The Wonderful World of Cheese Crystals

A variety of crystal types exist across the wide spectrum of cheeses in the marketplace. The most prevalent crystals can come about from minerals such as calcium and magnesium, and amino acids such as tyrosine and leucine.

**CALCIUM LACTATE**

The white powdery smear found on many aged cheddars are crystals of the compound calcium lactate. Calcium lactate is formed as the cheese ages when lactic acid reacts with calcium in the cheese. They don’t have any flavor themselves, but usually signify a piece of well-aged cheese that will be flavorful.

![Image of calcium lactate](image1)

**CALCIUM PHOSPHATE**

Calcium and phosphorus are ubiquitous minerals in milk and cheese. Under the correct acidity conditions, these minerals can crystallize. Brushite, a form of calcium phosphate, has been observed in bloomy rind cheeses such as brie and camembert, washed rind cheeses, and blue cheeses to name a few.

![Image of brushite](image2)

**TYROSINE & LEUCINE**

The crystals found in aged Italian, Dutch, and Swiss cheese varieties are usually the amino acids tyrosine (distinct specks) and/or leucine (powdery smear, diffuse spots). These are formed as the cheese ages when the protein breaks down into its constituent amino acids. They can build up to high concentrations and crystallize out.

![Image of tyrosine and leucine](image3)

**IKAITE & STRUVITE**

The gritty mouthfeel associated with washed rind cheese is caused by crystals. Ikaite is a calcium carbonate crystal, and struvite is a magnesium ammonium phosphate crystal. The mineral components are omnipresent in milk/cheese, the carbonate and ammonium is derived from the gases created by the surface microbes.

![Image of ikaite and struvite](image4)