

Will it burn?

The question everyone should ask about the buildings in which they live, learn, work, play, and recover

A ROCKWOOL FIRE SAFETY FACT SHEET



Over 3.7 million fires break out in cities around the world every year, killing more than 43,000 people¹. Fires today develop more than six times faster than they did in the 1950s². And the materials hidden inside our walls, roofs, and facades can mean the difference between a fire that stays contained – and one that becomes a catastrophe.

Most people assume all buildings are built to the same safety standards. They're not. The choice of building materials – in particular insulation and cladding – is one of the most significant factors in whether a fire stays contained or becomes a catastrophe. It is not the only factor, but it is one that can be chosen. And it is one that far too often goes unexamined.

The good news lies in what we already know – and it's not complicated.

Non-combustible insulation and cladding reduce fire risk. Combustible counterparts don't.³

1. Stone wool doesn't burn – and it won't help a fire spread

ROCKWOOL stone wool insulation is non-combustible. It will not ignite, fuel, or spread a fire. With a melting point above 1,000°C, stone wool acts as a fire barrier that can help maintain the integrity of a building's structure and slow the transfer of heat for extended periods – often exceeding 90 minutes.⁴

That time matters. In a high-rise, evacuation is slow. In a hospital, patients may not be ambulatory. In a school, children need guidance. Every extra minute that non-combustible materials can buy is a minute for occupants to get out – and for firefighters to get in.

Compare that to combustible insulation materials like expanded polystyrene (EPS), extruded polystyrene (XPS), polyurethane (PUR), or polyisocyanurate (PIR). These are fossil fuel-based plastic foams. They burn. And they require the addition of chemical flame retardants just to meet minimum fire safety ratings for use in buildings.⁵

2. Stone wool doesn't produce significant amounts of toxic smoke

Toxic smoke – not flames – is the primary killer in building fires. In the Grenfell Tower disaster, all 72 people who died were overcome by toxic gases, according to the Grenfell Tower Inquiry⁶. The building had been wrapped in combustible plastic foam insulation and plastic-filled cladding panels. When those materials burned, they released hydrogen cyanide and carbon monoxide in lethal concentrations. The toxic fallout didn't end with the fire. Researchers found cancer-causing chemical levels 160 times higher

than normal in the surrounding area.⁷ A study of firefighters who attended the blaze found that those exposed to the smoke were more than three times as likely to develop respiratory and digestive diseases in the years that followed.⁸

ROCKWOOL stone wool contains approximately three percent resin binder by weight – compared to up to 100 percent in plastic foam insulation⁹. The result: stone wool does not produce significant amounts of toxic smoke and makes a negligible contribution to fire toxicity.

When a material burns, it's not just the flames that kill. It's what the material releases into the air that people are breathing.

3. Stone wool's fire properties last a lifetime – no flame retardants needed

Stone wool's fire-resistant properties don't wear out. Tests of ROCKWOOL stone wool recovered from real buildings – including a sample retrieved during the 2023 renovation of Copenhagen Airport – confirmed that thermal, mechanical, and fire-resistant performance had not diminished after 65 years in place. No maintenance. No degradation. No chemical flame retardants required.¹⁰

Combustible plastic foam insulation, by contrast, requires the addition of chemical flame retardants – substances designed to delay ignition but whose effectiveness can degrade over time. These chemicals raise concerns about environmental contamination, indoor air quality, and end-of-life disposal¹¹. Stone wool requires no chemical flame retardants. Its fire resilience is inherent, not engineered after the fact.

Non-combustible from installation to demolition and beyond. That's what inherent fire safety looks like.

4. The risks are growing – and so is the urgency

The fire safety landscape is changing fast. Wildfires are increasingly threatening populated areas. In January 2025, the most destructive wildfires in U.S. history tore through Los Angeles County, destroying around 16,000 buildings, displacing 200,000 residents, and causing an estimated 95–165 billion USD in losses¹². In Europe, 2025 was the worst wildfire season on record, with over two million hectares burned.¹³

Meanwhile, the accelerating roll-out of rooftop photovoltaic (PV) panels adds another layer of fire risk to buildings. PV panels are electrical equipment and can act as ignition sources. In the event of a rooftop fire, they can radiate heat back down to the roof structure, intensifying the blaze. Multiple insurance companies now advise against combining PV panels with combustible roof insulation.¹⁴

At the same time, Europe’s renovation wave – driven by the EU Energy Performance of Buildings Directive (EPBD), which member states must transpose into national law by May 2026¹⁵ – presents a once-in-a-generation opportunity. Millions of buildings will be renovated. The question is whether fire safety will be treated as non-negotiable or as an afterthought.

The Grenfell Tower Inquiry made it clear: safety depends on good design, the choice of suitable materials, and sound construction methods. We have an opportunity to build fire resilience into the renovation wave from the start, not bolt it on after the next tragedy.

As the Grenfell Tower Inquiry concluded, “safety of people in the built environment depends principally on... good design, the choice of suitable materials and sound methods of construction”.¹⁶

5. Regulations are catching up – but not fast enough

Fire safety requirements for buildings vary dramatically across Europe. People living in similar towers, care homes, or schools can face very different levels of protection depending on which country they’re in. They see exit signs and fire extinguishers and assume they’re equally safe. In reality, a building of the same height and type can have much better – or much worse – fire protection depending on national regulations.

Some countries are leading the way. After Grenfell, England tightened rules on combustible materials in high-rise and higher-risk buildings and established a new building safety regulator. Scotland banned combustible cladding on all new residential and high-risk buildings over 11 metres. Romania recently overhauled its fire safety laws¹⁷, now requiring non-combustible insulation and clearer guidance for complex systems such as ventilated façades and rooftop solar.

But in many countries, combustible insulation is still permitted on high-risk buildings like schools, hospitals, and elder care facilities – buildings where evacuation is hardest and the consequences of fire are most severe.

ROCKWOOL encourages governments to ban combustible façade insulation and cladding on all high-rise and high-risk buildings.

Our choices matter

Non-combustible materials don’t burn.
Combustible materials do.

When non-combustible alternatives like stone wool are readily available, why take the risk of using anything else?

It’s called resilience by design. If it’s worth building, it shouldn’t burn.



Endnotes

- 1 CTIF World Fire Statistics Reports. Available at: ctif.org
- 2 Underwriters Laboratories, "Analysis of Changing Residential Fire Dynamics and its Implications on Firefighter Operational Timeframes" (2014), p. 16.
- 3 EN 13501-1 (European fire classification standard). Combustible insulation materials including EPS, XPS, PUR and PIR are classified in Euroclass B–F, confirming they contribute to fire spread. Stone wool is classified Euroclass A1 — non-combustible. See also footnote 4.
- 4 EN 13501-1 (European fire classification standard for construction products). GMC approved language; EURIMA language on durability available offline — contact fire safety SME.
- 5 Common brominated and organophosphate flame retardants used in EPS, XPS, PUR and PIR insulation are documented in: (1) ECHA restriction and authorisation dossiers under REACH for substances including HBCDD (historically used in EPS/XPS) and various organophosphates; (2) European Commission, "Study on the EU market of flame retardants in articles and mixtures" (2022) — documents flame retardant use by product type including building insulation; (3) ECHA Candidate List of Substances of Very High Concern. Available at: echa.europa.eu
- 6 Grenfell Tower Inquiry, Phase 2 Report Overview, September 2024, paragraphs 2.103 and 113.66. Available via UK Government Web Archive at The National Archives.
- 7 Professor Anna Stec, University of Central Lancashire, independent soil and debris testing. Published in *Chemosphere* (2019). Reported by BBC News. [Source link](#)
- 8 Professor Anna Stec, University of Central Lancashire, with assistance from the Fire Brigades Union. Published in *Journal of Occupational and Environmental Medicine*, Vol. 67, No. 1, January 2025. [Source link](#)
- 9 GMC approved language. ROCKWOOL product specification data.
- 10 TI (Danish Technical Institute), 2023, "Testing ROCKWOOL insulation from CPH airport hangar 4" — confirms fire, thermal and mechanical performance after 65 years. On indoor air quality: ROCKWOOL stone wool insulation is proven not to have a negative impact on the indoor environment. Residual binder content in finished products is below 0.1% formaldehyde in free form, meeting EU Taxonomy DNSH criteria (Appendix C). Stone wool carries no classifications for adverse impacts on human health from the European Chemicals Agency (ECHA). Sources: Salthammer et al., "Formaldehyde in the Indoor Environment" (2019); EU ECHA substance information [Source link](#); ROCKWOOL Group Annual Report 2025, p. 84.
- 11 Organophosphate flame retardants (OPFRs) used in foam insulation products are semi-volatile compounds that are not chemically bonded to the host material, enabling migration into indoor air and dust. Studies have documented flame retardant transfer from treated insulation boards into settled dust within hours of contact, and emissions from PUR foam building products under normal indoor conditions. Sources: (1) Liagkouridis et al., "Mass transfer of an organophosphate flame retardant between product source and dust in direct contact," *Emerging Contaminants*, Vol. 3, No. 3, 2017; (2) Kemmlin et al., "Flame retardants in the indoor environment — Part II: release of VOCs from polyurethane," *Indoor Air*, PubMed ID 12608925; (3) ECHA Candidate List of Substances of Very High Concern — see note 5.
- 12 Los Angeles County Department of Economic Opportunity / LAEDC, Economic Impact Analysis of January 2025 Wildfires, September 2025. Zhiyun Li, William Yu, University of California Los Angeles, Economic Impact of the Los Angeles Wildfires, February 2025.
- 13 European Forest Fire Information System (EFFIS) / European Commission Joint Research Centre, Wildfire Season 2025 Report, December 2025.
- 14 Swiss Re Institute, "Rooftop Solar: Emerging Risk Control Needs for Properties," October 2024.
- 15 Energy Performance of Buildings Directive (EU/2024/1275), entered into force 28 May 2024.
- 16 See note 5.
- 17 England: Building Safety Act 2022 and post-Grenfell building safety reforms. Scotland: combustible cladding ban on residential and high-risk buildings over 11 metres, April 2022. Romania: fire safety law overhaul, 2025.

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ROCKWOOL Group is the world leader in stone wool products, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibres for industrial use to insulation for the process industry and marine & offshore. We are committed to enriching the lives of everyone who experiences our products and services, and to helping customers and communities tackle many of today's biggest sustainability and development challenges including energy consumption, noise pollution, fire resilience, water scarcity, urban flooding and more.

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