Whipping and Freezing of the Gelato (called **Overrun**).

**Inerts** represent the Compounds that do not form any bond with Water (Complex Carbohydrates, Proteins, Fats and Fibers).

**Binders** constitute the Compounds which form bonds with Water (Sugars, Alcohols, Acids and Salts) and condition the Freezing Temperature of the Gelato and the formation of Ice present in the Gelato at a given temperature.

**2<sup>nd</sup>. Gelato is structurally balanced by the percentages of Overrun, Ice and Bound Water**

The balanced structure of a Gelato, which determines its Texture and Creaminess, is determined, at any temperature, by the balance required between the percentages of Overrun, Ice, Bound Water and Total Solids, present in the Gelato at a given temperature.

### **3<sup>rd</sup>. The structuring functions of a Gelato are defined by Relative Ice, Absolute Ice and Creaminess Index**

The **Relative Ice** function is identified as the percentage of Ice present in the Gelato at a given time temperature.

The **Absolute Ice** function is equal to the percentage of Relative Ice on Total Water present in the Gelato (called **Dryness**).

The **Creaminess Index** is the numerical value of the scientific algorithm deriving from the percentages of Overrun, Ice, Bound Water, Binders and Total Solids, present in the Gelato at a given temperature.

The values of these 3 functions, Relative Ice, Absolute Ice and Creaminess Index, based on the Gelato Recipe, predefine the perfect Structure of a Gelato in terms of Texture and Creaminess.

#### **For further information:**

Advanced Analysis of a Gelato: [http://www.articagel.it/FREEZY\\_ENG.htm](http://www.articagel.it/FREEZY_ENG.htm)

Automatic Project of a Gelato: [http://www.articagel.it/PROGELATO\\_ENG.HTM](http://www.articagel.it/PROGELATO_ENG.HTM)

Scientific Gelato Course: <http://www.articagel.it/MYEXPERIENCE.HTM>