



## **FB Eave Vent** **protects against fire spread**



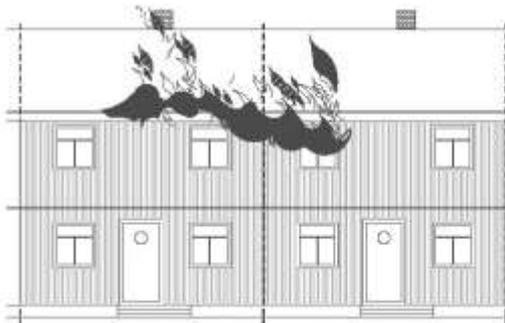
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**Securo AS**

## FIRE RATED AERATION

The principle of cold attics and venting through the eaves is very common and has worked well since it was introduced in Norway in the 1950s. The principal secures adequate ventilation of the roof construction and prevents fungus growth and moisture damage, while the roof remains cold to avoid snow melting and icing at the eaves and the gutters. But this principal has always been problematic under fires, the fire burst through windows and into air gaps in the eaves and spreads to the attic and roof. Fires that spreads to the attic often results in significant material damages.

National Office of Building in Norway (BE) has in a survey of fire safety in old and new row houses in the period 1995 to 1996 registered 417 actual fires. For those fires that had spread to several apartments, indicates BE that 80% of the cases were spread through the eave and in to the attic and roof construction.



Air gaps in the eave are number 1 caution for fire to spread from apartment to apartment.

In the Norwegian Technical regulation from 2011 (TEK11) it is recommended in §8-11 that the eaves is built as a fire limiting construction and if there is need for venting, it has to be used fire rated vents, as the FB Eave Vent.

**With the FB Eave Vent you have now got an easy and reliable solution that ensures both the need for venting and stopping fire spread.**

For constructions of new buildings this means that you can reach satisfying fire safety and continue the use of cold roofs and ventilation through the eaves. For existing buildings with cold attics are sealing of the eave and installation of the FB Eave Vent a very easy and cheap way to satisfying fire safety without extensive building project.

In the Norwegian fire preventive regulations it's required for owners of old buildings to upgrade the building to the safety demand of today within a practical and economically proper limits.

### Range of use:

**Houses in row, multi-family homes, care homes, dormitories, densely built-up areas, apartment buildings, office/commercial buildings, schools etc. with cold, ventilated attic or roofs.**

## TECHNICAL DATA - FB EAVE VENT

### Product description

Firebreather Eave Vent is a fully passive vent design that protects against fire spread into attic or cavities. The vent prevents fire spread in the classified period, 30 minutes (EI30), by combining a steel grille blocking flames during the first minutes and an intumescent material that swells and blocks the opening when the vent is exposed to flames or hot smoke gases.

### Where to use

The FB Eave Vents, as the product name suggests, are installed in soffit or roof eaves to prevent spread of leap frog fires, direct flaming, deflagration, façade fires or wind driven embers into attic or cavities. The vent also protects against ignitions of un-burnt gas at protected side.

### Approvals and tests

FB Eave Vent has been tested several times and are approved at Norwegian Building Research Institute (NBI) for fire resistance up to 30 minutes (EI 30). The Vent thus satisfies the requirements for fire stop in the Eaves under the guidance of Norwegian Technical Regulations, § 7-24.

### References:

- [NBI Technical Approval 2405](#): Approved for use in fire rated eaves.
- Warrington Fire Research Center: Designed for fire resistance EI 30 according to EN 1363 1 1999
- Warrington Fire Research Center: Designed for Direct Flame Test



Godkjenningsmerke

More information here: [NBI Technical approval 2405](#).

### Effective ventilation area

FB Eave Vent has an effective ventilation area of 32 % of the total area, proximal 0,023 m<sup>2</sup>. Outdoor air requirements for the roof should be determined for each project as a basis for selecting number and locations of the Vents.

### Fire resistance

FB Eave Vent installed according instructions have a fire resistance of 30 minutes (EI30)

## **INSTALLATION AND USE**

### **Installation in a fire limited eave**

The vents is installed horizontally in the block-outs of the cladding in the eave, usually between trusses or rafters, in openings of 500 mm ± 2 mm x 150 mm ± 2 mm (fits between the rafters in standard Norwegian dimensions). The vents is installed from underneath the eave with four stainless screws 4,1 mm x 50 mm into the studding (should be minimum 25mm wide and 45mm high, included the cladding)

Block-out for installation in the eave:

- Minimum block-out: 145 x 495 mm.
- Recommended block-out: 150 x 500 ±2 mm.

For more information, see: [NBI Technical Approval 2405](#).

### **Upgrading of existing eaves to fire limiting construction**

If the eave shall have 30 minutes fire rating, the construction around the vent also need to have 30 minutes fire rating. Details from Norwegian Building regulations recommend fire limiting designs for the eave:

- NBI 525.106: Skrå tretak med kaldt loft (slanting roofs with cold attics)
- NBI 720.311: Brannteknisk utbedring av bygninger med kaldt loft (Fire renovating of buildings with cold attic)

### **Surface of the vent**

The vent is made by stainless steel. It must not be painted as this will reduce the airflow.

### **Maintenance**

The FB Eave Vent contains no moving parts and requires no special maintenance with regard to functional safety. Fire resistance quality does not change over time.

In the same way as with conventional ventilation through insect mesh, the FB vent should be inspected for clogging of insects and dust, as it can reduce the ventilation effect.

It's recommended that the outside is checked every 5 year and the inside every 10 year.

## **DIMENSIONS**

### **Reference to requirements and recommendations in Norwegian building regulation and guidance**

For buildings classified in fire class 1 the guidance for technical regulations stat to use 30 minutes fire resistance in fire limiting constructions. In the Norwegian building regulation from 2011 (TEK11) §8-11 it's written: *“The spread of fire from windows to eaves and to cold attics has often been a common cause of rapid fire spread. This cause that the eaves should be performed as a fire limiting construction. Ventilation must be arranged elsewhere, or it can be use vents with fire resistance”*

### **Fire seal and ventilated design of the eaves**

Even you have fire walls that are brought up through the attic and all the way to the roof, Sintef recommend that the eave is sealed. This is because we often see that the existing fire walls in attics have weakness in connection to the roof and eave.

Fires can easily spread throughout out windows and into the eaves on the other side of the fire wall. In such cases, the fire can easily spread between fire cells despite internal fire walls in the attic. Fire limited eaves can also secure single-family homes (which is only one fire cell) from rapid fire spread to the attic and prevent total damage.

SINTEF Byggforsk provides examples and recommendations for fire limiting eaves:

- Byggforskserien 525.106: Slanting roofs with cold attics (Skrå tretak med kaldt loft)
- Byggforskserien 720.311: Fire renovating of buildings with cold attic (Brannteknisk utbedring av bygninger med kaldt loft)
- Byggforskserien 321.090: Fire limiting design of buildings with cold attic (Brannteknisk prosjektering av bygninger med kaldt loft)
- Håndbok 51: Multi-storey woodhouses. (Fleretasjes trehus)

### **Air requirement and number of FB Eave Vents**

Numbers of vents are calculated from the vents effective ventilation area of 0,023 m<sup>2</sup> and adequate ventilation of the roof construction to prevents fungus growth and moisture damage, while the roof remains cold to avoid snow melting and icing at the eaves and the gutters.

Air requirements can be decided from values in SINTEF Byggforskserien 525.106: Slanting roofs with cold attics (pre-accepted dimensions) or calculated for each project (required air dimensions)

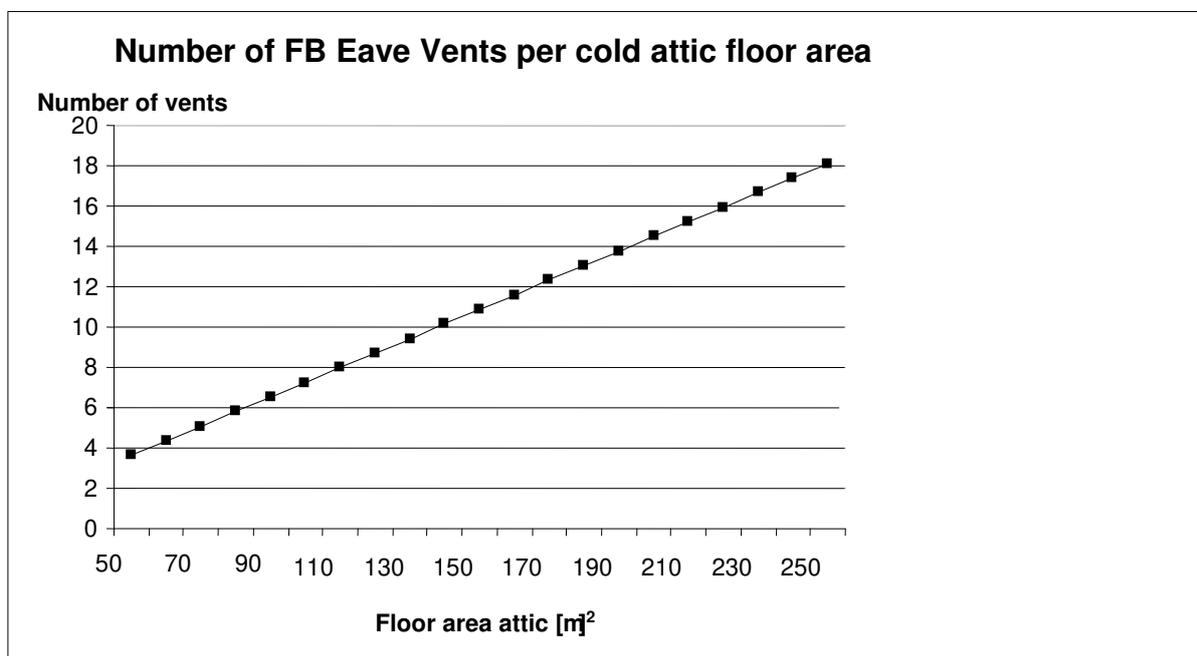
*Pre-accepted dimensions:*

The diagram below provides a general recommendation in relation to the minimum number of FB Eave Vents per floor area in the cold attic. The bases for the calculating in the diagram are recommendations that, among other things stated in the Brandsäkra Trähus as a result of the

co-operation project Nordic Wood (where, Sintef Byggforsk contributes). Sintef Byggforsk Håndbok 51: Multi-storey wood houses, recommend that the air space of cold attic / roof should be 1/300 part of the roof/ attic floor area. Basis is total air space, including area for venting. The diagram indicates recommended number of vents for the intake air in the eaves equivalent to a space of 1/600 of the roofs floor area.

It is assumed conventional ventilation in the gable. 1/300 total and 1/600 for intake air in the eaves are common values in other countries also, such as Federal Housing Administration (FHA) in USA.

The diagram shows that an apartment with floor area at the attic of 85 m<sup>2</sup> needs 6 FB Eave Vents, 3 at each side of the roof. The vents must be positioned so the air flow is constant and efficient in the attic.



Recommended minimum numbers of FB Eave Vents per floor are in the cold attic (according to SINTEF Byggforsk Håndbok 51)

*Required air dimensions:*

SINTEF Byggforsk detail 525.106 describes ventilation solutions with effective area determined by climate, geographical locations etc.

A project group or entrepreneurs can use this to calculate number of vents and energy loss from geographical location or climate. The recommendations in this detail are ambiguous: use of Håndbok 51 will always give fewer vents.

There is also literature to document ventilations requirements based on science. But in common projects you usually use pre –accepted in accordance with Håndbok 51 or Required air dimensions according to SINTEF Byggforsk detail 525.106.

### *Design for special roofs*

The vents can be used in attics with pent roof, lean-to roof or flat roof. In flat roofs can each raft be separated, and must thus be vented separately. As an alternative you can expand the eave as one whole unit and vent through this unit, then you don't need to vent each raft separately.

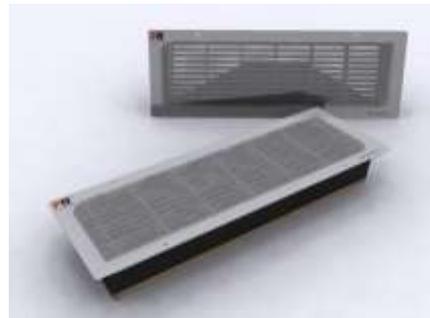
### **Environment**

Waste should be recycled.

FB Eave vents are made of stainless steel and can be sold as scrap iron. This recycling makes the vents environmental friendly alternative. The intumecentmass can be disposed as residual waste

### **Size and weight:**

- Dimensions include flange: 185 x 535 x 73 mm.
- Dimensions exclude flange: 145 x 495 x 73 mm.
- Weight: 1910 g.
- Weight included packaging: 2350 g



### **Supplier**

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### **Produced by (for Securo AS):**

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Cambridge CB2 4HG  
England

For more information, contact your supplier or Securo AS.

### **Responsibility**

It's Securo's responsibility to provide products with documented performance. Project companies must calculate ventilation requirements and fire resistance. Our guide only refers to relevant sources.