



European Reaction to Fire Classification System (Euroclasses)

Until recently EU countries had different methods for testing and classifying the Reaction to Fire performance of construction materials. This made comparison of the resulting data extremely difficult, with manufacturers required to carry out different tests in order to sell their products in a particular country. The implementation of a single classification system across the EU member states has introduced a common method for comparing the Reaction to Fire performance of construction products.

Testing is standardised through the use of EN 13501-1: Fire classification of construction products and building elements.

For insulation products intended to be used in wall and ceiling constructions, there are seven Reaction to Fire classification levels available – A1, A2, B, C, D, E and F.

Additional criteria provide information on a product's tendency to produce smoke and flaming droplets or particles.

For combustible products, smoke release is an important consideration and is measured for Reaction to Fire classes A2 to D. There are three smoke intensity levels: s1, s2 and s3, with s3 being the worst.

Burning droplets/particles can inflict skin burns and cause further spread of fire. Burning droplets/particles are measured for Reaction to Fire classes A2 to E. There are three classes of burning droplets: d0, d1 and d2, with d2 being the worst.

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This Reaction to Fire classification system was developed through the use of a large-scale Room Corner Test – a so-called ‘reference test’. The Reaction to Fire classifications were based on the tendency of common products used in the construction industry to exhibit ‘flashover’ in the test.

Flashover is a failure criterion which typically occurs when the combustion gases reach a temperature of around 600°C and there is a dramatic increase in the rate of heat release and smoke production. Combustion gas temperatures after flashover can range from 600°C to over 1300°C in real compartment fires.

Materials with good Reaction to Fire properties achieving class A1, A2 or B would not be expected to flashover.

Basically the amount of organic materials, their calorific value and the fire growth potential cause risk.

As the main raw materials for ROCKWOOL stone wool are diabase rocks together with a small amount of organic binder, **ROCKWOOL stone wool meets the criteria of the highest possible safety level for insulation products - Euroclass A1. Non combustible in nature, ROCKWOOL can withstand temperatures in excess of 1000°C without melting, only emits insignificant smoke and no burning droplets.**

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Class	Reaction to Fire	Flashover in the Room Corner reference test	Additional criteria tested for
A1	No contribution to a fire	No	None (<i>insignificant smoke release with no flaming droplets or particles expected</i>)
A2	No significant contribution to fire growth	No	Production of smoke & flaming droplets or particles
B	Very limited contribution to fire growth	No	Production of smoke & flaming droplets or particles
C	Limited contribution to flashover	Flashover after 10 min	Production of smoke & flaming droplets or particles
D	Contribution to flashover	Flashover between 2 to 10 min	Production of smoke & flaming droplets or particles
E	Significant contribution to flashover	Flashover before 2 min	Production of flaming droplets or particles (<i>Smoke release is expected to be substantial</i>)
F	Not tested or incapable of achieving Class E	No performance determined	

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