



Longer **visibility of escape and rescue routes** in the event of fire

## Kaiflex<sup>®</sup> KK plus s1

**Uncompromising. Because safety comes first!**

- With B/B<sub>L</sub>-s1, d0 Kaimann's highest safety standard for fire-sensitive areas
- Low smoke development in case of fire
- Significantly reduces contamination of building inventory and technical equipment
- The insulation material for highly frequented public and commercial buildings
- Reliably prevents condensation and reduces the risk of corrosion under the insulation



# Kaiflex® KKplus s1

## Uncompromising. Because safety comes first!

With Kaiflex KKplus s1, Kaimann offers an optimally coordinated insulation system, which in its entirety meets European fire class B/B<sub>L</sub>-s1, d0 per EN 13501-1 in the event of fire – the highest class attainable with elastomeric foams. The insulation, consisting of FEF (flexible elastomeric foam), a closed-cell synthetic rubber, is thus Kaimann's highest safety level for areas needing extra fire protection. At smoke development class s1 ("low smoke development"), the insulation meets the strictest European requirements for smoke and the building supervisory requirements of MVV TB for flame-resistant building products, and for many pipe penetration solutions it provides at least 90 minutes of fire resistance per DIN 4102-11 and EN 1366 without additional fire protection mat.

In the event of a fire in occupied areas, the use of Kaiflex KKplus s1 means that escape and rescue routes remain visible longer, even as smoke spreads. The low smoke development of the highest smoke class s1 reduces the risk of injury and property damage by significantly reducing the danger of suffocation and smoke poisoning, as well as the contamination of building inventory and technical equipment.

Hoses with patented KaiCene technology, a further development of the standard material, meet s1 classification even without coating, thus offering both low smoke development and high flame retardance. This high-performance material mix thus meets the especially high requirements of fire protection for technical insulation. Additionally, the higher standards for flame retardance for panel materials are met by the use of a low-smoke laminate, which in the event of fire foams up and so acts as a barrier. The result is excellent smoking behaviour.

- With B/B<sub>L</sub>-s1, d0 Kaimann's highest safety standard for fire-sensitive areas
- Low smoke development in case of fire
- Significantly reduces contamination of building inventory and technical equipment
- The insulation material for highly frequented public and commercial buildings
- Reliably prevents condensation and reduces the risk of corrosion under the insulation



### Versatile applications

This premium insulation system is especially suitable for use in highly frequented public and commercial buildings like airports, large office complexes and hotels, as well as apartment buildings, industrial plants and ships. Due to its fibre-free and antimicrobial nature, it meets the highest hygienic requirements, and so can be used in medical facilities such as hospitals. Here the closed-cell insulation provides ideal, unbroken heat and cold insulation of pipes and ductwork. The high mechanical resilience of the glass fibre-reinforced coating makes additional surface protection superfluous in many areas.

### Smart advantages

Kaiflex KKplus s1 combines very good lambda values of  $\leq 0.038 \text{ W}/(\text{m}\cdot\text{K})$  with the highest standards in fire performance. This flexible insulation with its closed-cell structure acts as a water vapour barrier, preventing the formation of condensation and thereby reducing the risk of CUI (corrosion under insulation).



Longer **visibility of escape and rescue routes** in the event of fire



### Reduced smoke development

In the event of a fire, visibility in rooms and corridors must be guaranteed for as long as possible. Through improved fire behaviour, Kaiflex increases personal protection and reduces contamination of building inventory.



### Complete system from a single source

Often the building materials have to be changed within a trade. Kaimann offers a coordinated overall system consisting of closed-cell insulation materials and matching accessories - without the need to change the material type.



### Reliable prevention of condensation

Dew formation can lead to damage to insulation as well as technical equipment. Due to its closed-cell property, Kaiflex keeps pipes and ducts dry and prevents corrosion under the insulation (CUI).



Further information, technical documents, application guides, services and much more can be found online at

[www.kaimann.com](http://www.kaimann.com)

### Certified quality



#### EPD

Transparent ecological balance thanks to an "Environmental Product Declaration".

### Related system components and accessories from our product range



#### Kaiflex

RT-KKplus s1/s2  
Insulated pipe support to prevent condensation and thermal bridges.



#### Kaiflex Pyrostar

Fire protection mat for sealing off insulation on pipelines in wall and ceiling penetrations.



#### Special Adhesive, Tape, Tools,...

Accessories designed for the optimal and efficient application of Kaiflex products

### Kaimann Services



#### KaiCalc

Insulation thickness calculator for technical insulation in heating and cooling applications.

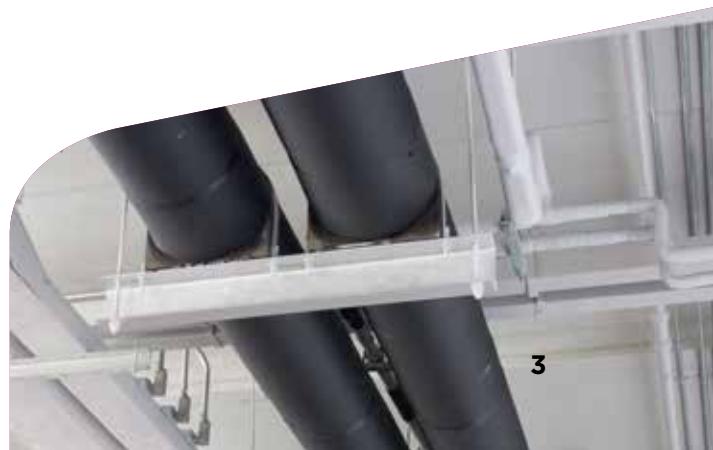
[www.kaicalc.com](http://www.kaicalc.com)



#### Fire Protection Planer

Just a few clicks to the ideal insulation material for a safe fire protection system.

[www.sgti-firepenetration.com](http://www.sgti-firepenetration.com)



## Kaiflex KKplus s1 Technical Data

<b>Material type base</b>			Elastomeric foam based on synthetic rubber, Flexible Elastomeric Foam (FEF)	
<b>Material type coating</b>	Tube		uncoated (KaiCene-technology)	
	Sheet		Glass fabric, single-side coated with a expanded graphite covering, low-smoke and intumescent in case of fire (INCER-AM-Cladding)	
<b>Cell structure</b>			Closed cell	
<b>Colour</b>		Base material	Anthracite	
	Sheet	Coating	Anthracite	
<b>Max. service temperature</b>	Pipe		+110 °C	
	Flat surface		+85 °C	
<b>Min. service temperature</b>			-50 °C (-200 °C)	see remark (1)
<b>Thermal conductivity</b>	$\lambda_0$		$0.038 + 9.0144 \cdot 10^{-5} \theta + 3.29744 \cdot 10^{-7} \theta^2$	
	at -10 °C		$\leq 0.037 \text{ W/(m}\cdot\text{K)}$	Test acc. to DIN EN ISO 8497
	at 0 °C		$\leq 0.038 \text{ W/(m}\cdot\text{K)}$	Test acc. to DIN EN 12667
	at +10 °C		$\leq 0.039 \text{ W/(m}\cdot\text{K)}$	
<b>Water vapour permeability</b>		Moisture resistance factor $\mu$	$\geq 10.000$	Test acc. to DIN EN 13469 Test acc. to DIN EN 12086
<b>Fire behaviour</b>	Tube	Euroclass characteristics <sup>(2)</sup>	B <sub>L</sub> -s1, d0	Test acc. to DIN EN 13501-1
	Sheet	Euroclass characteristics <sup>(2)</sup>	B-s1, d0	Test acc. to DIN EN 13501-1
			Self-extinguishing, no drips	
<b>Fire resistance classification</b>			R90	(ABP) Nr.:P-MPA-E-14-001
<b>Resistance to</b>		Corrosion	Satisfies requirements	In acc. with DIN 1988
		Mould and bacteria	No growth	Test acc. to DIN EN ISO 846 Meth. A+C In acc. with VDI 6022
<b>Environmental aspects</b>			No biocides added	
<b>Health aspects</b>			Fibre free: For high hygiene requirements  Free from heavy metal (e.g. cadmium, lead) and formaldehyde	
<b>Other properties</b>		pH-Value	NPD (No performance determined)	
<b>Other certificates / approvals</b>			CE-compliant	
<b>Storage</b>		Self-adhesive products	The material must be installed within one year after delivery and proper storage. Store in a dry room at a typical relative humidity (between 50 % and 70 %) and room temperature (between 0 °C and +35 °C)	
<b>Tolerances &amp; limits</b>			Satisfies requirements	In acc. with EN 14304:2009+A1:2013
<b>Outdoor applications</b>			Needs protection against UV-radiation	see remark (3)

Remark (1) For temperatures below -50 °C please contact our Technical Support Team for advice.

Remark (2) The Euroclass rating applies to metallic or solid mineral substrates.

Remark (3) To protect against UV-induced deterioration Kaiflex must be either painted using Kaifinish Color paint or covered with a suitable UV resistant cladding system within 1 day of being installed outdoors.



**Kaiflex KKplus s1**  
Tube · uncoated (KaiCene-Technologie)



**Colour: Anthracite · Length: 1,2 m**

Copper pipe Cu		Iron & steel pipe Fe			13 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1,2m-13x015	4005146	108.0
18.0	15	3/8	17.2	10	KK+s1-T-1,2m-13x018	4005147	88.8
22.0	20	1/2	21.3	15	KK+s1-T-1,2m-13x022	4005148	73.2
28.0	25	3/4	26.9	20	KK+s1-T-1,2m-13x028	4005149	58.8
35.0	32	1	33.7	25	KK+s1-T-1,2m-13x035	4005150	50.4
42.0	40	1 1/4	42.4	32	KK+s1-T-1,2m-13x042	4005151	36.0
		1 1/2	48.3	40	KK+s1-T-1,2m-13x048	4005152	38.4
54.0	50	2	54.0	50	KK+s1-T-1,2m-13x054	4005153	36.0
		2	60.3	50	KK+s1-T-1,2m-13x060	4005154	28.8
64.0			63.5		KK+s1-T-1,2m-13x064	4008639	28.8
76.1	65	2 1/2	76.1	65	KK+s1-T-1,2m-13x076	4005155	27.6
88.9	80	3	88.9	80	KK+s1-T-1,2m-13x089	4005156	19.2

Copper pipe Cu		Iron & steel pipe Fe			19 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1,2m-19x015	4005157	62.4
18.0	15	3/8	17.2	10	KK+s1-T-1,2m-19x018	4005158	50.4
22.0	20	1/2	21.3	15	KK+s1-T-1,2m-19x022	4005159	49.2
28.0	25	3/4	26.9	20	KK+s1-T-1,2m-19x028	4005160	39.6
35.0	32	1	33.7	25	KK+s1-T-1,2m-19x035	4005161	30.0
42.0	40	1 1/4	42.4	32	KK+s1-T-1,2m-19x042	4005162	27.6
		1 1/2	48.3	40	KK+s1-T-1,2m-19x048	4005163	24.0
54.0	50	2	54.0	50	KK+s1-T-1,2m-19x054	4005164	19.2
		2	60.3	50	KK+s1-T-1,2m-19x060	4005165	19.2
64.0			63.5		KK+s1-T-1,2m-19x064	4008642	15.6
76.1	65	2 1/2	76.1	65	KK+s1-T-1,2m-19x076	4005166	16.8
88.9	80	3	88.9	80	KK+s1-T-1,2m-19x089	4005167	14.4

Copper pipe Cu		Iron & steel pipe Fe			25 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1,2m-25x015	4012202	37.2
18.0	15	3/8	17.2	10	KK+s1-T-1,2m-25x018	4008643	37.2
22.0	20	1/2	21.3	15	KK+s1-T-1,2m-25x022	4008644	30.0
28.0	25	3/4	26.9	20	KK+s1-T-1,2m-25x028	4008645	24.0
35.0	32	1	33.7	25	KK+s1-T-1,2m-25x035	4008646	21.6
42.0	40	1 1/4	42.4	32	KK+s1-T-1,2m-25x042	4008647	19.2
		1 1/2	48.3	40	KK+s1-T-1,2m-25x048	4008648	16.8
54.0	50	2	54.0	50	KK+s1-T-1,2m-25x054	4008649	16.8
		2	60.3	50	KK+s1-T-1,2m-25x060	4008650	15.6
64.0			63.5		KK+s1-T-1,2m-25x064	4008651	14.4
76.1	65	2 1/2	76.1	65	KK+s1-T-1,2m-25x076	4008652	12.0
88.9	80	3	88.9	80	KK+s1-T-1,2m-25x089	4008653	9.6

Slit tubes available on request.

For further dimensions please contact our customer service.

**Kaiflex KKplus s1**

Tube · uncoated (KaiCene-Technologie)



**Colour: Anthracite · Length: 1,2 m**

Copper pipe Cu		Iron & steel pipe Fe			32 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1.2m-32x015	4008655	21.6
18.0	15	3/8	17.2	10	KK+s1-T-1.2m-32x018	4008656	21.6
22.0	20	1/2	21.3	15	KK+s1-T-1.2m-32x022	4008657	21.6
28.0	25	3/4	26.9	20	KK+s1-T-1.2m-32x028	4008658	19.2
35.0	32	1	33.7	25	KK+s1-T-1.2m-32x035	4008659	16.8
42.0	40	1 1/4	42.4	32	KK+s1-T-1.2m-32x042	4008660	14.4
		1 1/2	48.3	40	KK+s1-T-1.2m-32x048	4008661	13.2
54.0	50	2	54.0		KK+s1-T-1.2m-32x054	4008662	12.0
			60.3	50	KK+s1-T-1.2m-32x060	4008663	10.8
64.0			63.5		KK+s1-T-1.2m-32x064	4008664	10.8
70.0			70.0		KK+s1-T-1.2m-32x070	4008665	9.6
76.1	65	2 1/2	76.1	65	KK+s1-T-1.2m-32x076	4008666	7.2
88.9	80	3	88.9	80	KK+s1-T-1.2m-32x089	4008667	7.2

Slit tubes available on request.

For further dimensions please contact our customer service.

## Kaiflex KKplus s1

Tube · uncoated (KaiCene-Technologie) · self-adhesive · with tangential cut



**Colour: Anthracite · Length: 1,2 m**

Copper pipe Cu		Iron & steel pipe Fe			13 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1,2m-13x015-SA	4008683	108.0
18.0	15	3/8	17.2	10	KK+s1-T-1,2m-13x018-SA	4008684	88.8
22.0	20	1/2	21.3	15	KK+s1-T-1,2m-13x022-SA	4008685	72.3
28.0	25	3/4	26.9	20	KK+s1-T-1,2m-13x028-SA	4008686	58.8
35.0	32	1	33.7	25	KK+s1-T-1,2m-13x035-SA	4008687	50.4
42.0	40	1 1/4	42.4	32	KK+s1-T-1,2m-13x042-SA	4008688	36.0
		1 1/2	48.3	40	KK+s1-T-1,2m-13x048-SA	4008689	38.4
54.0	50		54.0		KK+s1-T-1,2m-13x054-SA	4008690	36.0
		2	60.3	50	KK+s1-T-1,2m-13x060-SA	4008691	28.8
76.1	65	2 1/2	76.1	65	KK+s1-T-1,2m-13x076-SA	4008692	27.6
88.9	80	3	88.9	80	KK+s1-T-1,2m-13x089-SA	4008693	19.2

Copper pipe Cu		Iron & steel pipe Fe			19 mm Insulation thickness		
OD mm	Nom. width DN	Inch	OD mm	Nom. width DN	Dimension / Reference	Order No.	m/ carton
15.0	10	1/4	13.5	8	KK+s1-T-1,2m-19x015-SA	4008694	62.4
18.0	15	3/8	17.2	10	KK+s1-T-1,2m-19x018-SA	4008695	50.4
22.0	20	1/2	21.3	15	KK+s1-T-1,2m-19x022-SA	4008696	49.2
28.0	25	3/4	26.9	20	KK+s1-T-1,2m-19x028-SA	4008697	39.6
35.0	32	1	33.7	25	KK+s1-T-1,2m-19x035-SA	4008698	30.0
42.0	40	1 1/4	42.4	32	KK+s1-T-1,2m-19x042-SA	4008699	27.6
		1 1/2	48.3	40	KK+s1-T-1,2m-19x048-SA	4008700	24.0
54.0	50		54.0		KK+s1-T-1,2m-19x054-SA	4008701	19.2
		2	60.3	50	KK+s1-T-1,2m-19x060-SA	4008702	19.2
76.1	65	2 1/2	76.1	65	KK+s1-T-1,2m-19x076-SA	4008703	16.8
88.9	80	3	88.9	80	KK+s1-T-1,2m-19x089-SA	4008704	14.4

For further dimensions please contact our customer service.

### Kaiflex **KK**plus s1

Sheet · endless · coated (INCERAM-Cladding)



Colour: Anthracite · Width: 1 m · OD coil: 40 cm · in box

Insulation thickness mm	Dimension / Reference	Order No.	rm/ carton	m <sup>2</sup> / carton
6	KK+s1-Sh-e-1m-40BX-06	4008727	18	18
10	KK+s1-Sh-e-1m-40BX-10	4008728	10	10

Colour: Anthracite · Width: 1 m · OD coil: 53 cm · in box

Insulation thickness mm	Dimension / Reference	Order No.	rm/ carton	m <sup>2</sup> / carton
13	KK+s1-Sh-e-1m-53BX-13	4008729	14	14
19	KK+s1-Sh-e-1m-53BX-19	4008730	10	10
25	KK+s1-Sh-e-1m-53BX-25	4008731	8	8
32	KK+s1-Sh-e-1m-53BX-32	4008732	6	6

For further dimensions please contact our customer service.

### Kaiflex **KK**plus s1

Sheet · endless · coated (INCERAM-Cladding) · self-adhesive



Colour: Anthracite · Width: 1 m · OD coil: 40 cm · in box

Insulation thickness mm	Dimension / Reference	Order No.	rm/ carton	m <sup>2</sup> / carton
6	KK+s1-Sh-e-1m-40BX-06-SA	4008733	15	15
10	KK+s1-Sh-e-1m-40BX-10-SA	4008734	10	10

Colour: Anthracite · Width: 1 m · OD coil: 53 cm · in box




Insulation thickness mm	Dimension / Reference	Order No.	rm/ carton	m <sup>2</sup> / carton
13	KK+s1-Sh-e-1m-53BX-13-SA	4008735	14	14
19	KK+s1-Sh-e-1m-53BX-19-SA	4008736	10	10
25	KK+s1-Sh-e-1m-53BX-25-SA	4008737	8	8
32	KK+s1-Sh-e-1m-53BX-32-SA	4008738	6	6

For further dimensions please contact our customer service.








## Accessories

### Adhesive · Cleaner · Protective Coating

		Details	Dimension / Reference	Order No.	Container type	Content	Pcs./ PU
<b>Adhesive</b>							
	Kaiflex Special Adhesive 415		<b>Ad-415-CA660</b>	4007232	Can	660 g	20
	Kaiflex Special Adhesive 414	incl brush · toluene-free	<b>Ad-414-CA220</b>	4004706	Can	220 g	24
	Kaiflex Special Adhesive 414	toluene-free	<b>Ad-414-CA660</b>	4004708	Can	660 g	20
	Kaiflex Special Adhesive 414	toluene-free	<b>Ad-414-CN2200</b>	4004710	Canister	2200 g	6
<b>Cleaner</b>							
	Kaiflex Cleaner		<b>Clean-CA1000</b>	4004732	Can	1.0 l	12
<b>Protective Coating</b>							
	Kaifinish Color	Colour: White (approx. RAL 9010)	<b>KF-Co-wh-CA750</b>	4004719	Can	0.75 l	4
		Colour: Grey (approx. RAL 7035)	<b>KF-Co-gr-CA750</b>	4004720	Can	0.75 l	4


## Accessories

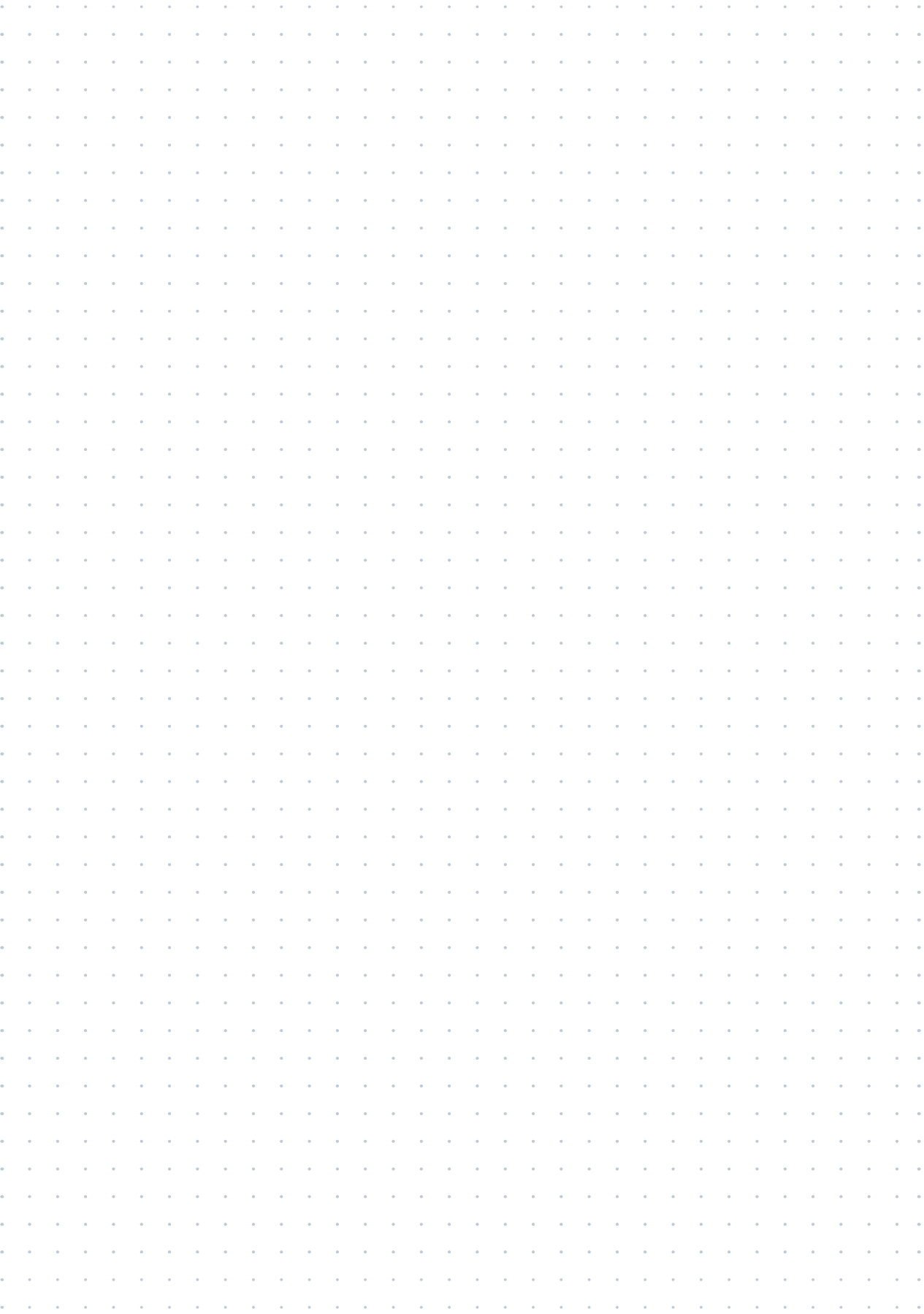
### Glue pump · Knife · Gel ink pen

		Details	Dimension / Reference	Order No.	Pcs./ PU
<b>Glue pump</b>					
	Glue pump	long spout · 17 mm brush	<b>GI-Pmp-long</b>	4004718	1
	Glue pump	short spout · 17 mm brush	<b>GI-Pmp-short</b>	4004715	1
	11 mm brush	for glue pump	<b>GI-Pmp-Brush-11</b>	4004716	1
	17 mm brush	for glue pump	<b>GI-Pmp-Brush-17</b>	4004717	1
<b>Knife</b>					
	Ceramic knife	with ceramic blade (15 cm) and plastic handle (14 cm)	<b>Knf-Ceramic</b>	4004737	1
	Sheet knife		<b>Knf-Sheet</b>	4004735	1
	Set of knives	3 knives, 1 whetstone	<b>Knf-Set</b>	4004736	1
<b>Gel ink pen</b>					
	Gel ink pen	Colour: Silver · for marking on insulation materials	<b>Gelpen</b>	4004730	12

## Accessories

### Tape

		Details	Dimension / Reference	Order No.	Width mm	Length m	Thickness mm	Pcs./ PU
	Kaiflex KKplus s1 Tape	coated (INCERAM-Cladding) · self-adhesive	<b>Tp-KK+s1-50/15/3-SA</b>	4010454	50	15	4	12



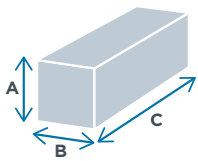
## Tolerances, Limits

EN 14304:2009+A1:2013 · Flexible Elastomeric Foam (FEF)

Delivery form	Length	Width	Thickness		Perpendicularity	Inner diameter	
			Stated	Limits		$D_i \leq 100$	$D_i > 100$
Tube	±1.5 %	-	$d_p \leq 8$ $8 < d_p \leq 18$ $18 < d_p \leq 31$ $d_p > 31$	±1.0 ±1.5 ±2.5 ±3.0	3.0 mm	$D_{iD} + 1 \leq D_i \leq D_{iD} + 4$	$D_{iD} + 1 \leq D_i \leq D_{iD} + 6$
Sheet · endless	+5.0 % -1.5 %	±2.0 %	$d_p \leq 6$ $6 < d_p \leq 19$ $d_p > 19$	±1.0 ±1.5 ±2.0	3.0 mm/m (Length/Width) - 3.0 mm (Thickness)	-	-
Tape	+5.0 % -1.5 %	±2.0 %	$d_p = 3$	-0.1 +1.5	-	-	-

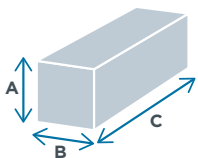
Measurements in mm ·  $D_i$  = inner diameter ·  $d_p$  = Nominal thickness of product ·  $D_{iD}$  = Nominal thickness of a tube

## Kaiflex KKplus s1 Packaging types



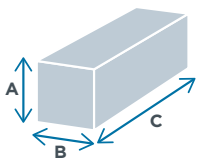
### Tube · Length: 1,2 m

A: 385 mm  
B: 400 mm  
C: 1.230 mm  
Volume: 0.189 m<sup>3</sup>



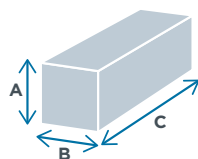
### Sheet · endless Width: 1 m OD coil: 40 cm

A: 410 mm  
B: 410 mm  
C: 1.060 mm  
Volume: 0.178 m<sup>3</sup>



### Sheet · endless Width: 1 m OD coil: 53 cm

A: 560 mm  
B: 560 mm  
C: 1.060 mm  
Volume: 0.332 m<sup>3</sup>



### Tape

A: 300 mm  
B: 300 mm  
C: 620 mm  
Volume: 0.056 m<sup>3</sup>



## General information

- Delivery in full packing units only.
- The pipe dimensions given in the tables refer to DIN EN 1057 for copper pipes and DIN EN 10255 for steel pipes.
- Kaimann accessories are to be used to ensure proper installation.

## WE CREATE SOLUTIONS

Always finding the best solution for customers – this simple resolution is what produces innovative ideas and continuous progress at Kaimann. The company is one of the leading suppliers of technology and innovation in elastomeric insulation and offers a broad product portfolio for a wide range of applications, e.g. in building services and technology as well as industry.

These products ensure higher energy efficiency and sustainability, combined with effective protection against corrosion, fire and noise. Thanks to environmental product declarations (EPDs), Kaimann insulation also provides more transparency for its life cycle assessment.



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