

Fire performance of PU insulation

Fire safe building applications



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21 March 2013

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Common rules in the European Market

Recent developments

- From CPD to CPR
- Revision of EN14509



Fire safe building applications with PU

- Different requirements of fire protection
- PU solutions for insulation board and sandwich panel applications



Common rules in the European market

From CPD to CPR

- From Construction Products Directive (CPD) to Construction Products Regulation (CPR)
 - Simplified procedures
 - Clear meaning of CE-marking
 - **Declaration of Performance (DoP)** is the key concept
 - The use of national marks is even more unjustifiable

Implementation date 1 July 2013

- More info on http://ec.europa.eu/enterprise/sectors/construction/index_en.htm



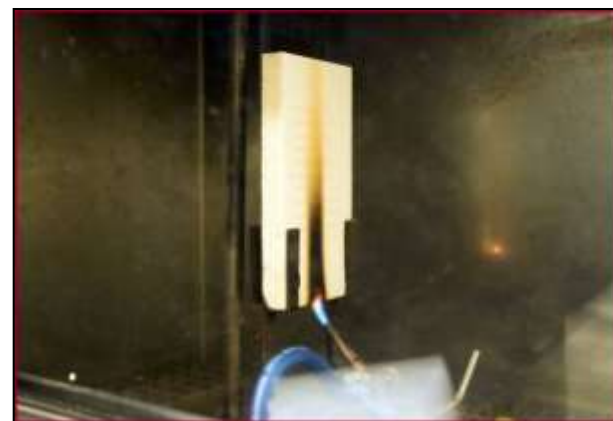
Common rules in the European market

Revision EN 14509

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- End of UAP vote: 17 June 2013
Expected date of publication: Jan 2014
Expected date of implementation: July 2014
- Improvements compared to first version
- Small flame test: ONLY on naked foam

- ✓ Fire rated panels require Euroclass E core
- ✓ Euroclass F core only for non fire rated panels



Fire safe building applications with PU

Different requirements of fire protection

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Reaction to fire (Internal fire)

Contribution of a
construction
product when
exposed to a
developing fire

EN 13501-1

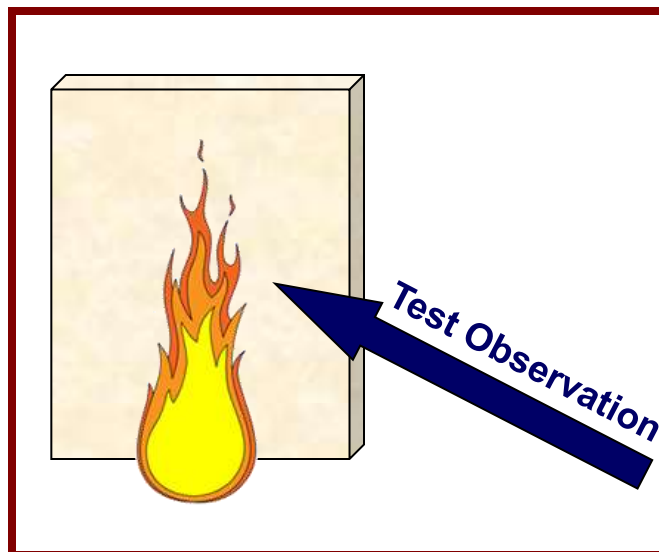
Euroclasses

A1, A2, B, C, D, E

Smoke s1, s2, s3

Droplets d0, d1, d2

e.g. Bs2d0



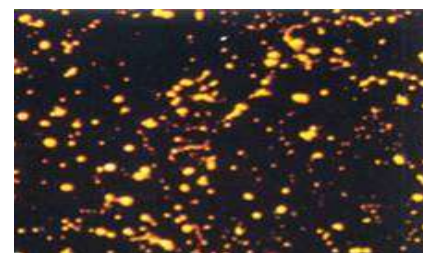
Ignitability & flame spread



Heat release



Smoke



Fire droplets or particles

Fire safe building applications with PU

Different requirements of fire protection

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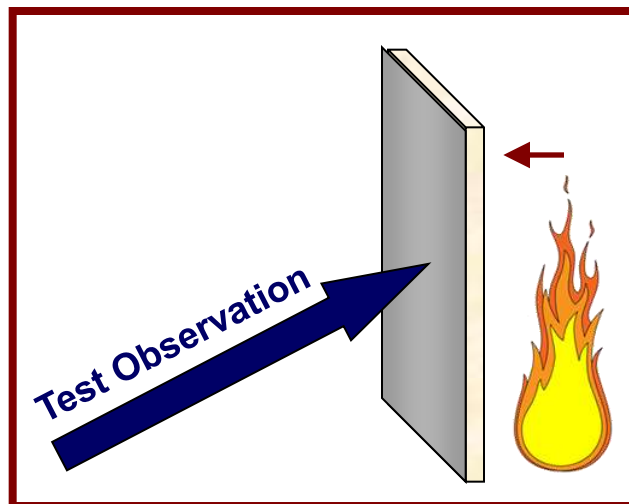
Resistance to fire (Internal fire)

Capability of construction element to maintain the following properties when exposed to a fully developed fire

EN 13501-2

REI (minutes)

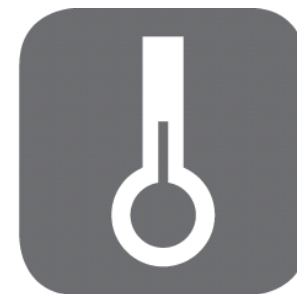
e.g. EI30



(E) Integrity: ability to prevent spread of hot gasses and flames



(R) Load bearing capacity: to assess the framework (in case structure has to bear load)



(I) Insulation: ability to prevent transmission of fire and heat

Fire safe building applications with PU

Different requirements of fire protection

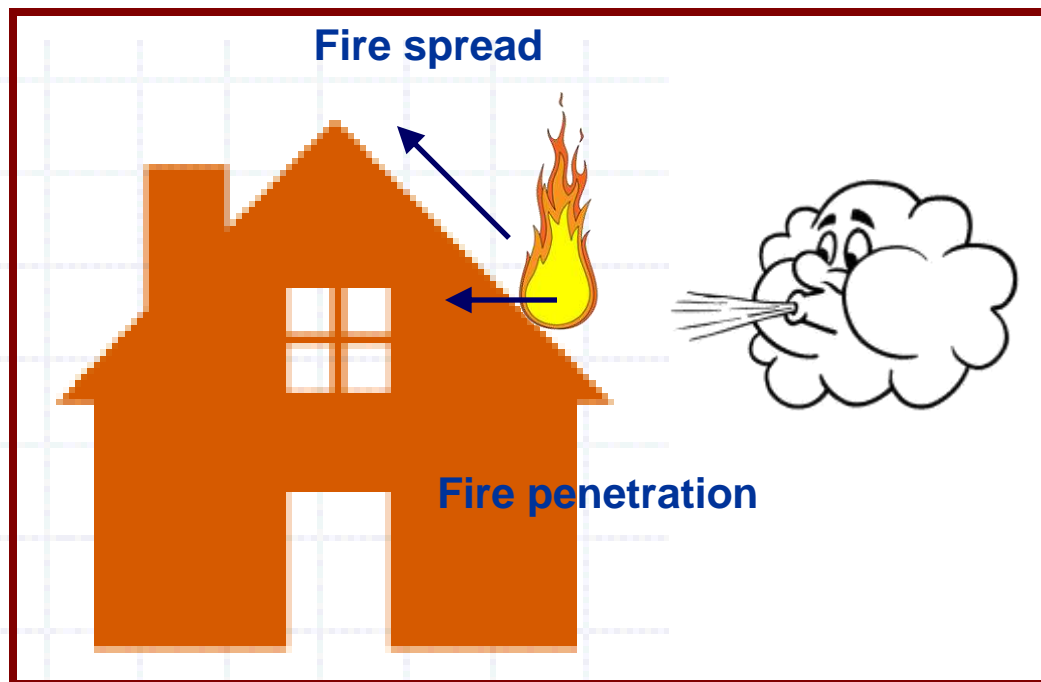
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External fire

Performance of roof exposed to an external fire, taking into account also additional conditions, depending on the test method used

EN 13501-5

e.g. Broof (t1)

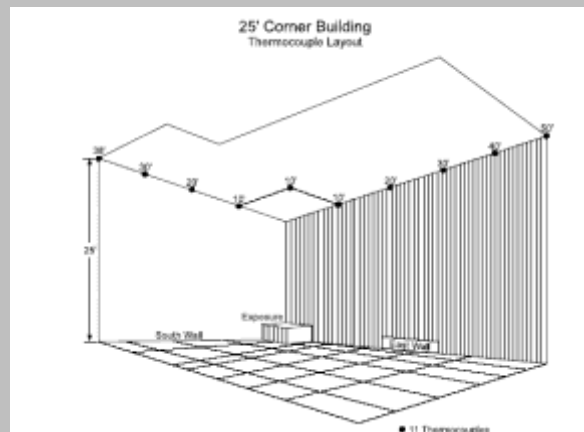


Fire safe building applications with PU

Insurance requirements

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Factory Mutual (FM)



Applied internationally

FM 4880

- Insulated wall, wall and roof/ceiling panels, external wall systems

LPC, UK



Loss Prevention Council,
Association of British Insurers

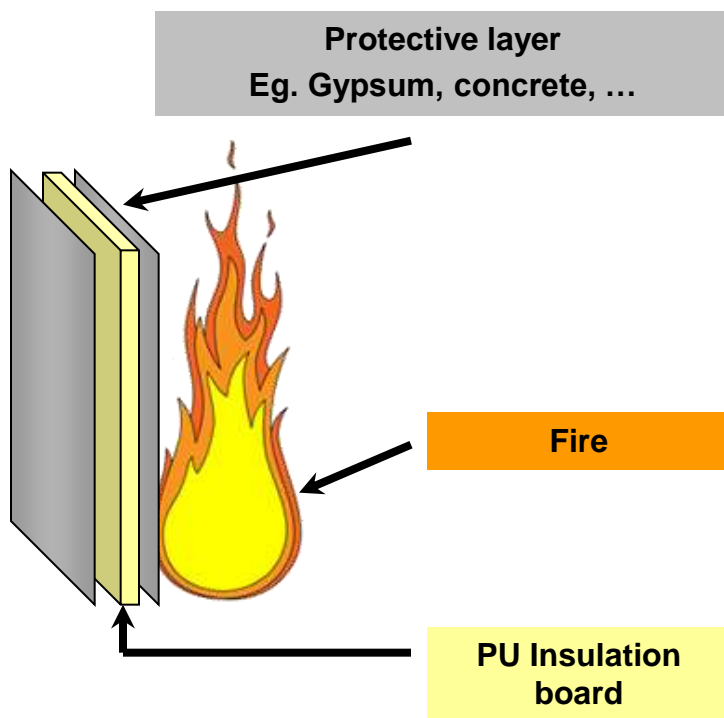
LPS 1181

- Part I: external wall and roof cladding
- Part II: Internal panels (food factories, cold stores)

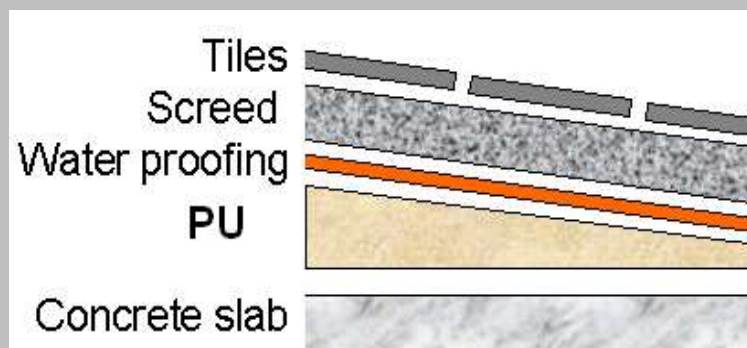
Fire safe building applications with PU

Insulation board behind protective layer

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PU insulation board in floors



PU insulation board on concrete roof

Fire safe building applications with PU

Fire rated metal faced sandwich panels

- Demand for fire rated panels is increasing
- Euroclass E core required in future
- High index PIR to meet fire resistance properties and insurance requirements

	F class	E class	Bs2d0	EI/REI	FM/LPC
Standard PUR					
FR PUR					
PIR					



Huntsman technology for fire rated metal faced sandwich panels

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Reaction to fire

- Bs2d0
- Bs1d0
- Class E on naked foam

Resistance to fire

- EI20 for 80mm wall panels
- EI30 and E45 for 100mm wall panels
- REI30 and RE60 for 100mm roof panels

Factory Mutual approvals

Huntsman technology for fire rated metal faced sandwich panels

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- PUR technology
- Processing at 40°C
- Bromine free

Reaction to fire

- Class E on naked foam
- Bs2d0

Conclusions

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**Fire safe building applications
are possible with PU**

**Huntsman offers innovative
solutions to meet fire
requirements**

Welcome at the Huntsman stand

