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presents
THE RESTORER


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# Insulation

Homeowners and contractors have several options to choose from when deciding on which thermal insulating material to use for a home, commercial or industrial application. Thermal insulation reduces energy costs, keeping the structure cool in the summer and warm in the winter. Its main purpose is to reduce the heat transfer between two objects of different temperatures. In order for a material to be used as a thermal insulation, it must limit the heat convection, conduction, radiation or a combination of the three. Additional benefits of a good thermal insulator include energy conservation and temperature control of a surface temperature.

On average heating and cooling account for 54% of a home's annual utility bill. Wall insulation can reduce a home's heat loss by 67% while attic insulation can lead to a 40% decrease in heating and cooling costs. A home that is well insulated against heat loss can recoup the costs of implementing insulation with 5-6 years from the result of energy saving.

The measure of a thermally insulating materials resistance to heat flow is referred to as the R-Value. As a benchmark, one inch of solid wood has an R-Value of 1. In comparison, an inch of blown fiberglass insulation has an R-Value of 3.1-3.4. The higher the R-Value, the greater the effectiveness and the higher the resistance to heat flow. Care must be taken when installing the material as a failure to follow the manufacture recommendations, can reduce efficiency.

**The most common insulating materials on the market today are fiberglass, mineral wool, cellulose, and polyurethane foam (Spray Foam Insulation).**

- **Fiberglass is easily the most common insulating material, due to its low cost. Fiberglass is made by combing glass (35% or more of which is recycled glass) sand, soda ash, limestone and other minerals. The mixture is heated to a molten form and then fed to a spinning bowl where fine threads of glass are formed and woven together. Fiberglass insulation often comes in batts, blankets, rolls, and loose fill. Batts, blankets, and rolls are all rectangular sections of material and come in standard widths and thicknesses to make them easy to install between studs and joists.**
- **Mineral wool is an insulation material manufactured from natural or synthetic fibers. After heating to a molten form, the fibers are woven together by a process referred to as melt spinning. It is sold in loose fill or formed into batts or boards. Mineral wool batts have a slightly higher R-Value than fiberglass batts of equivalent thickness.**
- **Cellulose is an inexpensive loose fill insulation, most commonly used as a blow in material. Cellulose is environmentally friendly as it is manufactured from recycled cardboard, paper, and other similar materials. It is a tightly compacted material that contains practically no oxygen, making it an excellent material for fire resistance. One of the draw backs of cellulose is that it has a tendency to compress over time, which reduces efficiency.**
- **Polyurethane foam is one of the most efficient types of insulation. It is excellent for filling around pipes and getting into tiny crevices. The foam expands after spraying to fill every crack and air gap and then hardens to keep its shape. There are two different types, medium density closed-cell spray foam and a light density open cell spray foam. Closed-cell foam stops both moisture and air from coming in, while open-cell foam lets moisture in and keep air out.**

It is important to note that in the event insulation becomes wet, it should be removed. Wet insulation will no longer perform its primary function of inhibiting heat transfer. Saturated insulation typically loses at least 40% of is insulating R-Value. While fiberglass insulation is technically "waterproof", inside of an enclosed attic or wall cavity the thick batts retain moisture which degrades the thermal resistance properties and saturates surrounding building materials. Also, mold growth is common following exposure to moisture on the paper backing of fiberglass. Cellulose insulation acts like a sponge when exposed to water and continuously transfers moisture to adjacent wooden materials and drywall that could lead to mold growth if not treated properly. Until next time my friends, be prepared and stay safe.

Reference: Ralph Hughes – "4 types of insulation for your house (pros and cons)" and Ken Thayer - "Most Common Building Thermal Insulation Materials on the Market Today"

# April 2019

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 IFMA Luncheon | 4 ACA Luncheon | 5 | 6 |
| 7 | 8 | 9 | 10 AAFAME Luncheon | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 SABOMA IREM Luncheon IIASA Luncheon | 18 SAABE Luncheon CAMO | 19 | 20 |
| 21 | 22 | 23 | 24 IWSA Golf | 25 IWSA Luncheon | 26 | 27 |
| 28 | 29 | 30 | | | | |

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**Events**

| | |
|---|---|
| **April 4:** | **SABOMA /IREM Lunchoen** |
| **April 5:** | **ACA Luncheon** |
| **April 5:** | **IIASA Luncheon** |
| **April 11:** | **AAFAME Luncheon** |
| **April 19:** | **SAABE Luncheon** |
| **April 19:** | **CAMO Trade Fair** |
| **April 24:** | **IWSA Golf** |
| **April 26:** | **IWSA Luncheon** |

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