

Fusion Spray Foam Insulation

**Ireland's Nationwide Specialist
Spray Foam Company**



"the foam with a vent system as standard"

www.fusioninsulation.com

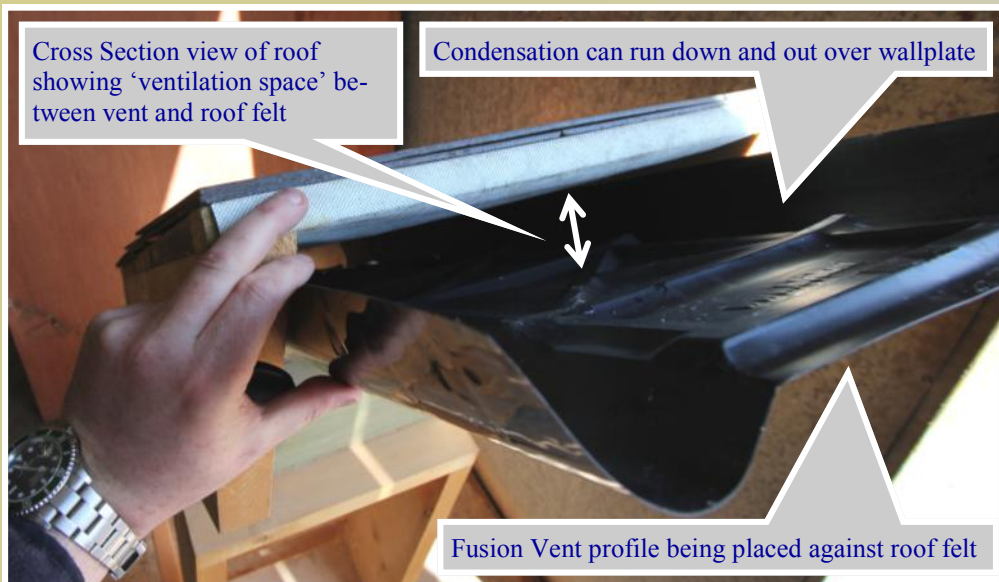
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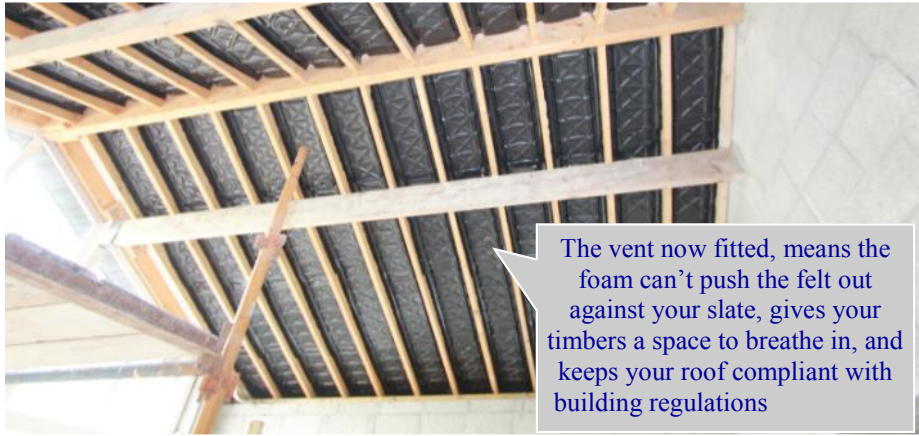
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Part 1: Why fitting the Fusion Vent System is a Great Idea





The vent now fitted, means the foam can't push the felt out against your slate, gives your timbers a space to breathe in, and keeps your roof compliant with building regulations



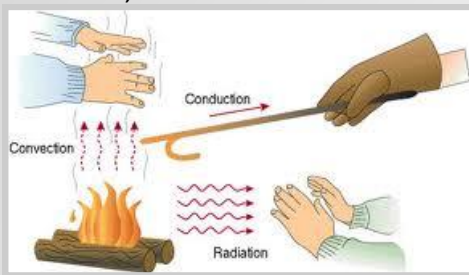
The Fusion Vent is then over-sprayed with Fusion Spray Foam, bonding the PVC profile and foam into a composite airtight panel, yet retains full ventilation behind.

Part 2: Spray Foam

The Great Double Acting Insulation

"If all you have is a hammer, then every problem you meet will tend to be a nail".....

and that's pretty much the solution the insulation industry in general has been offering their customers for the last 50 years or so. Insulation that only addresses one method of heat transfer, i.e. conduction, isn't much good, if you happen to live in one of the windiest countries in Europe. Now don't quit on me yet, because I'm not going to baffle you with science, just explain a little, as to how things are the way they are, and why most homes and buildings in Ireland cost a fortune to heat during the winter and feel about as cosy as Kilmainham Gaol. Okay here's the tecchie bit. You'll probably remember from your science class in school that heat transfers by three routes. Conduction, Convection and Radiation. Right?



Now the reason I'm telling you all this is to explain that while traditional roll and sheet insulations are good conduction insulators, they are awful convection insulators. Convection what? Convection losses are the air and draughts which can destroy a normal insulation's chances of stopping heat movement. Well think about it for a minute. Heat gets stripped up and out of the roll and sheet insulation and away to the outside world by the icy blasts of damp air that fill your attic during the winter months. You'll notice this if you stick your head into your attic on a windy day and you're hit with a Vladivostok like blast of cold damp air in the face, as soon as your head rises above the trapdoor. But wait a minute. There is a cure and it's Fusion Spray Foam. What's so special about Fusion Spray Foam? ***You see Fusion Spray Foam is a double act, a Bat Man and Robin of the insulation world.*** Fusion Spray Foam stops convection and conduction losses better than any other insulation. It's all got to do with the fact that when we spray it on your roof, walls, stud partitions, van, truck, boat, fridge, freezer, floor -you get the picture ...it

expands and its sticks like crazy and what's more it's full of tiny holes. All combined this means that air or nasty drafts can't move through the insulation, like the other roll and sheet insulations that are full of joints and overlaps.

Now I know what you're thinking ***"If I make my attic or roof airtight, wont my roof timbers rot?"***. That's a great question and let me answer that right now . Fusion Insulation is one of the few insulation companies in Ireland that recommend the fitting a vent spacer system. A vent what? It's a gap created by a PVC profile sheet that allows your roof to breathe, condensation to run down and out over the wall plate and the spacer vent means that the foam wont ever push your roof felt out.

"But another foam guy told me I don't need a vent spacer system, I can just spray onto my roof felt ?". Here at Fusion, we believe in doing the job right. It's difficult when our competition are muddying the water with advice that simply isn't correct and lets face it, it's cheaper when you don't fit a vent spacer system. So what to do? We ask our customers to verify all information they get, with the Government Authorities. The Government bodies makes no bones about it, the spacer vent system has to be fitted in a warm roof construction detail.

Will my foam last? That's the great thing about polyurethane foam . It lasts and lasts. When was the last time you saw the foam on an insulated copper cylinder disintegrating? Well, our foam is made from the same stuff and we know it will stay in place , flex and move with your roof yet remain perfectly airtight. So read on and you'll see why Fusion Biofoam, the only 100% Irish made foam is the best choice for your home or building, and why, by using our company, Fusion Insulation, means that you'll get the most experienced spray 'foam guys' in the 32 counties. Phone us today and we'll arrange a free consultation and quotation at a time that suits your timetable.

Part 3

Thermal “U” Values Roof, Walls and Cavities

Slope of Roof using BioVent

*Slope of Roof + Fusion Vent

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.35	0.28	0.24	0.21	0.18	0.16	0.15
Biofoam 1600	0.30	0.25	0.21	0.18	0.16	0.14	0.13
Biofoam 2700	0.30	0.24	0.20	0.18	0.16	0.14	0.13

*Slope of Roof & Fusion Vent with 50mm insulated slab

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.22	0.19	0.17	0.15	0.14	0.13	0.12
Biofoam 1600	0.20	0.17	0.15	0.14	0.13	0.12	0.11
Biofoam 2700	0.20	0.17	0.15	0.14	0.12	0.11	0.10

Slope of Roof foam only

*Slope of Roof

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.37	0.30	0.25	0.22	0.19	0.17	0.15
Biofoam 1600	0.32	0.26	0.22	0.19	0.17	0.15	0.13
Biofoam 2700	0.31	0.25	0.21	0.18	0.16	0.14	0.13

*Slope of Roof with 50mm insulated slab

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.23	0.20	0.18	0.16	0.14	0.13	0.12
Biofoam 1600	0.21	0.18	0.16	0.14	0.13	0.12	0.11
Biofoam 2700	0.20	0.18	0.16	0.14	0.13	0.12	0.11

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*Flat of Attic

Flat of Attic

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.34	0.28	0.24	0.21	0.18	0.16	0.15
Biofoam 1600	0.30	0.25	0.21	0.18	0.16	0.14	0.13
Biofoam 2700	0.29	0.24	0.20	0.18	0.16	0.14	0.13

*Flat of Attic with 50mm insulated slab

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.23	0.20	0.18	0.16	0.14	0.13	0.12
Biofoam 1600	0.21	0.18	0.16	0.14	0.13	0.12	0.11
Biofoam 2700	0.20	0.18	0.16	0.14	0.13	0.12	0.11

Timber Frame

*Timber Frame

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.31	0.27	0.23	0.20	0.18	0.16	0.14
Biofoam 1600	0.28	0.24	0.20	0.18	0.16	0.14	0.13
Biofoam 2700	0.28	0.23	0.20	0.17	0.15	0.14	0.12

*Timber Frame with 50mm insulated slab

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.21	0.18	0.16	0.15	0.14	0.13	0.12
Biofoam 1600	0.19	0.17	0.15	0.14	0.12	0.11	0.10
Biofoam 2700	0.19	0.16	0.15	0.13	0.12	0.11	0.10

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Warm Roof Construction

***Warm Roof Construction**

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.35	0.29	0.24	0.21	0.19	0.17	0.15
Biofoam 1600	0.31	0.25	0.21	0.18	0.16	0.15	0.13
Biofoam 2700	0.30	0.25	0.21	0.18	0.16	0.14	0.13

*** Warm Roof Construction with 50mm insulated slab**

Depth of Foam =	100mm	125mm	150mm	175mm	200mm	225mm	250mm
Biofoam 800	0.22	0.19	0.17	0.16	0.14	0.13	0.12
Biofoam 1600	0.20	0.18	0.16	0.14	0.13	0.12	0.11
Biofoam 2700	0.20	0.17	0.15	0.14	0.12	0.11	0.10

Just Foam

***U-value of Fusion Biofoam only no structure**

Depth of Foam =	25mm	40mm	50mm	75mm	100mm	125mm	150mm
Biofoam 800	1.26	0.83	0.68	0.47	0.35	0.29	0.24
Biofoam 1600	1.11	0.73	0.59	0.41	0.31	0.25	0.21
Biofoam 2700	1.08	0.71	0.58	0.39	0.30	0.24	0.20

Depth of Foam =	175mm	200mm	225mm	250mm	275mm	300mm	325mm
Biofoam 800	0.21	0.18	0.16	0.15	0.13	0.12	0.11
Biofoam 1600	0.18	0.16	0.14	0.13	0.12	0.11	0.10
Biofoam 2700	0.17	0.15	0.14	0.12	0.11	0.10	0.10

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U-values

Year House Built	Cavity Width	Expected Insulation Level in Cavity	U-value	2700sp installed	New U-value
1997-2002	100mm	60mm SD EPS	0.45	40mm	0.28
1990-1997	100mm	50mm SD EPS	0.51	50mm	0.28
1980's	80mm	40mm SD EPS	0.59	40mm	0.33
1970's	40mm	None	1.65	40mm	0.51

Biofoam 2700 Slow Pour

U-values

Cavity Width Biofoam 2700 sp (mm)	Render 1300 kg/m ³ Block 2000 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Render 1300 kg/m ³ Block 650 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Brick 1700 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Brick 1700 kg/m ³ Block 650 kg/m ³ Plaster 1200 kg/m ³
100	0.27	0.24	0.27	0.24
105	0.26	0.23	0.26	0.23
110	0.25	0.23	0.25	0.23
115	0.24	0.22	0.24	0.22
120	0.23	0.21	0.23	0.21
125	0.23	0.20	0.23	0.20
130	0.22	0.20	0.22	0.20
135	0.21	0.19	0.21	0.19
140	0.20	0.19	0.20	0.19
145	0.20	0.18	0.20	0.18
150	0.19	0.17	0.19	0.17
155	0.18	0.17	0.18	0.17
160	0.18	0.17	0.18	0.17
165	0.17	0.16	0.17	0.16
170	0.17	0.16	0.17	0.16
175	0.17	0.15	0.17	0.15
180	0.16	0.15	0.16	0.15
185	0.16	0.15	0.16	0.15
190	0.15	0.14	0.15	0.14
195	0.15	0.14	0.15	0.14
200	0.15	0.14	0.15	0.14

Note: It is assumed that cavity walls containing full-fill Biofoam 2700sp will be constructed in accordance with the requirements of the 1997 to 2007 Building Regulations.



U-values

U-value Calculations for Biofoam Slow Pour

Year House Built	Cavity Width	Expected Insulation Level in Cavity	U-value	800sp installed	New U-value
1997-2002	100mm	60mm SD EPS	0.45	40mm	0.30
1990-1997	100mm	50mm SD EPS	0.51	50mm	0.30
1980's	80mm	40mm SD EPS	0.59	40mm	0.35
1970's	40mm	None	1.65	40mm	0.56

Biofoam 800 Slow Pour

U-values

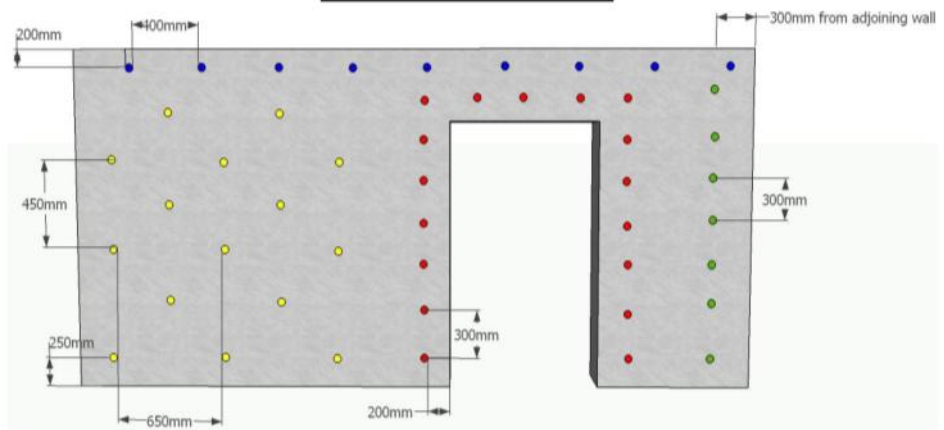
Cavity Width Biofoam 800 sp (mm)	Render 1300 kg/m ³ Block 2000 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Render 1300 kg/m ³ Block 650 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Render 1700 kg/m ³ Block 2000 kg/m ³ Plaster 1200 kg/m ³	Render 1700 kg/m ³ Block 650 kg/m ³ Block 650 kg/m ³ Plaster 1200 kg/m ³
100	0.32	0.28	0.32	0.28
105	0.31	0.27	0.31	0.27
110	0.30	0.26	0.30	0.26
115	0.28	0.25	0.28	0.25
120	0.27	0.24	0.27	0.24
125	0.26	0.23	0.26	0.23
130	0.25	0.23	0.25	0.23
135	0.25	0.22	0.25	0.22
140	0.24	0.21	0.24	0.21
145	0.23	0.21	0.23	0.21
150	0.22	0.20	0.22	0.20
155	0.22	0.20	0.22	0.20
160	0.21	0.19	0.21	0.19
165	0.21	0.19	0.21	0.19
170	0.20	0.18	0.20	0.18
175	0.19	0.18	0.19	0.18
180	0.19	0.17	0.19	0.17
185	0.19	0.17	0.19	0.17
190	0.18	0.17	0.18	0.17
195	0.18	0.16	0.18	0.16
200	0.17	0.16	0.17	0.16

Note: It is assumed that cavity walls containing full-fill Biofoam 800sp will be constructed in accordance with the requirements of the 1997 to 2007 Building Regulations.



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Bio Foam Slow Pour Bore Pattern



Bio Foam Slow Pour Indicators

- Yellow** Main areas of walls bored 650mm apart horizontally and 450mm apart vertically in a diamond configuration (see drawing highlighted yellow)
- Red** Areas around windows, doors, openings etc bored 200mm horizontally from opening and 300mm apart vertically (see drawing highlighted red)
- Blue** Areas at roof level bored 400mm apart horizontally and 200mm vertically from roof level (see drawing highlighted blue)
- Green** Areas at adjoining/intersecting walls bored 300mm horizontally from adjoining/intersecting wall and 300mm apart vertically (see drawing highlighted green)



Congratulations, your search for the perfect insulation has brought you here. I have been installing insulation since I first started my building career at the age of sixteen, and in that time I have installed just about every type of insulation imaginable. I can also say in that time, I have come across no other insulation with the range of abilities that spray foam possesses. I get asked a lot by potential customers “what savings can I expect, when I insulate with foam?”. The answer to that, is typically 40-50% on what you are currently spending on oil or gas. But here’s the thing, there’s more important stuff in

life than euros and cents. No, I haven't lost my marbles, let me explain. Your home is meant to be a place of refuge, a place to recharge yourself, a place to care for yourself and your family. It’s not meant to be a place where, too often you get cold’s, flu’s and feel stiff, arthritic and wheezy. But all too often, I meet people who literally ‘suffer’ in their homes and they can’t figure it out. Why, when they have existing insulation in their attic or loft, their home still feels dank, drafty and cold?. As I explained earlier in this booklet, creating a good environment in your home office or building, starts with a good ‘conductive’ insulation, allied with a system that is a great ‘convection’ insulator, that is inherently airtight. Yes, of course with the promise of air-tightness comes a natural fear and worry, that by making your roof airtight you will store up problems for yourself down the road in terms of wet rot, dry rot or insidious condensation. Well here’s the good news, our Fusion Biofoam system has been tested and approved . When installed with the approved vent spacer system, which fits between our foam and your roof felt, it creates a valuable space where condensation, if any accumulates, can escape. Brilliant !

There’s so much more I want tell to tell you about our amazing multi talented spray foam insulation, but if I did, this document would be as long as the bible, by the time I finished. So to help you learn everything there is to know about our wonder insulation, I have created a highly informative website **www.fusioninsulation.com**, where you can read more, see more photos and watch some great videos. After that, phone us or email us, and one of our experienced assessors will call at your home, office or building and quote you free of charge.

Kind regards

Anthony Blowick
Managing Director
Fusion Insulation