New CWCT Technical Notes

Fire

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Agenda

- Welcome,
- Purpose of today's webinar,
- New TN's webinar,
- Questions.

TN114	Fire performance of facades - Use of combustible material (26 pp)
TN113	Fire performance of facades - Introduction (23 pp)

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Introduction

David Metcalfe

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Outline

- 113: *Fire performance of facades – Introduction*
- 114: *Fire performance of facades – Use of combustible material.*
- For each Note we will touch on
  - The scope
  - A few of the key takeaways
  - Annexes
- Further TNs are in preparation,
  - 115: *Fire performance of facades – Application to curtain walls*
  - 116: *Fire performance of facades – Application to built-up walls*
- These Notes replace TN98, *Fire performance of facades - Guide to the requirements of UK Building Regulations*
- Good engagement with the Building Safety Regulator and Scottish Building Standards Division.

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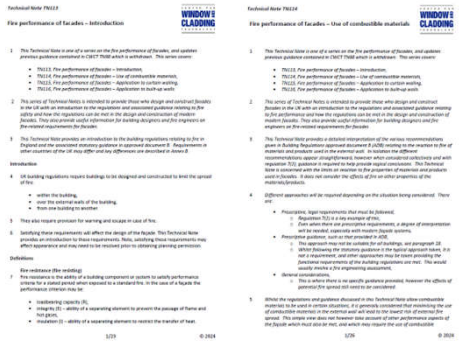
Target audience

- Those who design and construct facades in the UK,
- Also provide useful information for building designers and fire engineers on fire-related requirements for facades.



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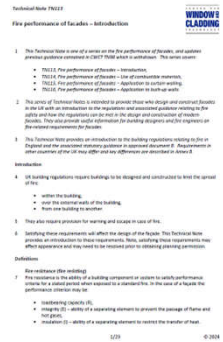
TN113 – Fire performance of facades – Introduction

- Contents;
  - Introduction,
  - Definitions,
  - Regulations and guidance;
    - Regulatory framework,
  - Building regulation requirements;
    - Content of regulations and guidance applicable in England,
  - Summary
  - Annexes;
    - Testing for reaction to fire,
    - Requirements for Wales, Northern Ireland and Scotland.



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TN113 – Fire performance of facades – Introduction

- Definitions;
  - Fire resistance,
  - Reaction to fire
    - Require testing,
    - European classification system now used,
    - Classification based BS 476 no longer recognised from March 2025 for reaction to fire and September 2029 for fire resistance
  - Relevant building;
    - Definition varies according to country and context,
  - Higher risk building,
  - External walls,
  - Specified attachments.

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TN113 – Fire performance of facades – Introduction

- Regulation and guidance;
  - Building Regulations give **minimum** requirements **to ensure life safety**;
    - Generally in functional terms,
    - Approved Documents provide practical guidance that would normally satisfy the functional requirements (Approved document B for fire),
    - Regulation 7(2) is prescriptive and does not allow alternatives,
  - However;
    - *'following the guidance in ADB may not be sufficient to achieve an adequate level of performance for a given facade in a fire for certain building situations. It is incumbent on the building designer to ensure that the guidance given in ADB is relevant to their building and what additional measures (if any) are required to ensure the façade achieves the required performance standard'*
  - Additional considerations:
    - Property protection.

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TN113 – Fire performance of facades – Introduction

- Regulation and guidance;
  - Geographical extent,
    - Approved document B covers England
    - Wales has its own Approved document B
    - Northern Ireland has Technical Booklets (E for fire)
    - Following the English Approved document B will satisfy requirements for construction of facades in Wales and Northern Ireland
    - Scotland has its own regulations and guidance documents (Technical Handbooks) which differ in structure and content but will give similar results in most, **but not all,** cases.
  - TN113 refers to requirements in England and describes differences in other countries in Annex B.

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TN113 – Fire performance of facades – Introduction

- Building regulation requirements;
  - B1 Means of warning and escape,
    - Fire resisting façade to protect fire escape,
    - Smoke vents,
    - Fire doors,
  - B2 Internal fire spread (linings);
    - Reaction to fire of lining materials,
  - B3 Internal fire spread (structure);
    - Fire resistance of loadbearing facades,
    - Interfaces with compartment walls /floors,
    - Cavity barriers,
- B4 External fire spread;
  - Requirement for fire resisting façade to limit fire spread between buildings,
  - Limits on reaction to fire of external surfaces,
  - Limits on combustibility of materials,
  - Cavity barriers,
  - Testing in accordance with BS 8414,
- B5 Access and facilities for the fire service;
  - Risk of falling materials in fire.

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TN113 – Fire performance of facades – Introduction

- Summary
  - Design of the façade is affected by decisions about the design of the building,
    - A fire strategy needs to be developed by the building designer/fire engineer,
    - Requirements need to be communicated to the façade designer,
    - These might exceed the recommendations of ADB,
    - Requirements include
      - Requirements for façade to be fire resisting,
      - Identification of compartment walls/floors to allow design of interfaces,
      - Limitations on reaction to fire of materials that exceed limits in ADB,
      - Provisions relating to escape routes that affect the façade,
    - Minimum recommendations of Approved document should be met:
      - Cavity barriers,
      - Limits on reaction to fire of materials.

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TN113 – Fire performance of facades – Introduction

- Annex A reaction to fire
  - Classification A1 to F based on small scale laboratory tests
  - Some tests carried out on sample that represents way material is to be used,
  - Classification depends how material is used,
    - Eg thickness of paint coating
  - Claims of performance should be supported by a classification report giving field of application.

Fire testing of Reynobond PE

Date	Type	Test fully completed?	Classification
2005	Cassette	✗	E
2005	Rivet	✓	B
2011	Cassette	✗	E
2011	Rivet	✓	B
2014	Cassette	✗	E
2014	Rivet	✓	C
2015	Cassette	✗	E
2015	Rivet	✓	C

Source: CSTB BBC

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TN114 – Fire performance of facades – Use of combustible material

- Extensive guidance in relation to regulation 7(2) available in the CWCT/SFE guide,
  - Update published last year,
  - Live document.
- https://www.cwct.co.uk/pages/cwct-sfe-fire-guidance

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TN114 – Fire performance of facades – Use of combustible material

- Structure
  - Regulations
  - ADB requirements
  - Summary of requirements
    - Flow charts
  - External surfaces
  - Materials and products
  - Balconies
  - Reaction to fire testing
  - Annex
    - Other countries of the UK
    - Flow charts (Scotland)

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TN114 – Fire performance of facades – Use of combustible material

- Overarching requirement (ADB clause 10.4/12.4)
  - *In relation to buildings of any height or use, consideration should be given to the choice of materials (including their extent and arrangement) used for the external wall, or attachments to the wall (e.g. balconies, etc.), to reduce the risk of fire spread over the wall.*

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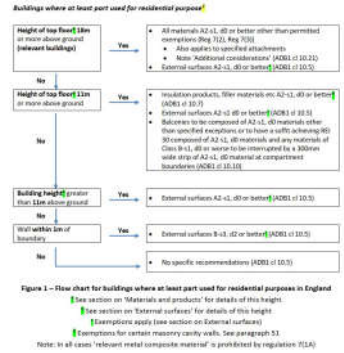
TN114 – Fire performance of facades – Use of combustible material

- Summary of minimum recommendations
  - Residential
  - Non residential



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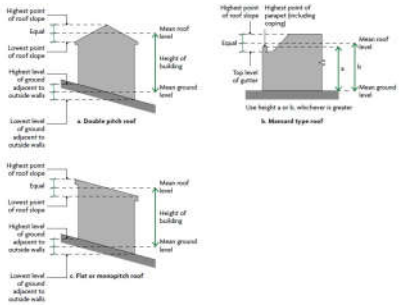
TN114 – Fire performance of facades – Use of combustible material

- External surfaces
  - What is an external surface?
  - Where do the recommendations apply?



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TN114 – Fire performance of facades – Use of combustible material

- External surfaces
  - What is an external surface?

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TN114 – Fire performance of facades – Use of combustible material

- Where do the recommendations for external surfaces apply?
  - Any problems applying them to all materials?
  - Considered impractical to apply recommendations to all parts of the external surface,

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TN114 – Fire performance of facades – Use of combustible material

- Where do the recommendations for external surfaces apply?
  - Any problems applying them to all materials?
  - Considered impractical to apply recommendations to all parts of the external surface,
  - What about regulation 7(2) exemptions?
  - What about other buildings?

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TN114 – Fire performance of facades – Use of combustible material

- In conclusion, recommendations for external surfaces principally apply to:
  - Opaque areas generally,
    - Rainscreen panels,
    - Spandrel/infill panels,
    - External render systems,
    - Precast panels,
    - Etc,
  - Balcony balustrades*,
  - Attachments such as shading devices*
- Surfaces considered exempt from the recommendations for external surfaces:
- Window/curtain wall framing members,
- Vision glazing in windows/curtain walls,
- Sealants/gaskets.
- Consideration must be given to the potential risk of fire spread over these materials.

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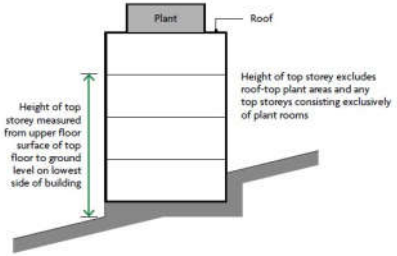
TN114 – Fire performance of facades – Use of combustible material

- Materials and products
  - Different definition of height!
- Recommendations clear, except for the definition of a 'filler material',
  - Laminated glass?
  - Considered exempt in vision glazing
  - Spandrel glazing/balcony balustrades not exempt,
    - Conflicts with safety,
    - Use justified by fire risk assessment.



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TN114 – Fire performance of facades – Use of combustible material

- Balconies
  - New guidance for buildings with a 'residential' purpose, with a storey 11m in height,
  - Two options given.
- Reaction to fire testing
  - Details of reaction to fire testing given in TN113,
  - Important that products are tested in a way that is representative of their end use,
  - Care required where asymmetrical products are used.

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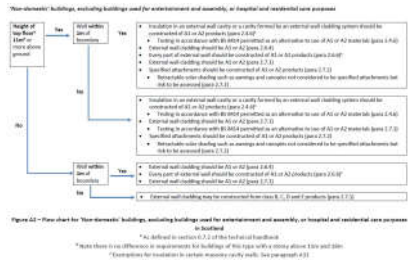
TN114 – Fire performance of facades – Use of combustible material

- Annex
  - Recommendations in other countries of the UK,
  - Guidance in Scotland is very different, however the end result is similar.



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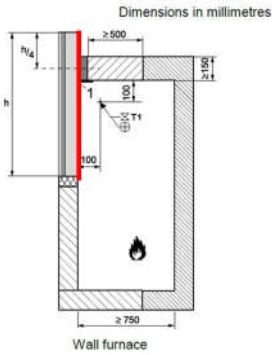
Future Fire Technical Notes

- *TN115 – Fire performance of facades – Application to curtain walls*,
- Curtain wall fire stops,
- Proposing a hierarchical approach to this:
  - Direct field of application
  - Extended field of application
  - Fire engineering assessment,
- https://www.cibsejournal.com/technical/fire-and-facades-key-guidance/



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Future Fire Technical Notes

- *TN116 – Fire performance of facades – Application to built-up walls*,
- Unresolved issues
  - How can cavity barriers be tested when rainscreen fails before the end of the test?
  - Is the spread of cold smoke prior to activation of open state cavity barriers an issue?
  - Acceptability of testing in accordance with BS 8414.

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Questions?

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