

## *Installation of thermal insulation foam and rockwool on metal roofs*

Pre-conditions

Preparation

Self-inspection

Execution



This **work instruction** is designed for use in detailed planning and preparation of work on construction projects. With thorough planning high levels of personal safety and optimal work apportionment can be achieved at the same time as the work can be organized efficiently and cost effectively.

## Safety — Risk assessment

Work activity: Installation of thermal insulation on metal roofs

Work activity & Problem	P	C	Risk= P*C	Action
Fall from roof	3	150	450	Lifeline for certain jobs
Crane work with pallets of insulation, trapping injuries	30	5	150	Education in crane directing/strapping
Cluttered workplace, Twist/fall injuries	10	15	150	Keep the material depots in order. Regular tidying

Probability = P  
Consequence = C  
Risk = P \* C

**Assessment of probability**

P = 0,1	Very unlikely	(<1 times/10 years)
P = 1	Unlikely	(1 times/10 years)
P = 3	Low probability	(1 times/3 years)
P = 10	Relative probability	(1 times/year)
P = 30	Probable	(1 times/month)

**Assessment of consequences**

C=0,5	Trifle	
C=1	Tiny	( 1 - 2 days sick leave)
C=5	Small	( 3 - 7 days sick leave)
C=15	Tactile	( 8 - 29 - " - )
C=70	Severe	(30-299 - " - )
C=500	Very severe	(>300 - " - )

*Text and image from the Working Environment Authority's brochure Safer Construction Work*

## **Personal Protective Equipment § 71**

Safety helmet and protective footwear should be used unless this is clearly unnecessary. Other personal protective equipment such as eye protection, hearing protection and gloves should be worn when required.







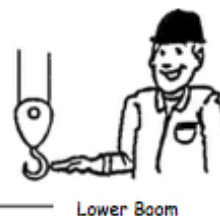

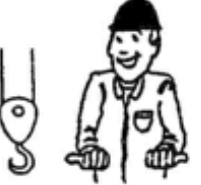








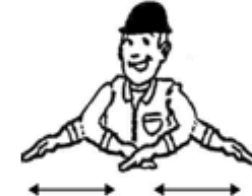
## **Working safer on roofs § 87-92**

When engaged in roof work it is usual for a guardrail or equivalent protection to be provided. Railings can sit on the eaves or in a position that ends just below the eaves.

Remember that it may need extra strong railings to stop a person who comes at speed down a steep roof.



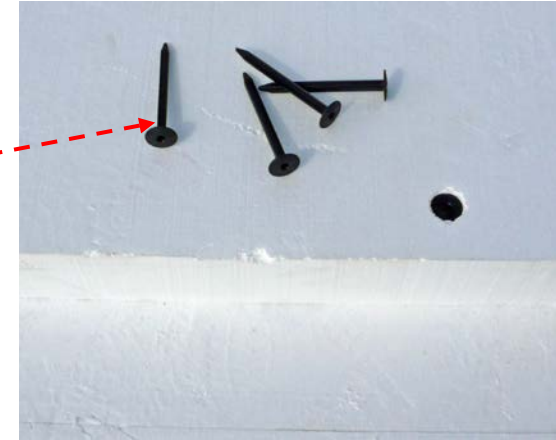
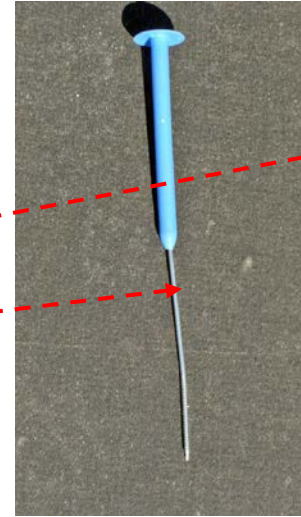
(See also AFS 2008:13, Appendix 3)

 Hoist Load	 Lower Load	 Hoist Load Slowly	 Lower Load Slowly	 Stop
 Swing Boom in direction indicated		 Lower Boom		 Emergency Stop
 Extend Boom	 Retract Boom	 Raise Boom	 Lower Boom	 Signal not understood
 Open	 Close	 Main Hoist	 Auxiliary Hoist	 Finished

Equipment and machinery

**Materials:**

- ❑ Wedge-shaped rock wool 115 mm
- ❑ Foam, here 150 + 100 mm
- ❑ Plastic film to the vapor barrier
- ❑ Board, here 15 mm
- ❑ Plastic screw and
- ❑ Sheet metal screw that goes through all layers of insulation (Plastic 150-200 mm + screw = 300 - 400 mm)



**Equipment:**

- ❑ Foam saw; Battery powered and manual
- ❑ Screwdrivers for various screws
- ❑ Folding ruler/ knife





## Storage

Insulation storage requires a lot of space.

Do not take the material up onto the roof until it is ready to be laid.

Keep in mind that the insulation bales can tip or blow away in strong wind. Take it down or secure!

Take down bagged-up residual material before high winds commence. There are small compressors / balers for insulation.

Insulation boards shall also be stored in containers - they also takes place

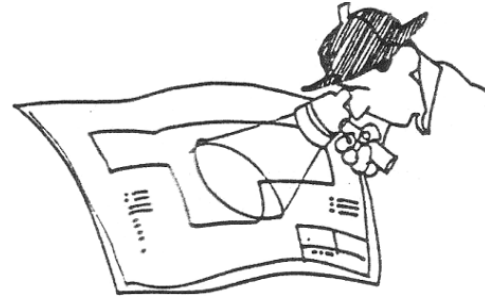


# Self-inspection <sup>1(2)</sup> Template & instructions

No	Check	Method or equipment	Frequency	Result	Date Signature	Deviation/Remedy Approval/Non-A
1	Vapor barrier without holes and above pipes and ducts					
2	Connections to ducts etc. No penetrating splices					
3	Side and end joints Check against figures in the AMA					
4						
5						
6						
7						
8						
9						
10						
11						

## Quality criteria for the project and the product

- Study Drawings, Specifications and Inspection planning
- Think through the alternative **methods of production** and handling of materials, tools etc. that can meet the requirements

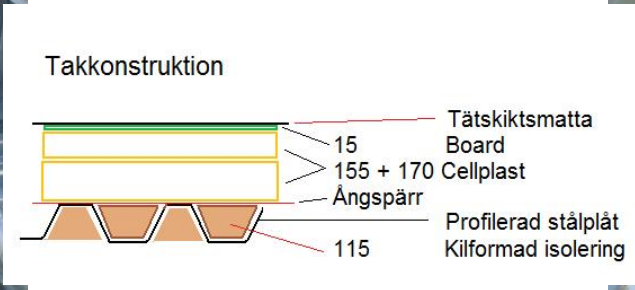


### *Pay particular attention to*

- Handle the insulation products in accordance with manufacturer's instructions
- Control gradient and slope
- Seal all penetrations and connections - secure vapor barrier
- Do not overload the insulation material
- The roof slope shall not exceed 1:16



The wedge-shaped rockwool insulation is laid on the roof panels and adjusted accordingly. The vapor barrier / folio is then added and above the installed ducts and pipes.





The foam = the steam barrier.  
In this project – the picture to the right it was decided to lay the folio under the metal sheeting.

The first layer of foam is laid out and adapted to the channels and pipes.  
*Hope the chap in the picture doesn't saw through the vapor barrier!*





Second layer of foam is placed without penetrating joints

Afterwards, the layers are secured with “plastic spikes” that are driven in with the screwdriver.

**On the plate are:**

- 1 - Wedge-shaped insulating board here in Rockwool brand Heralan
- 2 - Vapor barrier, plastic folio
- 3 - Foam, 15 + 10 cm, which is cut to fit to the ventilation channels.
- 4 - Board 15mm
- 5 - Building paper is “screwed” and pasted on wood board





Thereafter is laid a 15 mm board adapted for the connections.

The building paper is fastened in metal roof, through the insulation, with about 400 mm long screws.



Finally welded waterproofing matting is laid and welded by the pre-pasted side being heated with propane.

