

## **7 IMPORTANT SAFETY TIPS FOR THE INSTALLATION OF RADIANT BARRIER, REFLECTIVE INSULATION, OR IRCCs**

### **Scope:**

Radiant barrier, reflective insulation and IRCCs have become increasingly popular with the global effort to conserve energy. Because these products work by reducing radiant heat gain and loss, they have the potential to greatly improve the energy-efficiency of a structure while enhancing the performance of the conventional insulation and any ductwork/HVAC equipment that may be present in the attic. However, before installing reflective materials, it is important to carefully follow all safety instructions. The following list is not meant to be a comprehensive list of all safety rules and requirements, but is only meant to draw attention to some of the most important ones concerning radiant barrier, reflective insulation and IRCCs specifically. For further safety information, please refer to ASTM C 1743, ASTM C 1744, ASTM C 727, ASTM C 1321 standards, and contact the manufacturer of the products that you are using.

**1. Electrical Wiring** – Radiant barrier, reflective insulation and IRCC products all contain a certain amount of aluminum, which can potentially have electrical conductivity. Even for products that are less electrically conductive, like metalized films, there is still an inherent risk when working with or around faulty or uninsulated wires. Check the area you are insulating and make any needed repairs before you begin. Any bare or worn wiring should be replaced or repaired by a licensed electrician before you begin installing a radiant barrier, reflective insulation or IRCC. Stepping on, stapling through, or otherwise coming into contact with “live” uninsulated wires can lead to serious injury or even death.

**2. Attic Temperatures** – It is not unusual for temperatures in an attic to be 40-50 degrees hotter than the outside air temperature before a radiant barrier, reflective insulation or IRCC is installed. When working in a hot attic, it is always wise to take frequent breaks and drink plenty of fluids to help prevent serious medical conditions like heat exhaustion or heat stroke. Small children and elderly persons should avoid working in the attic under these conditions. Please consult your physician for additional information.

**3. Ceiling Joists** – The floors of many attics consist only of one and a half inch wide ceiling joists spaced about every 16 to 24 inches apart, making it difficult to maneuver. Do not always trust a ceiling joist to hold your weight; some framers do not properly nail the joist which can cause them to “roll” when weight is placed on them. It is a good idea to weight test the joist by only placing part of your body weight on them to see if it is secure before adding all of your weight. Additionally, mass insulation may be installed over these joists, making them difficult to see. Even young, able-bodied individuals have been known to occasionally miss a wooden joist and step through the ceiling. In addition to costly repairs, such incidents may lead to serious injury. If structural sheathing or dimensional lumber is installed perpendicular to these joists, creating a solid floor-like space on which to walk and support the weight of the installer, the installation of a radiant barrier, reflective insulation or IRCC may be faster, easier, and most importantly, safer.

**4. Water Vapor Transmission** – Insufficiently permeable or non-permeable products may act as a vapor barrier. While there are some applications where a vapor barrier is beneficial, if a radiant barrier is being installed above mass insulation, or in direct contact with OSB, plywood, or other objects intended to transmit moisture, ensure that

the product is perforated enough to allow water vapor to pass through so it doesn't accumulate and lead to mold or mildew problems. Some products are perforated to ensure breathability, but simply because a product is perforated if doesn't mean it's perforated enough. The size and spacing of the holes are important. Other products utilize a matrix of spunbonded olefin threads to achieve the breathability requirements without the need for perforations. Since visual inspection alone is not an accurate indication of permeability, look for products tested to ASTM C 1313 standards, which requires a minimum rating of 5 perms for any radiant barrier intended to transmit moisture.

**5. Protruding Nails** – It is not uncommon for roofing nails to be protruding from the roof decking. When applying radiant barrier, reflective insulation or IRCCs in attics, be aware of protruding nails, especially where there is a low roof pitch or in small, cramped spaces. A hard hat or other protective head covering may prevent injury. If the attic is not well lit, a simple flashlight can help prevent injury due to protruding nails and other easily avoidable hazards.

**6. Chemical Exposure** –Some IRCCs may also contain hazardous chemicals or emit fumes, which can enter the body through inhalation, skin absorption, or injection into the eyes, nose or throat. Before working with such products, consult the manufacturer's Material Safety Data Sheet, and wear the manufacturer's recommended personal protection, like safety glasses, gloves, long sleeves, long pants, and a painter's mask or respirator. If you have questions regarding the installation recommendations of specific products, contact the manufacturer.

**7. Weather Conditions** – When installing radiant barrier or reflective insulation outdoors, it is important to continuously monitor the weather conditions. At the first sign of thunder and lightning, stop work immediately and proceed to a safe location. All objects with high metal content, including radiant barrier and reflective insulation, should be avoided under such conditions, especially when working on rooftops. Wait until the storm has subsided before resuming work.

As with any construction or home-improvement project, there are certain risks involved with the installation of many products including radiant barrier, reflective insulation and IRCCs. Most professional installers are likely familiar with these suggestions, but the DIY homeowner should read them carefully and consult the manufacturer with any questions. It is the position of RIMA-I that safety should always be a top priority, even when reflective technology is not being used. When working with or around other insulation products, like fiberglass, rock wool, asbestos, foam or cellulose, please consult the installation and safety requirements specific to those products. Other insulation products have their own set of ASTM standards, Material Safety Data Sheets, and manufacturer's instructions which should be strictly adhered to. When applied properly and safely, radiant barrier, reflective insulation and IRCCs are effective at reducing heat transfer and offer cost-effective solutions to the high cost of heating and cooling.

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