

CONDENSATION RISK ANALYSIS STATEMENT FOR BUILDING CONTROL

A.

The problem of condensation is **common with metal roof buildings** in climates with high or mixed humidity with temperatures low enough to reach dew point.

As the air inside the building is heated it rises, **carrying moisture with it**. When the warm moist air reaches the ceiling it easily passes through the fibrous insulation material allowing it to reach the underside of the metal roof. If it is cold outside the metal roofing is also cold so the **moisture in the warm air condenses** on the underside of the metal roofing. The higher the moisture content the greater the condensation potential.

There are **several options to stop/reduce this problem** in the future.

- The moisture content in the air of the building could be reduced (often this may not be practical)
- Increasing the insulation and add a moisture barrier to prevent warm moist air from passing through the insulation.
- Move the insulation from contact with the metal roof to create a roof ventilation system (air gap behind the Metal either through battens or an appropriate Roofing membrane)

B.

REGULATIONS:

BS 5250:2011+A1:2016

Code of practice for control of condensation in buildings

Condensation can be a big problem in roofs, leading to issues such as damp, structural damage, and even potential health hazards. BS 5250 provides advice for controlling condensation and describes the causes and effects of surface and interstitial condensation in buildings.

Approved Document C refers to BS 5250, stating that a roof will meet the requirements if it's built in accordance with clause 8.4 of the standard, as well as BS EN ISO 13788 (Internal surface temperature to avoid critical surface humidity and interstitial condensation. Calculation methods).

The standard provides detailed guidance on how to control condensation and states that prevention is best achieved through the provision of **natural air ventilation.**

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BEST PRACTISE ADVISE IN THE APPROVED DOCUMENTS C2

Site preparation and resistance to contaminants and moisture

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/431943/BR_PDF_AD_C_2013.pdf

6.10

A roof will meet the requirement if it is designed and constructed in accordance with Clause 8.4 of BS 5250:2002¹⁴¹ and BS EN ISO 13788:2002¹⁴². Further guidance is given in the BRE Report BR 262¹⁴³.

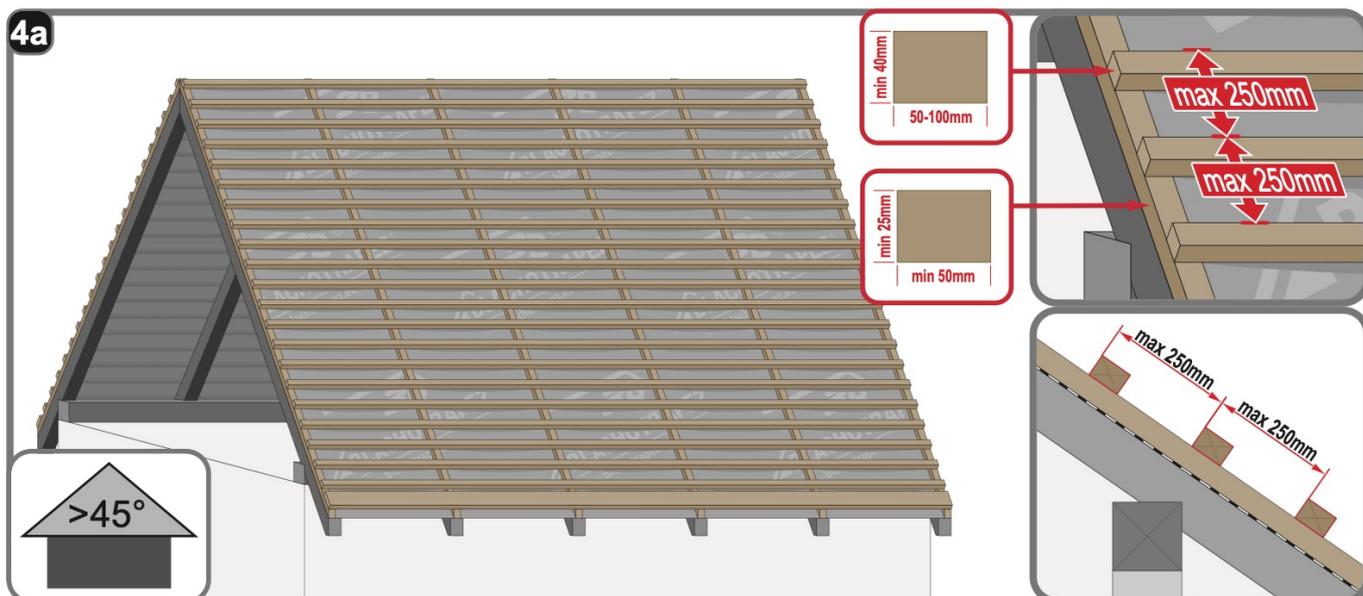
6.11

The requirement will be met by the ventilation of cold deck roofs, i.e. those roofs where the moisture from the building can permeate the insulation. For the purposes of health and safety it may not always be necessary to provide ventilation to small roofs such as those over porches and bay windows. Although a part of a roof which has a pitch of 70° or more is to be insulated as though it were a wall, the provisions in this document apply to roofs of any pitch.

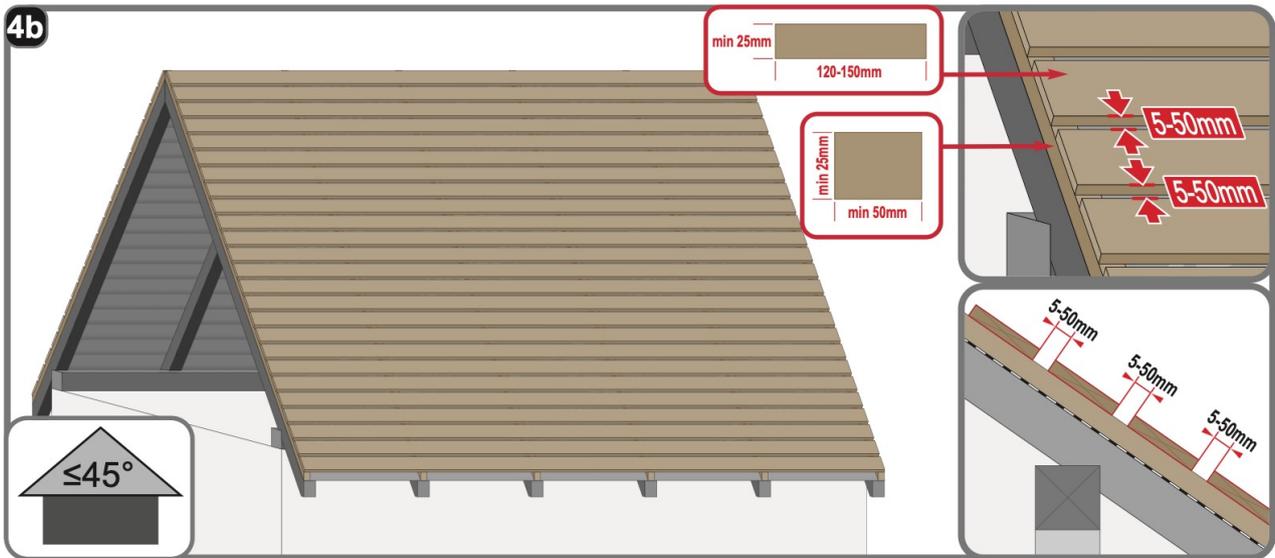
C.

INSTALLATION OPTIONS:

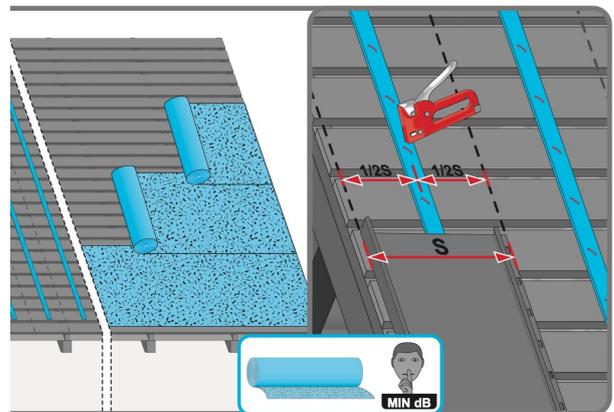
INSTALLATION 4A COUNTERBATTENS ON TOP OF REGULAR MEMBRANE



CONDENSATION RISK ANALYSIS STATEMENT FOR BUILDING CONTROL

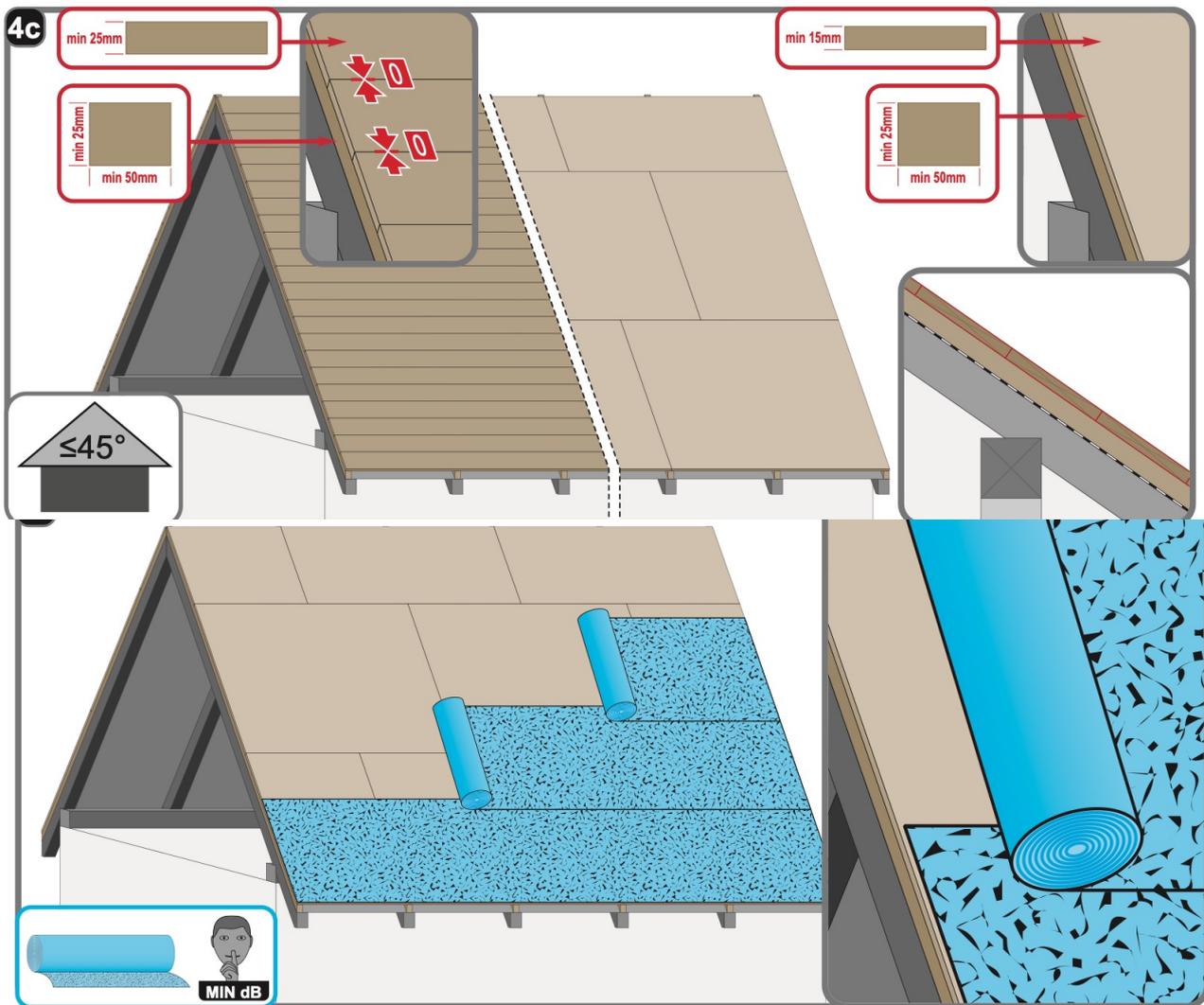


INSTALLATION 4B BOARDS ON TOP
OF BATTENS covered with SPECIALIST
MEMBRANE (SEE POINT D.)



CONDENSATION RISK ANALYSIS STATEMENT FOR BUILDING CONTROL

INSTALLATION 4C BOARDS(OSB OR PLY) COVERED WITH SPECIALIST MEMBRANE
(SEE POINT D.)



CONDENSATION RISK ANALYSIS STATEMENT FOR BUILDING CONTROL

D.

INSTALLATION BEST PRACTISE CONDENSATION CONTROL WITH METAL ROOF
MEMBRANE

3 commonly used specialised MEMBRANES FOR CONDENSATION CONTROL :

-**DELTA TRELA®** (<https://www.doerken.com/int/products/pitched-roof/delta-trela.php>)

-**PERMO SEC®** (<https://klober.co.uk/shop/product/permo-sec-metal>)

-**TYVEK METAL®** (<https://www.dupont.co.uk/products-and-services/construction-materials/tyvek-building-envelope/brands/tyvek-breather-membrane/products/tyvek-metal-roofing-underlay.html>)

DATASHEETS:

-**PERMO SEC®** <http://klober.co.uk/media/uploads/56c711838b31b.pdf>

-**TYVEK METAL®** https://www.dupont.co.uk/content/dam/dupont/products-and-services/construction-materials/building-envelope-systems/documents/2510B_20191203_UK_Ireland_English.pdf

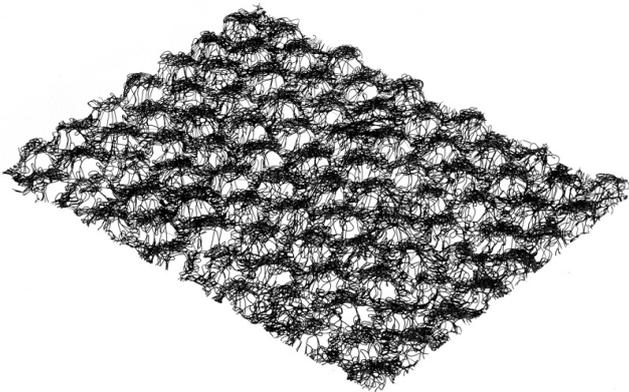
- DELTA TRELA®**
- Weight: ca. 380 g/m²
 - S_d – value: ca. 0,02 m
 - Fire behaviour: E (EN 13501-1)
 - Noise reduction: up to 16db
 - CE-conform according to EN 13859-1 & 2

 - Underlay: DELTA-VENT S
 - Structured layer: Polypropylen
 - Structure height: ca. 8 mm
 - Amount of dimples: > 2.600 Stk/m²
 - Measures: 1,50m/1,40m · 30m

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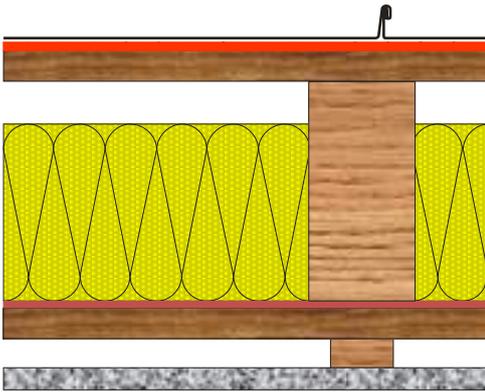


- Condensation- and melt water can drip off.
- No corrosion by condensed water
- No backwater

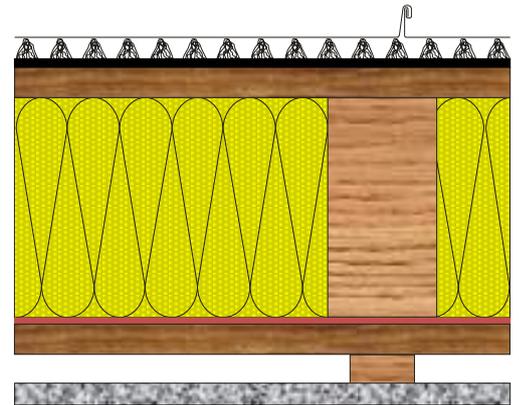


CONDENSATION RISK ANALYSIS STATEMENT FOR BUILDING CONTROL

VENTILATED CONSTRUCTION



UNVENTED CONSTRUCTION



UNVENTED CONSTRUCTION

