

ASK THE INSPECTOR COLUMN FOR SEPTEMBER 23, 2015
HEADLINE: HISTORY OF INSULATION

I received an e-mail from a reader who, while renovating a home, marveled at all the recent innovations available in regard to insulation. When I answered him with a comment about how some products are “revivals,” he was surprised and said it would make a good column so here goes!

Trying to stay warm goes back to the Egyptians, who used papyrus linings on their clothing. They were also aware that thick brick walls helped keep out the heat from the summer sun. The Romans are well documented as engineers and they were amongst the first to use a natural material called cork, the same cork that is now seen a revival in flooring. Cork was probably the first harvested insulation. Grown in the Mediterranean countries of Spain and Portugal it was first used by the Greeks as floats for their fishing nets. The Romans used cork extensively for insulating their hot water pipes in the bath houses. A few years ago, I was working on an historic County of Frontenac building and the original owner had lined the attic with cork that was about 2 inches thick. This stone building was constructed in the late 1800’s. The trees that produce cork are harvested every nine years and this harvesting leaves the tree undamaged. Cork is 50% air and is also an excellent sound deadening material.

In the middle ages there are many documented cases of the use of cloth, sheep’s wool, bark, straw and even mud blended with horse hair. It is widely accepted that the massive stone castles were cold and damp. The walls were often hung with large woven tapestries that were very heavy. It is thought this was done to reduce the cold and dampness.

The Greeks utilized asbestos for clothing and blended it into the walls of their homes. They actually named this fibred material and are on record stating that the slaves that worked with asbestos developed a breathing sickness and many died because of this material. In the “Steam Age,” asbestos again rose in popularity and was used for insulation on boilers, heat pipes and brakes for the trains. By the 1940’s a natural material called mica was being mined, processed and then sold as vermiculite, most of it contained a portion of asbestos. In the late 70’s, during the first oil embargo, vermiculite was recommended by our government as part of the Canadian Home Insulation Plan (CHIP) program as attic insulation. This insulation is in thousands of homes all across Canada. To bad we did not listen to the Greeks!

Along with cork, just after WW1 we began to see the development of commercially viable insulation. The first was developed by a company called Weyerhaeuser. In the early 1920s, “Balsam Wool” became available. It is not really a wool, rather a blend of wood fibers; some had borax blended in as a fire retardant and they utilized an asphalt mix as the binder. This insulation was then attached to a black or brown kraft paper and installed like insulation batts. By the early 40’s, it was the most common wall insulation. There was some loose fill Balsam Wool, but it was not common.

About the same time that Balsam Wool was gaining in popularity, two other products were being developed. In the mid 1800's, the first commercially produced mineral wool or rock wool, as it is also called, was developed. A company in Germany found that they could heat molten rock, blow steam through it and create a fibre that could be spun into a cloth like material or chips that has good insulation values. Rock wool became a staple for insulation before WW2. Even cotton was developed as insulation in the 30's by some companies, but it was mainly a localized product and never became a major player in the insulation market.

Fibreglass blended into loose fill, rolls and batts is probably the most popular insulation on the market today. It, too, was known to the Egyptians. They used glass fibers for decoration and clothing. The commercial development did not happen until the mid 30's when Corning Glass and Owens-Illinois joined forces and begun the manufacture of fibreglass as we now know it.

While many people think that foam insulation is a new product, it was actually commercially developed in the 1940's and early 50's in Europe. In 1839, a German scientist was the first to discover what is now known as polystyrene. It was not until 1931 that a German company invented the "beads" now used to manufacture this material. The word Styrofoam is actually a trade mark name belonging to Dow Chemical, even though most of this white bead board is lumped into the Styrofoam term. Fast forward to today and the development of Structural Insulated Panels (SIPs), which have gained worldwide acceptance for their strength and insulation value are manufactured with polystyrene. Polyurethane also started in Germany, was brought to the US before WW2 and patented in 1953. The first use of this type of foam was in the furniture industry, for padding and cushions.

As is now clear, nearly all of the products we are using today go back years and in some cases centuries. It is only in the past few years with the drive for energy efficiency that we have "looked back" to find these products, some of which, like cork, rock wool and balsam wool, were an environmentally responsible product years ago.

Questions or Comments; Cam Allen L.I.W. NHI ACI LEED Green Assoc
E-mail; cam@alltechconsultinggroup.com