



koffel associates, inc.

FIRE PROTECTION ENGINEERS • CODE CONSULTANTS

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*William E. Koffel, P.E.
President*

October 18, 2004

To Whom It May Concern:

**RE: ELEVEN INCHES OF ICYNENE CRAWL SPACE AND ATTICS
TEST RESULTS
KA 02190-004**

Koffel Associates, Inc. has been retained by Icynene, Inc. to provide technical assistance related to code compliance issues.

The codes explicitly allow foam plastics, such as Icynene[®] flexible foam, to be installed in any space, if protected by a thermal barrier. The code allows thermal barriers that provide 15 minutes of protection for the foam, such as ½-inch gypsum wallboard, rated ceiling systems, and spray coatings.

The codes explicitly require foam plastics, including Icynene's, which are installed in attics and crawl spaces that may be accessed for service of utilities, to be protected from ignition. The codes list ignition barrier materials such as ¼-inch wood structural panel, 1 ½-inch thick mineral fiber insulation, 3/8-inch gypsum wallboard, or particleboard, as appropriate to serve as an ignition barrier.

In addition to those applications as defined in the code, Icynene has conducted an extensive evaluation of the product for use in attics and crawlspaces. As result of the testing, a National Evaluation Report (NER-420) has been issued allowing Icynene[®] flexible foam to be installed in attics and crawls spaces without either a thermal barrier or protection from ignition. This report is posted on www.icc-es.org. The NER requires:

- Entry to the attic or crawl space is limited to service of utilities
- There are no interconnected basement or attic areas
- Air in the attic or crawl space is not circulated to other parts of the building
- Ventilation of the attic or crawl space is provided in accordance with the applicable Code

- The insulation shall be limited to a maximum nominal thickness of 6 inches (152mm) according to the preceding configurations.

Subsequent to the testing that was used as a basis for the NER, another round of testing was conducted at Omega Point Laboratory in the summer of 2004. As part of the subsequent testing, Southwest Research Institute Procedure 99-02 was run with Icynene[®] flexible foam applied to an 11-inch nominal thickness to the underside of the top of the enclosure. As the assembly with 11 inches of Icynene[®] flexible foam applied to the underside of the enclosure performed better than the control assembly of bare wood, 11 inches of Icynene[®] flexible foam has met the requirements of the procedure.

Southwest Research Institute Procedure 99-02 has been used, and accepted by the National Evaluation Service, as a means to demonstrate equivalency with respect to foam plastics in attics and crawl spaces. This is the same test method that was previously accepted by the National Evaluation Service to increase the maximum thickness of Icynene[®] in attics and crawl spaces.

It is Koffel Associates' professional engineering opinion that Icynene[®] flexible foam installed to a maximum of 11-inch nominal thickness on the underside of a roof or top of a crawl space provides a level of safety consistent with code requirements.

Sincerely,



Eric N. Mayl, P.E.
Senior Fire Protection Engineer