THE *ENVIRODESIC*™
CERTIFICATION PROGRAM FOR
MAXIMUM INDOOR AIR QUALITY™

ENVIRODESIC™

ENVIRODESIC™ BUILDINGS,
PRODUCTS AND SERVICES FOR
HEALTHIER INDOOR LIVING™

The Icynene Insulation System.

CERTIFICATION SUMMARY

CERTIFICATION STATEMENT

The Icynene Insulation System, produced by Icynene Inc., Mississauga, Ontario, is certified under the *Envirodesic*™ Certification Program as a suitable insulation where Maximum Indoor Air Quality™ is preferred.

SCIENTIFIC BASIS FOR CERTIFICATION

The *Envirodesic*™ certification file for the Icynene Insulation System is based primarily on tests conducted by the Saskatchewan Research Council, Saskatoon, Saskatchewan, described in SRC Report No. 1-4801-9-C-94, May 1994. These tests identified volatile organic compounds emitted by the insulation, using gas chromatograph/mass selective detector analysis under Procedure B of the CGSB Standard CAN/CGSB-51.23.92. Specimens were taken from a test panel after a 24-hour cure period, and offgassing measurements were made after 30 minutes in a 0.33 litre headspace chamber and for 1 hr. and 2 hr. durations at periodic intervals (1 hr., 12 hrs., 1 day, 2 days, 4 days, 7 days, 14 days, and 30 days) in a 51.2 litre dynamic test chamber.

The tests identified specific gas-off products in the headspace test immediately following the 24-hour cure, and tracked the reductions in concentrations of these and various additional gas-off products in the dynamic chamber tests over time. The results simulate the indoor air concentrations of volatile organic compounds which may result in a typical 500m³ house with a ventilation rate of 0.3 ac/h, given full exposure of the insulation to the indoor air.

In the dynamic chamber tests, several series of gas-off products were observed, all of which declined in concentration to 0.05 mg/m³ or less within 14 days, and to less than the detection limit of 0.003 mg/m³ within 30 days. Both these levels are well within the Molhave limit of 0.16 mg/m³ of total volatile organics being used presently as the upper limit of the benign range for the general population by the *Envirodesic*™ Certification Program.

ADDITIONAL SUBJECTIVE INFORMATION REGARDING ENVIRONMENTAL HYPERSENSITIVITY

Preliminary feedback from subjective testing of partially and fully gassed-off insulation samples by select researchers and other individuals knowledgable about the effects of extremely low chemical emissions on environmentally hypersensitive individuals indicates that the insulation, once fully gassed-off beyond the 30-day levels indicated above, may be suitable for use in installations designed for environmentally hypersensitive individuals.

CONCLUSIONS REGARDING EMISSION LEVELS

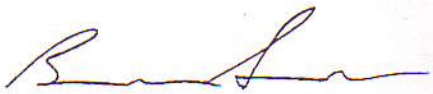
The volatile organic compound measurements confirm that emissions from the Icynene Insulation System, once aired, are well within a range considered benign for human exposure, within a 30-day cure period. In addition, again after the 30-day period, the insulation is considered likely to be suitable for persons who may be more hypersensitive to chemical exposures than the general population. In cases of severe chemical sensitivity, individual testing of the individual's sensitivity against aged insulation samples is considered advisable to confirm the suitability of the insulation and the air-out time required under these circumstances.

SUITABILITY FOR NEW CONSTRUCTION

The creation of a tight air barrier is extremely important in low-indoor-pollution construction, to ensure control over intake and exhaust air. Combining Icynene's low offgassing characteristic after the air-out period with its efficient air-tightening properties, the Icynene Insulation System is considered highly suitable for new building construction where Maximum Indoor Air Quality™ is preferred, even for buildings to be occupied by individuals with moderate to severe chemical hypersensitivity. A 30-day period without occupancy following installation of the insulation is advised to provide full airing. This is usually well within common construction timetables.

SUITABILITY FOR RENOVATION

The Icynene Insulation System is also considered suitable for retrofit situations where Maximum Indoor Air Quality™ is preferred, and where environmentally hypersensitive occupants are present. For retrofit situations, an airing period of 30 days without occupancy is advised for the general public, with any modification of the airing time depending on the tightness of the air barrier between the insulation and the occupants. The time may need to be increased to suit any occupants who may be environmentally hypersensitive.



Bruce M. Small, P. Eng., President
Green-Eclipse Incorporated
Envirodesic™ Certification Program

Envirodesic™ Certification is an ongoing process whereby additional data and consumer experience is added to a product file as it becomes available. Persons wishing to examine further details of the file or wishing to ask questions about the test methods or the suitability of the product for different populations are invited to contact the *Envirodesic*™ Certification Program in care of Green-Eclipse Incorporated at any of the offices listed below.

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