

# Flat roof systems

Durable protection with  
liquid waterproofing systems



 **KEMPER**  
SYSTEM



## Flat roofs – a waterproofing challenge

A flat roof is not only defined as a roof with no pitch or a pitch of less than 10°: all roofs that require waterproofing are classified as flat roofs. These include domed roofs, sawtooth roofs, VT gabled roofs, "butterfly roofs", HP shell roofs.

Flat roofs unite effectiveness with a wide range of advantages. The fact that they are economic, can be used for additional purposes and provide space for superstructures has made the flat roof the de facto standard for commercial and industrial buildings.

Flat roofs are exposed to wind and the elements, making them one of the structural elements most prone to failure, with damage commonly caused by leaking around details such as upstands, penetrations and superstructures.

Substrates and materials with different expansion coefficients, permanent temperature fluctuations and the impact of the environment – a dependable waterproofing system must fulfil a great many requirements. KEMPER SYSTEM's liquid resin-based system KEMPEROL® is a dependable solution that durably protects and waterproofs structures even under the toughest, most demanding conditions.

Liquid, wet-on-wet waterproofing systems are the state-of-the-art solution for a variety of substrates and are listed in the current Standards for Waterproofing Flat Roofs along with bitumen and plastic sheeting as effective roofing solutions.





## New builds

As well as being the solution of choice for repairs, experts are increasingly choosing durable, liquid waterproofing solutions from the word go. Longer intervals between inspections, maintenance contracts and an expected working life of 25 years certified according to ETAG 005 provide peace of mind for many years. The permanently elastic membrane self-bonds with most substrates, bridges small cracks and dependably compensates for different material expansion coefficients.



## Repairs

Tackling water damage, repairing substandard refurbishment work, production downtimes or idle periods all cost money. Economic lightweight metal roofs have firmly established themselves in the construction industry. When these roofs fail, 'liquid' is the fastest and most cost-effective repair option. As KEMPEROL® membranes are lightweight, in most cases it is not necessary to remove the old roofing material. As an additional advantage, the solvent-free KEMPEROL® 2K-PUR und KEMPEROL® 1K-SF waterproofing systems can be applied straight to non-absorbent substrates without a primer.

In many cases, roof failure is due to water infiltration, and listed historic buildings and monuments are particularly affected by this problem due to their age. Because KEMPEROL® is applied in liquid form, it will effortlessly coat even the small gaps between balustrades, around cornices and edges as well as all complex details, which are typical weak spots prone to failure. The system forms a permanent elastic bond and bridges cracks.



## Systems for untrafficked roofs and around details

System	Product	Material
Solvent-free	KEMPEROL® 2K-PUR	2-component PU
Single component	KEMPEROL® 1K-PUR	Single component PU
Solvent-free and single component	KEMPEROL® 1K-SF	Single component PU
Classic	KEMPEROL® V 210	UP

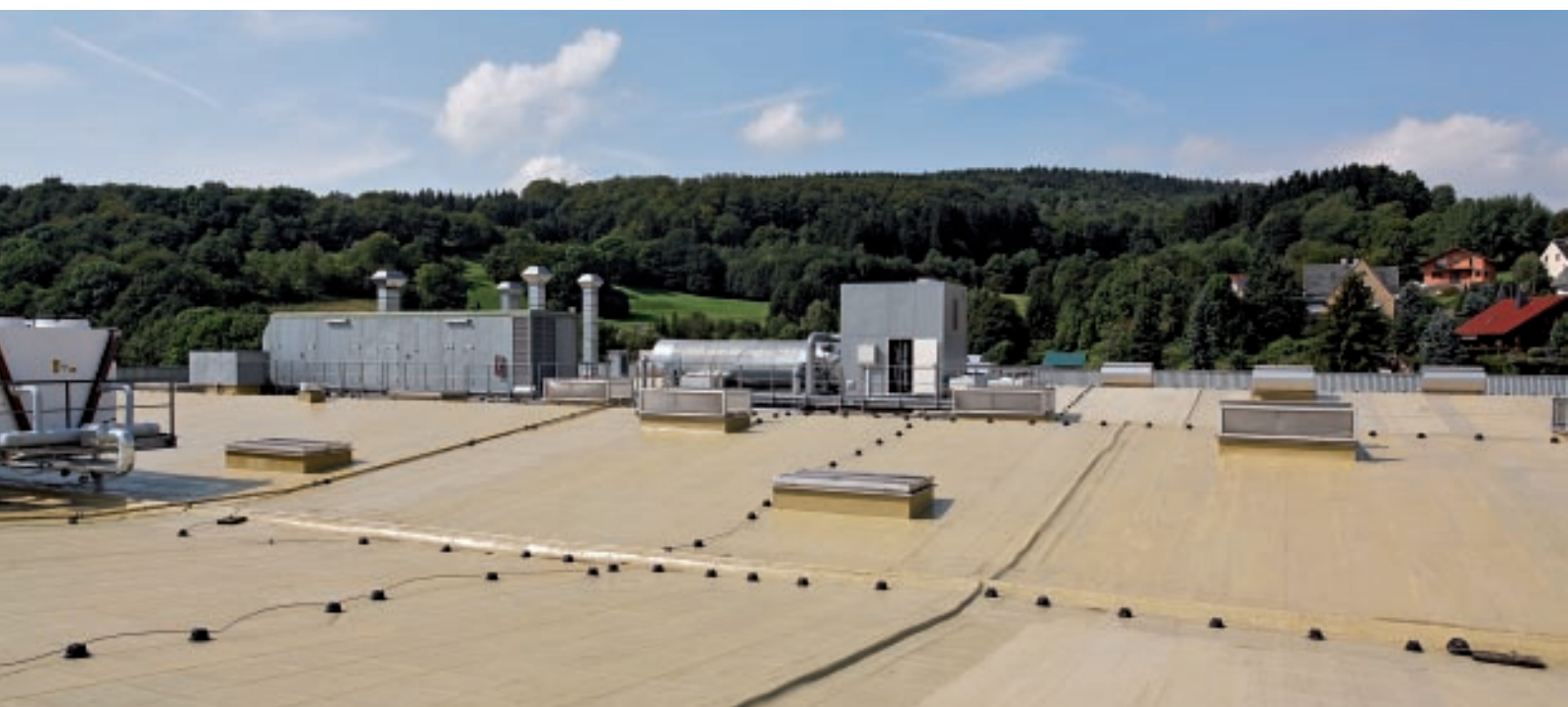
### The solvent-free system – a dependable safety package for any roof

KEMPEROL® 2K-PUR is a solvent-free waterproofing system for all applications. Because it is odourless and is applied cold, there's no need to switch off the air conditioning system when waterproofing flat roofs with this product.

On non-absorbent substrates, such as bitumen, KEMPEROL® 2K-PUR is applied without a primer.

### The single component system – easy-to-apply protection around details

KEMPEROL® 1K-SF and KEMPEROL® 1K-PUR are ideal for easy, fast application around complex details. These straight-from-the-can products can be used to tackle waterproofing around awkward penetrations and upstands. They apply fast, with minimum fuss and can also be used in combination with other roofing materials.





## The classic system – with over 40 years of proven effectiveness

Based on flexible, unsaturated polyester resin, the highly versatile KEMPEROL® V 210 system was the very first fleece-reinforced waterproofing system on the market. For many years, the system was primarily used for waterproofing flat roofs, until builders also started using it for underground car parks, parking decks and balconies.

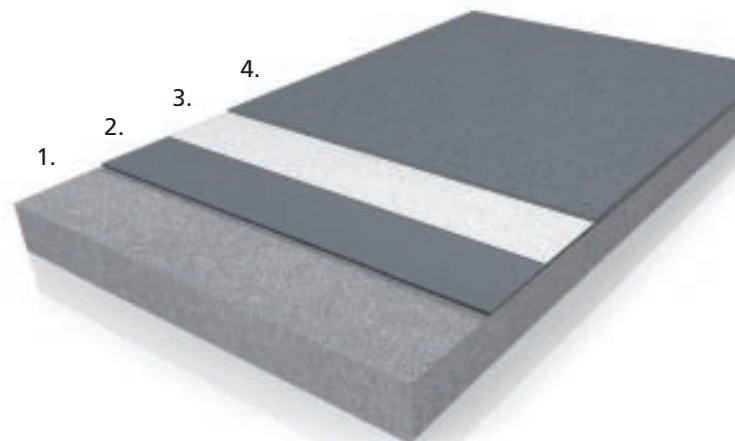
All KEMPEROL® products are applied using in the same three steps: apply first coating of KEMPEROL®, lay fleece, saturate with second coat of KEMPEROL®.

All materials cure to form a seamless, durable, permanently elastic bond with the substrate. Single component systems can be used straight from the can; 2 and multi-component products are mixed on site. The chemical reaction starts as soon as the components have been mixed. As a general rule of thumb: the higher the ambient temperature, the faster the reaction.



### System build-up

1. Primer (optional)
2. KEMPEROL® waterproofing, first coat
3. Reinforcement fleece
4. KEMPEROL® waterproofing, second coat



## Combined roofs

Modern roofs are increasingly complex, making them difficult to waterproof securely using traditional materials. The advantages of a liquid waterproofing system are unsurpassed, particularly around awkward details and penetrations: longer durability, fewer weak spots, reduced costs and simple, easy to use technology. KEMPEROL® can be combined with almost all standard roofing materials.



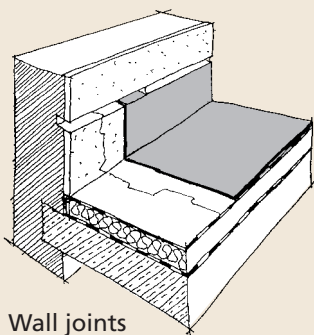
## Watertight details

The functionality and working life of any waterproofing system depends to a large extent on the quality of the application around the roof details. Alongside the use of unsuitable materials, the most common cause of roof failure is inadequate waterproofing around critical details, such as penetrations and upstands. These classic weak spots include aerials, parapets, superstructures, lightning conductors, anchors, edges, I-beams, ventilation pipes, joints, drains, valley gutters, gantries, roof lights and air conditioning vents.

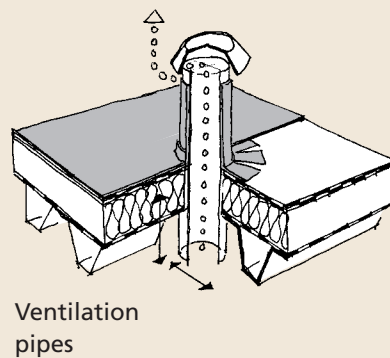
By using a liquid applied waterproofing system all these penetrations, upstands and complex details, even those in tight, awkward corners, are seamlessly and durably included in the tough KEMPEROL® membrane.



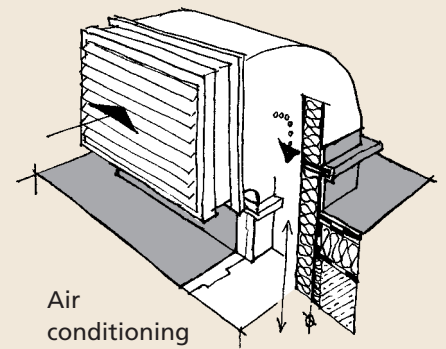
## Waterproofing details on flat roofs:



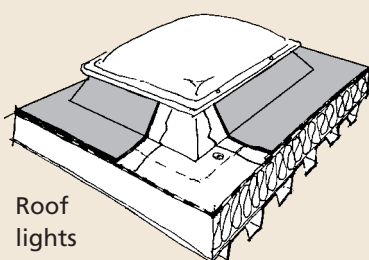
Wall joints



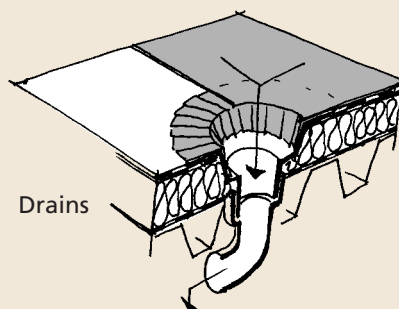
Ventilation pipes



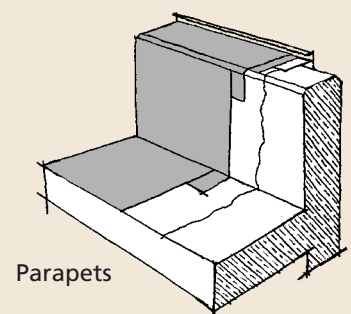
Air conditioning



Roof lights



Drains



Parapets

## Advantages at a glance

### Liquid application

- No seams or joints
- Applied cold, no naked flame needed
- Minimum film thickness
- Low imposed weight

### Forms a seamless bond with the substrate

- No mechanical fixtures needed
- Resistant to wind suction

### Bonds to almost all substrates

- Forms a permanent bond between the old and the new surface (in most cases it is not necessary to remove the old material)
- Any penetrations and upstands installed at a later point can be easily incorporated
- A variety of different materials/substrates can be incorporated in the surfacing system

### Certified according to ETAG 005, W3 categorisation

- Certified expected working life of 25 years
- Permanently elastic from -30°C to +90°C
- EN 13501 fire rating
- UV-resistant: will not become brittle, not additional protective coating required
- Vapour-permeable: allows damp substrates to dry
- Root resistant according to FLL guidelines

### Solvent-free (KEMPEROL® 2K-PUR)

- One system for internal and external application
- Air conditioning can remain running during application
- For sensitive areas, e.g. nurseries, schools, hospitals,
- Ideal for refurbishing occupied buildings

### Wide choice of colours and finishes

- By incorporating coloured quartz sand
- By incorporating chips
- Choice of bespoke colours
- Adapts to all shapes



KEMPER SYSTEM is a modern chemicals company with a deep sense of responsibility for people and the environment. We use materials from renewable sources wherever possible. KEMPER SYSTEM was a pioneer in solvent-free waterproofing and surfacing systems; polyurethane-based, solvent-free liquid waterproofing systems have been part of our portfolio for many years.

Sustainability is a key issue for us. KEMPER SYSTEM produces fully automated and in compliance with respect to the environment. Our plants, which are operated by highly qualified, skilled chemical workers, comply with the latest standards. Our operations fulfil all the requirements of modern, forward-looking environmental protection because we believe that ecology and business go hand in hand.



KEMPER SYSTEM is the global market leader in the liquid-applied waterproofing segment. Ten subsidiaries in Europe, Asia and the United States, as well as cooperations with distribution partners in many countries ensure that KEMPER SYSTEM products and systems are available around the world.

Our excellent reputation as experienced specialists for difficult applications and challenges has made us an internationally sought-after partner for architects, planners, builders and contractors. Make our competence work for you!



## Technical support and services

- Expert advice and support from our experienced technical design team
- Advice on repair projects
- Full project specifications
- Technical advice and guidance for the duration of the project
- Training courses for KEMPEROL® contractors on-site, KEMPEROL® training sessions at the KEMPER SYSTEM Training Centre and regional courses
- For detailed product information, please contact us or visit our website

