



KAIMANN

We create solutions.



Kaimann Industrial Solutions

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HIGH RELIABILITY FOR INDUSTRIAL APPLICATIONS



For high efficiency, permanent and reliable insulation of...

- cryogenic applications
- offshore and marine installations
- outdoor applications
- installations into the ground
- tanks, containers
- pipelines
- pumps, aggregates, valves
- ➔ ...the entire equipment!

Kaiflex R-FORCE®: insulation the modern way

Kaiflex® **R-FORCE** plus



SERIEF:
Semi-rigid elastomeric foam

High compressive strength
>50 kPa

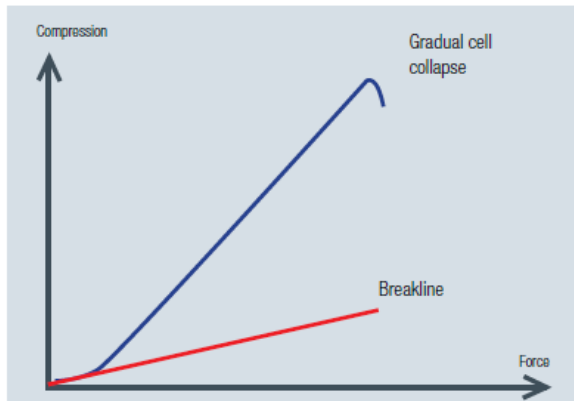


Ultra low thermal expansion
 $3,94 \times 10^{-6} / K^{-1}$

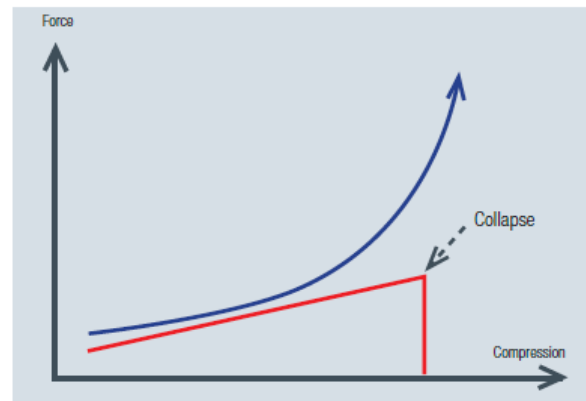


Applied like a prefab –
fast, safe and versatile

Kaiflex R-FORCE® in comparison with thermoplastic materials

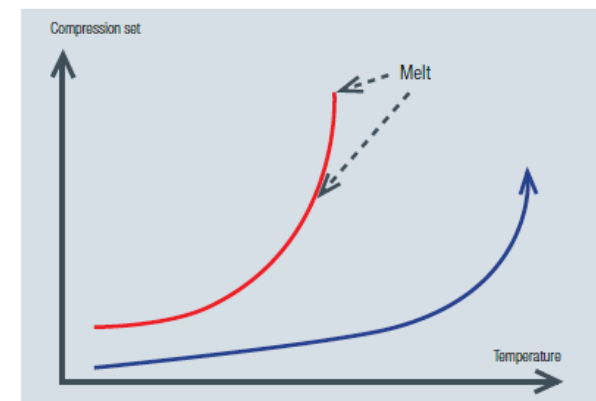


— Kaiflex R-FORCE
— Rigid foam



— Rubber-based
Kaiflex R-FORCE foam
— Thermoplast foam

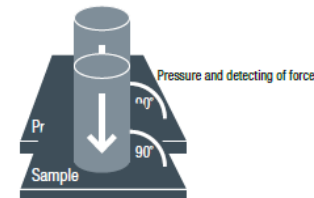
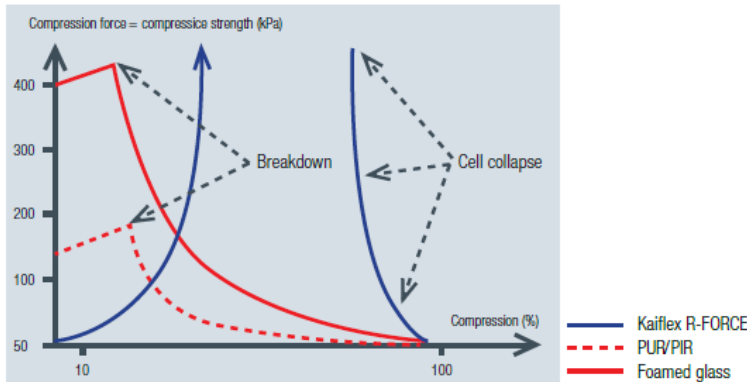
No creeping under pressure or gravity.



— Rubber-based
Kaiflex R-FORCE foam
— Thermoplast foam

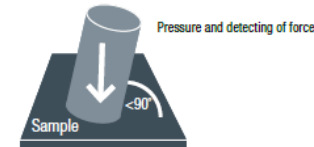
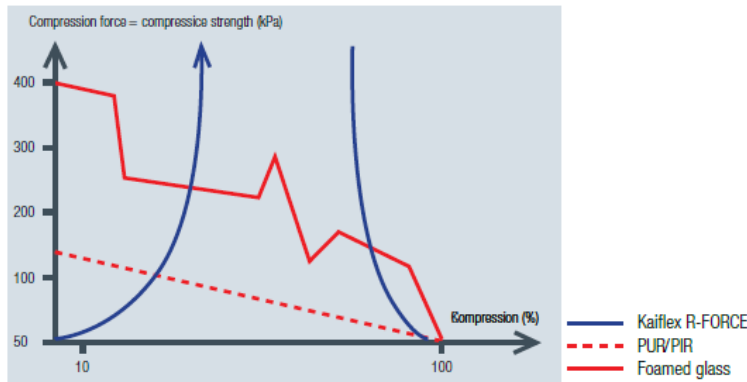
No cell collapse at high load or sudden impact.

Kaiflex R-FORCE[®] in comparison with rigid materials



Applying 90° angle weight load
(e.g. EN 826):

PIR and glass start high, but break soon. Kaiflex R-FORCE starts lower but progressively sets a counterforce to pressure; does not break.



Applying non-rectangular load:

Shear force or vibration leads to destruction of rigid materials; glass will irregularly crack down, PIR will be sheared to dust. Kaiflex R-FORCE response is independent from the angle the force applied.

Kaiflex R-FORCE[®] elastomeric semi-rigid foams offer new, versatile advantages

Broad property profile

- Rubber, but compression resistant
- Compression resistant, but shatterproof
- Unique, patent pending
- Universal



High compressive strength
>50 kPa



Ultra low thermal expansion
 $3,94 \times 10^{-6} \text{K}^{-1}$

- ➔ Densities from 60 to 300 kg/m³
- ➔ Thermal conductivity $\lambda \leq 0,036 \text{ W}/(\text{m}\cdot\text{K})$ at +10 °C
- ➔ Moisture barrier effect up to $\mu \geq 10.000$ without or $\mu \geq 50.000$ with Kaiflex Claddings

Kaiflex R-FORCE[®] elastomer with high load capacity and sustainability

Kaiflex R-FORCE[®] is a semi-rigid elastomeric foam (SERIEF), based on patented and patent-pending technology:

- Flexibility as known from rubbers
- Durable as known from PIR or foamed glass
- **Load-bearing without breaking.**

Properties:

- Easy to give shape, e.g. for prefabs
- Full heat tracing compatibility
- Non-corrosive, not abrasive, dust and fiber free
- **First choice for industrial, thermal and sound shielding.**



Kaiflex R-FORCE[®] technical features

Kaiflex R-FORCE

Ready to carry the burden

- Closed cell structure
- Densities from 60 to 300 kg/m³
- Compression resistance from >50 to 160 kPa
- Ideal as support or reinforcing structure: self-supporting, non-sag
- Very low temperature-induced dimensional change
- Superior to glass or PIR solutions:
 - Rigid but still flexible
 - No risk of ruptures or cracks
 - Easily compensates installation tolerances

Typical applications of Kaiflex R-FORCE®

- Multilayer insulation
- Half-shell and prefab parts
- Pipe hangers and supports
- Heat tracing embedding
- Structural support
- Step-on pipework



Kaiflex[®] comCLAD



The alternative. Outperforming metal cladding.

- innovative solution for cladding: Kaiflex Protect HD directly bound to a Kaiflex R-FORCE support gives comCLAD HD
- extensive and thus risky wet gluing of insulation material is no longer necessary
- safest and easiest way to apply a closed, tight flexible cladding
- no warping, no wrinkles; smooth and equal surface; easy and safe bonding and sealing:
 - rubber foam to rubber foam
 - rubber foam to cladding
 - cladding to cladding



Kaiflex comCLAD® technical features

***Kaiflex* comCLAD**

One-step shield, glue & seal

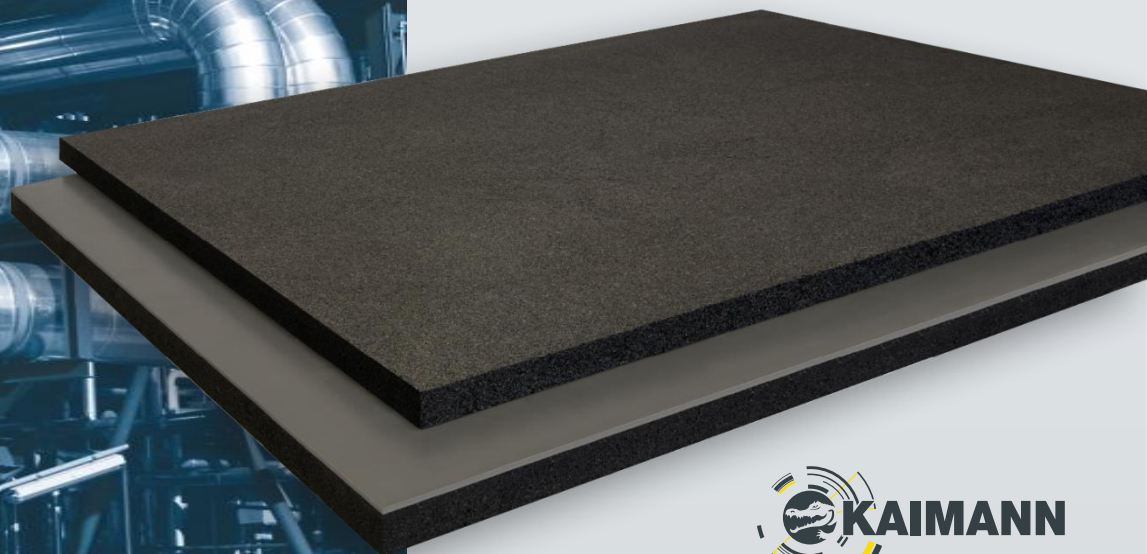
- Highly durable reinforced polymer cladding
- UV and weathering resistant up to 10 years
- Co-welded onto R-FORCE support for easy application
- Both R-FORCE and Protect HD cladding can be welded
- Superior to other claddings:
 - Insulation + cladding in one step
 - Welding technology: gluing and sealing in one step
 - No adhesives, no mastic
 - Tight and safe cladding independent from environmental conditions: from permafrost to tropics

Kaisound®



The most flexible approach to soundproofing

- Soundproofing system
- Absorption and reflection
- Insulation and damping
- Flexible and versatile



Kaisound[®] technical features

Kaisound[®]

Noise reduction

- Open cell structure
- Densities 140 and 240 kg/m³
- ISO 15665 and Shell class D compliant
- ISO 11654 class A absorber at 50 mm
- Holistic thermal-acoustic solution:
 - Semi-rigid, non-sag in combination with R-FORCE
 - Tested to work with polymeric (comCLAD), metal and GRP cladding
 - Significant reduction of any kind of structure and airborne noise with sound barrier SB



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