

Northwestern Ohio Foam Products, Inc.

Under Slab Insulation Fact Sheet

Introduction

Under Slab insulation significantly contributes to a structure's ability to maintain a steady-state temperature and energy usage value. This is especially true in areas that experience colder weather during the winter months. Under Slab insulation is critical in any in-floor (hydronic) heating system. Many are discovering the benefits of in-floor heating systems, and properly insulating them is as critical as the system itself in order for it to achieve stated performance standards.

What is Under Slab insulation?

An Under Slab insulation is a product that insulates both beneath and around the perimeter of the slab. Slabs lose energy through conduction – that – by physically touching another colder material (dirt). The purpose of an Under Slab insulation is to reduce or eliminate heat loss by providing a thermal break around and below the slab. This thermal break is especially important in cold weather environments and also when radiant floor heating is being used.

How does an Under Slab insulation work?

Energy exchange is always from hot towards cold, trying to achieve a state of equilibrium. Under slabs, where there is no airflow and all substrates are in physical contact with each other – that energy exchange happens through the conductive energy transfer process. Therefore, a material that creates a thermal break and is highly resistant to thermal energy conduction is required in order to eliminate heat loss through the slab. The unit of measurement to determine an Under Slab insulation value is referred to as K-Value. The K-Value, or heat transfer coefficient, is the measured value of the heat flow, which is used to measure the Heat Insulation Efficiency within a building's foundation. The lower the K-Value, the better the performance of an insulating product. Also, not to be overlooked, an Under Slab insulation should also be impervious to all forms of moisture transfer as well as being a radon inhibitor.

What types of materials are best suited for Under Slab insulating?

Generally speaking, rigid and extruded foam products provide the lowest K-Value, hence the highest resistance to thermal conductivity. There are a wide variety of materials in the marketplace that would fit this need. It is important to remember that there are two critical aspects to Under Slab insulation: (1) a substrate's ability to resist thermal conductivity and (2) a substrate's ability to resist all forms of moisture transfer. There is also a controversy regarding products with foil being used as an Under Slab insulation. As foil facings are highly conductive and must be used with an airspace, they are an extremely poor choice for this application. Foil-faced materials will actually facilitate the loss of energy directly into the earth below.