AddGreen
Duurzame na-isolatie

# *Carbon footprint of AddGreen 50®*
# *CAVITY WALL INSULATION*

## *Executive summary[1]*

[1] In 2019 SGS INTRON estimated the carbon footprint of the application of AddGreen Premium Insulation. This sheet report summarizes the highlights of this study. A full report of the carbon footprint is included in SGS INTRON report A107460/R20190122 of 04/11/2019.

WHEN YOU NEED TO BE SURE

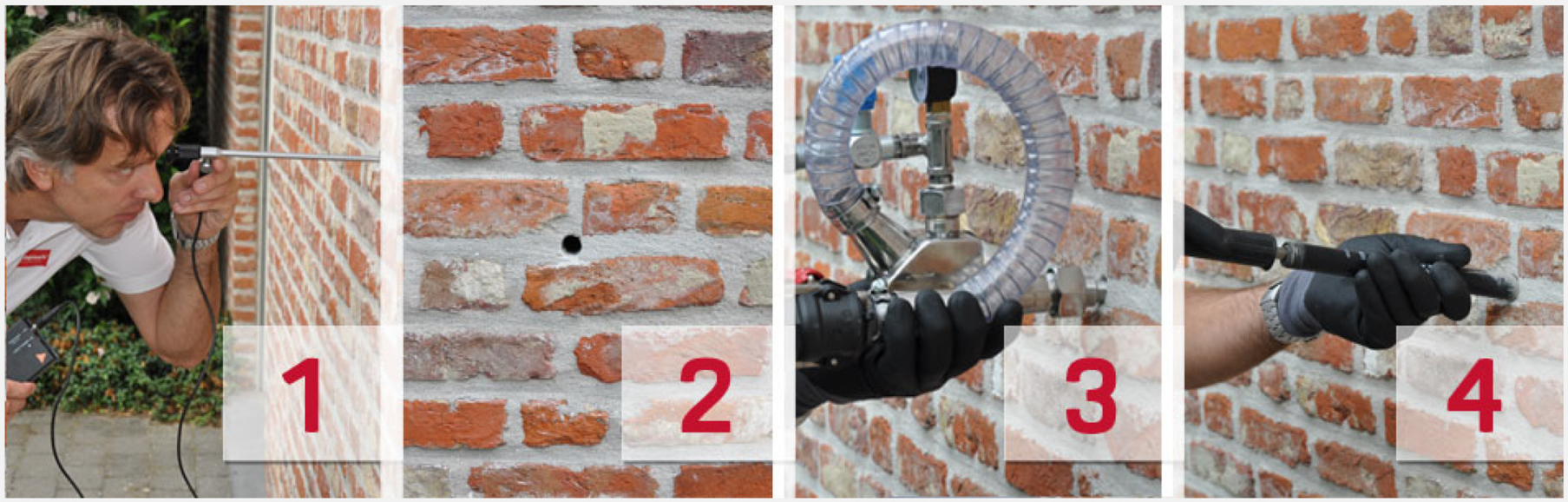
SGS

# Introduction to AddGreen Insulation

AddGreen Insulation BV has developed AddGreen 50® Insulation. This is a technology for applying cavity wall insulation into existing buildings. This product includes 50% bio-based expanded polystyrene (EPS), more specifically BASF's NEOPOR®, which is blown into the cavity wall. As opposed to most traditional EPS cavity wall insulation for existing buildings, AddGreen 50 ® Insulation also includes a binder which binds the individual EPS pearls together.

**The application of AddGreen** 50 ® **:**

1. Step 1 is inspection of the cavity wall;
2. Step 2 is drilling holes in the outer wall according to a predetermined grid (1 hole per $m^2$);
3. Step 3 is blowing the EPS pearls and the binder into the cavity wall using a specialized nozzle;
4. Step 4 is closing the holes with mortar.



# Goal and scope of the study

*By insulating dwellings, the overall energy use of the building is reduced by saving energy needed for heating. This results in lower greenhouse gas (GHG) emissions.*

**The goal of the carbon footprint study** is to objectively and transparently estimate the release of GHG with the application of AddGreen 50® into a building. Furthermore we estimate the reduction of GHG emissions by the energy saved during application.

AddGreen Insulation BV provided information on the life cycle of Addgreen 50®. SGS INTRON evaluated the usability of the data. Furthermore, since SGS INTRON has a vast experience with life cycle assessment (LCA) of building materials we selected the literature values of carbon footprint data for the underlying materials and processes. For this publicly available data from LCA databases were used.

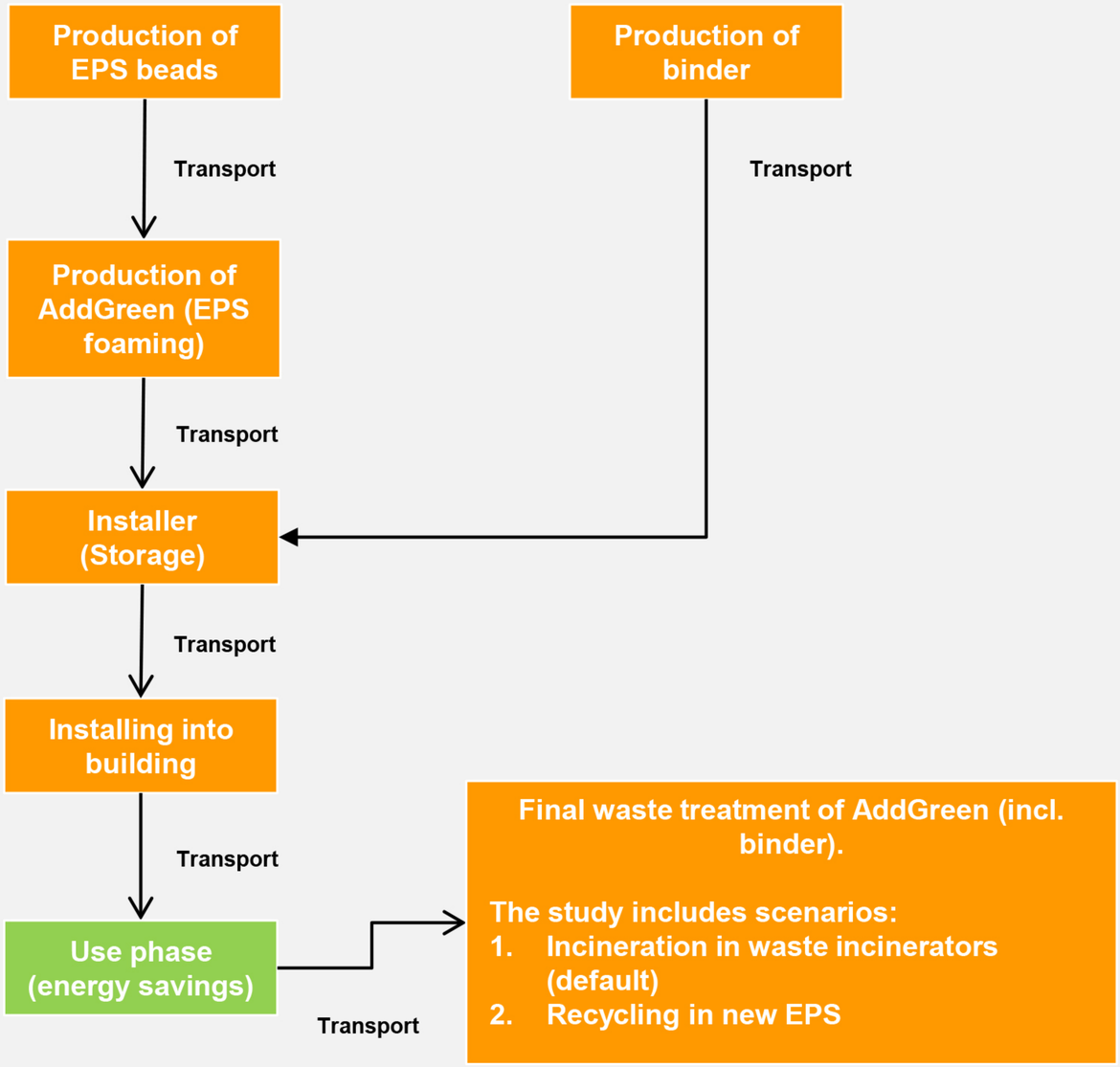
## Limitations

In this study we thoroughly inventoried the life cycle of AddGreen 50® and carefully selected literature sources for all subsequent materials and processes. However, this study is not intended to fully comply with the LCA standards ISO 14040 and ISO 14044; furthermore a critical review from a third party was not included.

## Reference

This sheet report only includes the highlights of the carbon footprint. All details of the study are included in SGS INTRON report ***A107460/R20190122 of 04/10/2019***

# The life cycle of AddGreen insulation



# Conclusion

We observed that the production of EPS is the most important contributor to the overall GHG emissions. Other important contributors to the carbon footprint of AddGreen 50® are the waste treatment scenario at the end of the life cycle of EPS and the service life of the EPS.

Employing two scenario's that consider EPS to be either largely incinerated or recycled in new EPS, and a service life of 50 and 75 years, we estimated that the GHG emission of applying AddGreen 50® is exceeded by the avoided GHG emissions by a factor 197 to 411.

This means that on average, the break even point for the GHG emission is reached after 2,2 – 3,0 months after application of the AddGreen 50® . During this period of application, the same amount of GHG emissions are saved, compared to the GHG emissions resulting from the other stages in the life cycle of AddGreen 50®.

# Results

The results of the study are summarized in the table below (numbers in carbon dioxide equivalents (kg $CO_2$ eq.), negative numbers correspond to avoided emissions during the service life of AddGreen ® :

| Scenario *end-of-life* | Application into building + *end-of-life* | Savings in 50 years application (kg $CO_2$ eq.)* | Savings in 75 years application (kg $CO_2$ eq.)* | Conclusion |
|---|---|---|---|---|
| **Incineration** | 839 | -165437 | -248155 | Savings surplus emissions from application and final waste treatment 197 and 296 times (during 50 and 75 years of application respectively). |
| **Recycling** | 604 | -165437 | -248155 | Savings surplus emissions from application and final waste treatment 274 and 411 times (during 50 and 75 years of application respectively). |

* The calculation of the of the natural gas use savings obviously is dependant on specific parameters like insulation thickness and the thermal resistance of the cavity wall. We calculated with an insulation thickness of 6 cm, according to AddGreen BV this is common cavity wall thickness in Dutch dwellings. At this insulation thickness the thermal resistance of the cavity wall is assumed to be 1.82 $m^2K/W$. This value is retrieved via Bureau CRG pdf file with verified quality statement code: 20191434GKBKUW (October 1th, 2019).

# Colophon

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