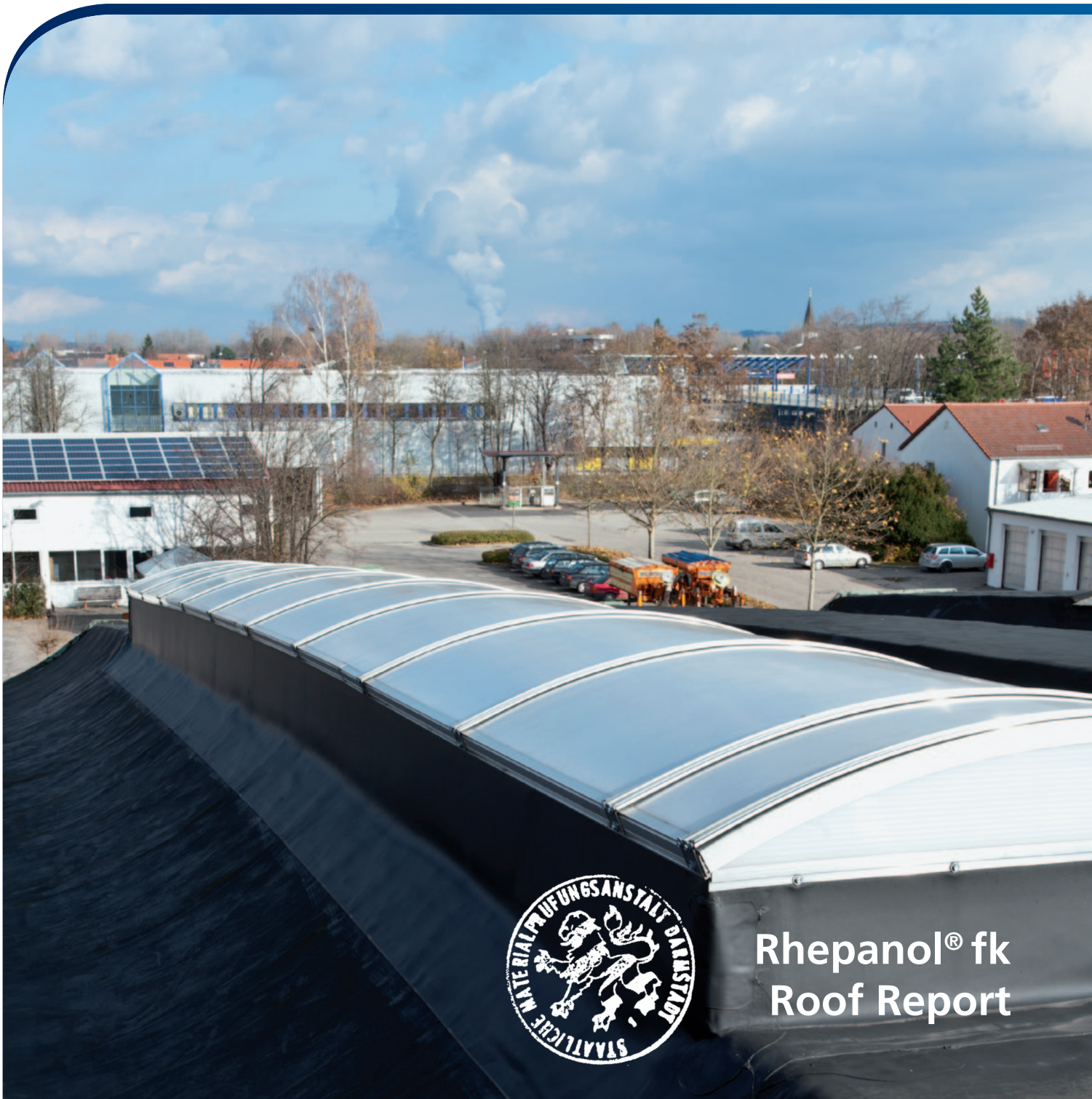
Proven durability of Rhepanol® fk –
up to 30 years of unimpaired roof integrity.

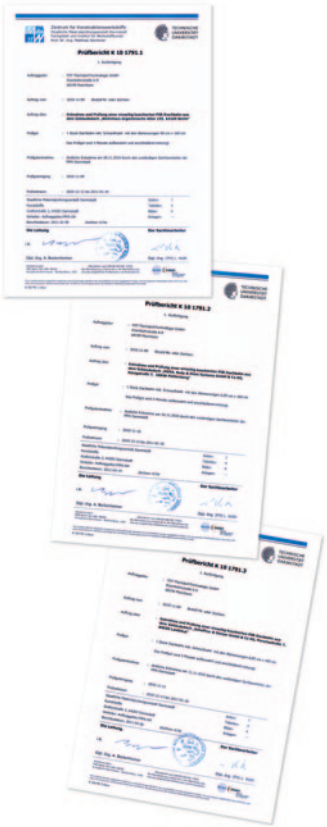


Rhepanol® fk Roof Report

Long live our roofing membranes.

Object of survey

Rhepanol fk is the name of our synthetic roofing membrane, which has been applied on more than 95 million square metres of roof area worldwide. We at FDT know its practical strengths and regard this measurable success as proof of our work. However, being manufacturers with a strong commitment to quality, we attach the same importance to the opinion of independent experts. Therefore, on our request, the Material Testing Institute Darmstadt has been testing buildings waterproofed with Rhepanol fk for a long time. In this roof report we have compiled for you after many years of wear, the condition and stability of the membrane and the further anticipated life expectancy.



The expert's opinion: The official results of the Material Testing Institute are proof of the outstanding durability of Rhepanol fk.

Testers with a passion

The Material Testing Institute (MPA) in Darmstadt together with the Materials Department and Institute (IfW) of the Darmstadt Technical University forms the independent centre of competency for materials and components analysis. For them, testing is a vocation – in the building industry as well as in many other fields. The scientists and test engineers are renowned experts for product scrutiny. Their opinion is highly appreciated throughout the industry.

What is the approach?

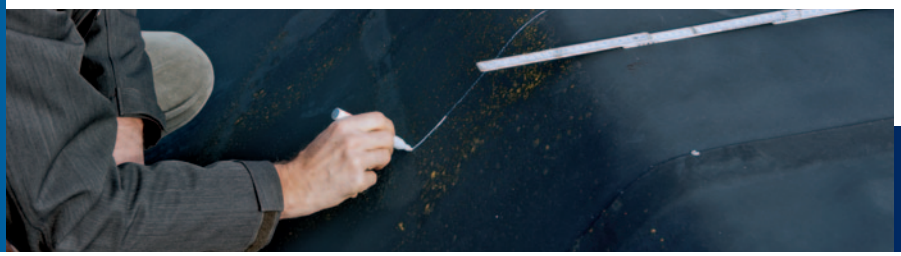
The standard DIN 16 731 is a recognized official quality benchmark defining requirements for new roofing membranes. Rhepanol fk has been tested to these criteria and has shown sensational results. Even 30-year-old Rhepanol fk has proven to be of the same quality as new material.

SCHAFFNER & STELZER, LANDSHUT

- Year of application: 1984
- Roof area: 6,500 m²
- System: Rhepanol fk
- Solution: adhesive bonding
- Sampling: 11.11.2010
- Result: Requirements according to DIN 16726 are met even after 27 years of service

IN TOP CONDITION for 27 YEARS

Rhepanol® fk in practice: Schaffner & Stelzer GmbH & Co. KG, Landshut



The moment of truth for a flat roof

Sampling on the roof of the Schaffner & Stelzer warehouse in the city of Landshut was carried out by an MPA test engineer on 11 November 2010. When opening the roof sealing, special attention was paid to taking material to be tested from an area including seams.

A strong piece of history

Refurbishment of the warehouse roof was carried out in 1984. At that time, the site management decided not to remove the old bituminous layer. Thus, the black roofing membrane Rhepanol fk – bitumen compatible, with a synthetic fleece backing – could be installed directly on top of the sanded old material.

What did the experts say?

Good news for all involved: both the object survey and the material testing confirmed the integrity of the arched roof. Even after 27 years of service, there is not the least indication of any deterioration. Rhepanol fk was and still is in full compliance with DIN requirements.

Top performance in figures

Actual proven service life: 27 years.

Test report results K 10 1791.3

Properties	Findings* after 27 years	Requirements for new material according to DIN 16726
General condition	free from blisters, cracks and cavities	free from blisters, cracks and cavities
Overall thickness d in mm	smallest single value: 2.32 average value: 2.40	smallest single value: > 2.2 average value: from 2.3 to 2.8
Elongation at max. tensile force F^{max} in N	along: 476 across: 514	> 400
Elongation at max. tensile force eB in %	along: 60 across: 61	> 50
Tear-growth resistance/Graves in N	along: 80 across: 93	> 60
Perforation test	watertight at fall 500 mm	watertight at fall 300 mm
Bending at low temperatures –20 °C	no cracks	no cracks

*Arithmetic mean, if not indicated otherwise

Not only for commercial buildings is Rhepanol fk an obvious solution. This economic and reliable flat roof lends itself also to residential buildings such as on this housing estate. Its investors can take it easy. There won't be any maintenance bills for a long time!

Nice and dry living conditions for decades: the houses in the Argentinische Allee. Waterproofed with **Rhepanol fk.**

HOUSING ESTATE ARGENTINISCHE ALLEE

- Year of application: 1984/85
- Roof area: 6.000 m²
- System: Rhepanol fk
- Solution: mechanically fastened on a timber decking
- Sampling: 9.11.2010
- Result: Requirements according to DIN 16726 are met even after 25 years of service

Rhepanol® fk in practice:
Housing estate Argentinische Allee, Berlin

The moment of truth for a flat roof

Berlin is always worth a trip. Whether regular tourists would have visited the housing estate at the Argentinische Allee, however, is unlikely. The fact is, an MPA representative has surveyed the roof of the residential building and has taken a sample of Rhepanol fk.

A strong piece of history

In 1984/85, the housing estate underwent major refurbishment, including the flat roofing. In order to avoid costly disposal of the old roofing material, Rhepanol fk was laid on the existing old bituminous coverings and fastened mechanically to the original timber boarding.

What did the experts say?

This exercise shows that even after 25 years the roofing membrane has the same functional qualities as is required for new material according to DIN 16726.

Top performance in figures

Actual proven service life: 25 years.

Test report results K 10 1791.1

Properties	Findings* after 25 years	Requirements for new material according to DIN 16726
General condition	free from blisters, cracks and cavities	free from blisters, cracks and cavities
Overall thickness d in mm	smallest single value: 2.53 average value: 2.61	smallest single value: > 2.2 average value: from 2.3 to 2.8
Elongation at max. tensile force F^{max} in N	along: 397 across: 423	> 400
Elongation at max. tensile force eB in %	along: 49 across: 65	> 50
Tear-growth resistance/Graves in N	along: 68 across: 77	> 60
Perforation test	watertight at fall 500 mm	watertight at fall 300 mm
Bending at low temperatures –20 °C	no cracks	no cracks

*Arithmetic mean, if not indicated otherwise

DURA is an acknowledged component supplier to manufacturers of passenger cars and small lorries. Today, you will find components from the comprehensive DURA product range in almost every car coming off the assembly lines.

Everything but fragile – the roof of the Glass Systems factory, a member of the DURA group of companies. In 1981 the buildings of the subsidiary in Plettenberg were covered with **Rhepanol fk.**

DURA BODY & GLASS SYSTEMS GMBH & CO. KG

- Year of application: 1981
- Roof area: 10.000 m²
- System: Rhepanol fk
- Solution: mechanically fastened, partly seam fastening or adhesive bonding
- Sampling: 10.11.2010
- Result: Requirements according to DIN 16726 are met even after 30 years of service

Rhepanol® fk in practice:
DURA Body & Glass Systems GmbH & Co. KG, Plettenberg

The moment of truth for a flat roof

November 10, 2010. That day, sampling was to be carried out in order to examine how Rhepanol fk had served as a waterproofing on top of the factory roof during all these years. The expert in charge from the Material Testing Institute conducted the tests very thoroughly.

A strong piece of history

In 1981 Rhepanol fk was applied in Plettenberg. To a total area of 10,000 m², the roofing membrane was installed partly by mechanically fastening and partly by adhesive bonding.

What did the experts say?

Considering a service life of more than three decades, the test results are even more impressive. The complete roof area, including the self sealing overlaps, were found to be in impeccable condition.

Top performance in figures

Actual proven service life: 30 years.

Test report results K 10 1791.2

Properties	Findings* after 30 years		Requirements for new material according to DIN 16726
General condition	free from blisters, cracks and cavities		free from blisters, cracks and cavities
Overall thickness d in mm	smallest single value:	2.63	smallest single value: > 2.2
	average value:	2.70	average value: from 2.3 to 2.8
Elongation at max. tensile force F^{max} in N	along:	424	> 400
	across:	420	
Elongation at max. tensile force eB in %	along:	54	> 50
	across:	68	
Tear-growth resistance/Graves in N	along:	74	> 60
	across:	78	
Perforation test	watertight at fall 500 mm		watertight at fall 300 mm
Bending at low temperatures –20 °C	no cracks		no cracks

*Arithmetic mean, if not indicated otherwise

SIG Design & Technology

Mannheim House
Gelders hall Road
Shepshed
Lecistershire LE12 9NH

Tel 01509 505714
Fax 01509 505475
www.singleply.co.uk

09 | 03 | 10/11 | 2000 | GB |