

# ENERGY SAVINGS BY RIM JOIST APPLICATION OF HANDI-FOAM® SPRAY FOAM

## Background

In April of 2007, construction was taking place on a 2,400 ft<sup>2</sup> home in Kansas. Choosing cabinetry and carpeting proved to be the easy decisions, but when it came to the insulation of the home, the builder paid special attention to ensure an energy efficient home. As an additional selling feature to a prospective home buyer, this builder marketed the energy efficiency and cost savings associated with the insulating and air sealing of the home.



## Problem

Often times fiberglass batts are used as insulation material in residential construction. However, while fiberglass is a thermal barrier, it is not an air barrier. Stopping air infiltration is the best defense against energy loss. In fact, the Department of Energy estimates that up to 40% of energy loss in a home can be contributed to air infiltration. Also, creating an air barrier becomes vitally important in a rim joist because this is a primary area where colder moist air infiltrates into the house, potentially contributing to moisture related problems like mold and rot.

## Solution

Handi-Foam® Spray Foam was used to seal and insulate the basement rim joist of the home. Because of its closed cell properties, Handi-Foam® creates both an air and a vapor barrier; vapor barrier is achieved with 3" of foam, at the rim joist. The home was tested, via blower door test, to verify the energy savings and the reduction of uncontrolled air infiltration. The results of this "case study" showed that a reduction in annual infiltration rate estimated at 11.4% was achieved in the house simply by applying Handi-Foam® Spray Foam in the rim joist locations. This reduction in air infiltration translated to an estimated annual cost savings of approximately 19.3% for heating and cooling, according to Hathmore Technologies, the certified HERS energy rater that performed the testing (Test File: 031907 "FOMO TEST").

The dramatic decrease in uncontrolled air infiltration that can be achieved with Handi-Foam® was verified through the use of a "blower door" test, which is an EPA Energy Star recognized diagnostic method for measuring air tightness, and performed by a certified third-party home energy rater accredited by the U.S. Government. In this case study, the home was first tested with standard fiberglass insulation in the rim joist areas. After this initial blower door test was performed, Handi-Foam® Two-Component Spray Foam was applied in these rim joist areas at an average thickness of 3" (the cantilever floor bays were sealed by a "skim coat", approximately 1", of Handi-Foam®). The results, as described above, verify the reduction in unwanted air infiltration, which is equivalent to eliminating 36.8 in<sup>2</sup> of holes in the building envelope!

Handi-Foam® polyurethane foam sealants and two-component spray foam systems may be used in a variety of locations throughout the building, to create a critical seal and to help stop air infiltration, leading to energy savings. In addition, Handi-Seal® Window and Door Sealant is the only patented low-pressure, closed-cell polyurethane foam sealant for use specifically around windows, doors and skylights.



Handi-Foam® Spray Foam products are composed of a diisocyanate, hydrofluorocarbon blowing agent and polyol. Consult the product's MSDS (Available at [www.fomo.com](http://www.fomo.com)) for specific information. The urethane foam produced from these ingredients will support combustion and may present a fire hazard if exposed to a fire or excessive heat about 240°F (116°C). Wear protective glasses or goggles, nitrile gloves, and clothing that protects against dermal exposure. Use only in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). See MSDS