

Whole Milk – Grade A, Pasteurized, Homogenized – what does all this mean?

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How many times have you purchased a jug of milk and read the words “Grade A”, “Pasteurized”, and “Homogenized” on the label? Were you wondering what all this meant? Well, here is a little explanation to these terms – what they mean and how they were created.

Milk is a nutritive beverage obtained from various animals and consumed by humans. Most milk is obtained from dairy cows, although milk from goats, water buffalo, and reindeer is also used in various parts of the world. In the United States, and in many industrialized countries, raw cow's milk is processed before it is consumed. During processing the fat content of the milk is adjusted, various vitamins are added, and potentially harmful bacteria are killed.

Whole Milk –The term “whole milk” refers to the fat or butterfat content. By law, the butterfat content in whole milk in the US should be 3.25%; 2% in the Reduced fat milk, 1.8% in Semi-skim, about 1% in Low fat, and 0.0 – 0.5% in Skim milk.

Raw milk, or milk in its natural state, varies in fat content depending on the breed of cows, type of feed, health status, and many other factors of the animals producing the milk. The average composition of cow's milk is 87.2% water, 3.7% milk fat, 3.5% protein, 4.9% lactose, and 0.7% ash. This composition varies from cow to cow and breed to breed. For example, Jersey cows have an average of 85.6% water and 5.15% milk fat.

Grade A Milk - “Grade A” refers to milk produced under sufficiently sanitary conditions to permit its use as fluid milk. About 90% of the milk produced in the United States is Grade A milk. Grade B milk is produced under conditions that make it acceptable only for manufactured products such as certain cheeses, where it undergoes further processing. Certified milk is produced under exceedingly high sanitary standards and is sold at a higher price than Grade A milk.

Pasteurization - contrary to raw milk, pasteurized milk goes through a process of heating the milk to a given temperature for a given time and then quickly cooling it. This process destroys almost all of the bacteria in the milk, as well as any disease agents. In this way pasteurization prolongs the shelf life of the product. The milk lasts longer, but also loses much of its character, such as its physicochemical and intrinsic qualities.

The process of pasteurization has been around for quite a long time and has had a profound effect on milk consumption and public health.

The process of pasteurization was invented by a French scientist Louis Pasteur who, in 1850, began to examine why products like wine and beer sometimes went sour during the fermentation process. This led to his discovery that the souring was caused by certain unwanted strains of bacteria and yeast, or 'germs,' as he called them.

Taking a cue from Lazzarro Spallanzani (an Italian biologist who laid ground work for a germ theory), Pasteur found that heating below boiling, then rapidly cooling wine, killed the spoilage organisms busily trying to turn it into vinegar. This heat sterilization process, dubbed 'pasteurization', was first proposed for use on milk in 1886 by German agricultural chemist Franz von Soxhlet. The first commercial pasteurization machines came on-line in the mid-1890's and remained the standard for decades.

In the United States, the first milk processing plant to install pasteurizing equipment was the Sheffield Farms Dairy in Bloomfield, New Jersey, which imported a German-made pasteurizer in 1891. Many dairy operators opposed pasteurization as an unnecessary expense, and it wasn't until 1908 that Chicago became the first major city to require pasteurized milk. New York and Philadelphia followed in 1914, and by 1917 most major cities had enacted laws requiring that all milk be pasteurized.

Today, the most common methods of pasteurization used in the industry are:

Vat Pasteurization – Vat Pasteurization is the gentlest type of pasteurization. It requires the milk be held in a heated vat at 145 degrees for 30 minutes. It is then quickly cooled to 39 degrees. This type of pasteurization is more expensive, which is why products that have been produced using it are difficult to find.

High Temperature, Short Time (HTST) method – HTST requires that the milk be held at 161 degrees for 16 seconds. This process, also referred to as continuous flow pasteurization, requires the milk to be forced through metal pipes that are heated from the outside.

Ultra-Pasteurization (UP) – This is the type of pasteurization that you will most commonly see on cartons of milk, half-and-half and heavy cream. It produces a product that has a stable shelf life of up to two months! The UP method requires that the milk be held at 280 degrees for 2 seconds. Most commercial milk brands use this form of pasteurization since it is the quickest and cheapest.

Homogenizing - most milk is homogenized to reduce the size of the remaining milk fat particles. This prevents the milk fat from separating and floating to the surface as cream. It also ensures that the milk fat will be evenly distributed through the milk. The hot milk from the pasteurizer is pressurized to 2,500-3,000 psi by a multiple-cylinder piston pump and is forced through very small passages in an adjustable valve. The shearing effect of being forced through the tiny openings breaks down the fat particles into the proper size.

Hopefully when you go to purchase your next gallon of milk you will be a more informed consumer. If you have additional questions after reading the labels on your milk, please feel free to contact me at the UNH Cooperative Extension office in Grafton County (603-787-6944).

Taken From:

<http://www.madehow.com/Volume-4/Milk.html>

<http://www.deliciousobsessions.com/2010/10/types-pasteurization/>

<http://www.strausfamilycreamery.com/?id=34>

http://www.raw-milk-facts.com/pasteurization_T3.html