

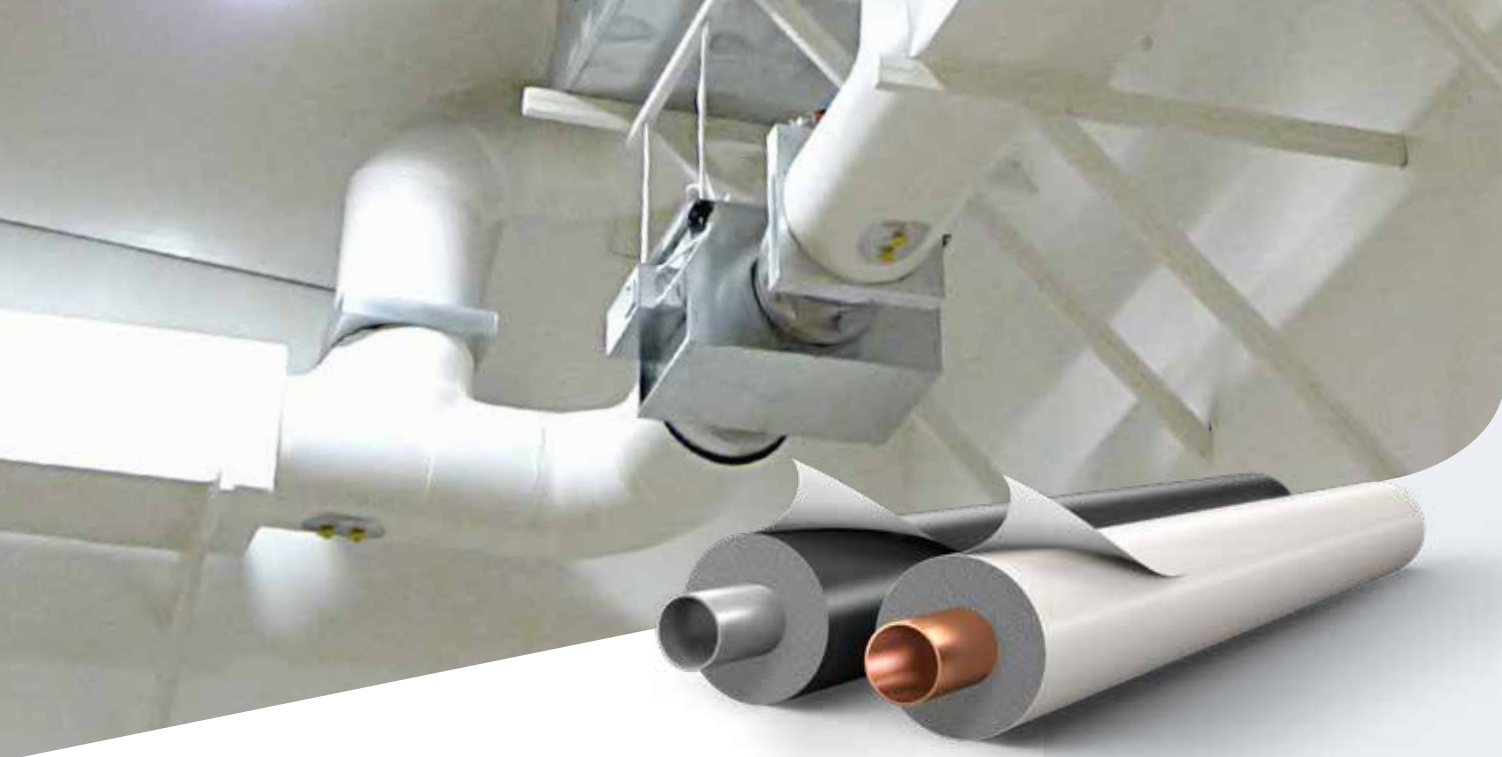


Kaiflex[®] Protect^{TC}

Designed to be tough and durable

- Closed cell structure with in-built water vapour barrier
- Inherent resistance to microbial growth
- Weather & UV resistant for outdoor use
- Durable protective covering
- Clean surface for food production locations





Kaiflex® Protect TC

**Designed to be
tough and durable**

Nitrile rubber tubes and sheets with a tough PVC coating pre-applied, Kaiflex Protect TC prevents energy loss and condensation whilst providing the waterproof rubber foam insulation with protection against the weather, impact, vandalism and UV damage.

Kaiflex Protect TC is durable and visually attractive. The finish resists dirt and makes Kaiflex Protect TC ideal for use in food production and clean room locations. With inherent UV resistance Kaiflex Protect TC can be used outdoors without the need for additional paint or cladding. Kaiflex Protect TC can even be used on pipework buried in shallow soil, on pipe connecting mains cold water to houses and on sections of ground source heat loops which require insulation.

Available in pure white or black films, on rolls or pre-bonded to Kaiflex tubes, Kaiflex Protect TC is particularly easy to install with application times minimised.

- Closed cell structure with in-built water vapour barrier
- Inherent resistance to microbial growth
- Weather & UV resistant for outdoor use
- Durable protective covering
- Clean surface for food production locations

Related system components and accessories from our product range



Protect TC Coating
Separately available film for subsequent coating of Kaiflex insulation material (page 173).



Protect TC Tape
Reliable sealing of seams along the insulation (page 172).

Kaimann Services



On-site consulting
Benefit from personal advice from our dedicated and competent application engineers and field service staff.



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

www.kaimann.com

Kaiflex Protect TC

Technical Data

Material type base		Elastomeric foam based on synthetic rubber, Flexible Elastomeric Foam (FEF)	
Material type coating		Polymer (PVC)	
Cell structure		Closed cell	
Colour	Base material Coating	Anthracite Black / White	
Max. service temperature		+80 °C	see remark (1)
Min. service temperature		-10 °C	see remark (2)
Thermal conductivity	λ_g at -10 °C at 0 °C at +10 °C	$0.034 + 8.0 \cdot 10^{-5} \cdot \vartheta + 7.0 \cdot 10^{-7} \cdot \vartheta^2$ $\leq 0.033 \text{ W/(m·K)}$ $\leq 0.034 \text{ W/(m·K)}$ $\leq 0.035 \text{ W/(m·K)}$	
Water vapour permeability	Moisture resistance factor μ	≥ 10000 no separate vapour barrier required	Test acc. to DIN EN 13469
Fire behaviour	Euroclass characteristics ⁽²⁾ Surface spread of flame	E_L Class 1 Self-extinguishing, no drips	Test acc. to DIN EN 13501-1 Test acc. to BS 476-6
Resistance to	UV radiation Mould and bacteria	Excellent No growth	
Environmental aspects		ODP Zero GWP Zero	
Health aspects		Fibre free: For high hygiene requirements Free from heavy metal (e.g. cadmium, lead) and formaldehyde	
Storage	Self-adhesive products	The material must be installed within one year. Store in a dry room at a typical relative humidity (between 50 % and 70 %) and room temperature (between 0 °C and +35 °C)	
Tolerances & limits		Satisfies requirements	In acc. with EN 14304:2009+A1:2013
Outdoor applications		No additional protection required	

Remark (1) For temperatures above +80 °C please contact our Technical Support Team for advice.

Remark (1) For temperatures below -10 °C please contact our Technical Support Team for advice.

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

Kaiflex Protect TC Tube · coated (TC)



Colour: Anthracite/Black · Length: 1 m

Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	13 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
	1/4	6.0			7.0	PR-TC-T-1m-bk-13x006	4009304	120
	3/8	10.0	1/8	10.2	11.0	PR-TC-T-1m-bk-13x010	4009305	95
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-bk-13x012	4009306	86
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-bk-13x015	4001854	77
5/8	3/4			20.0	21.0	PR-TC-T-1m-bk-13x020	4009307	60
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-bk-13x022	4001855	55
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-bk-13x028	4001856	43
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-bk-13x035	4001857	38
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-bk-13x042	4001858	28
			1 1/2	48.3	49.5	PR-TC-T-1m-bk-13x048	4001859	24
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-bk-13x054	4001860	23
			2	60.3	61.5	PR-TC-T-1m-bk-13x060	4001861	20
2 1/2					68.5	PR-TC-T-1m-bk-13x067	4001862	20
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-bk-13x076	4001863	17
						PR-TC-T-1m-bk-13x080	4001864	15
		88.9	3	88.9	90.5	PR-TC-T-1m-bk-13x089	4001865	15
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-bk-13x108	22613108	14
		114.0	4	114.3	116.0	PR-TC-T-1m-bk-13x114	22613114	14

Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	19 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
	3/8	10.0	1/8	10.2	11.0	PR-TC-T-1m-bk-19x010	4010760	53
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-bk-19x012	4001866	50
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-bk-19x015	4001867	43
5/8	3/4			20.0	21.0	PR-TC-T-1m-bk-19x020	4001868	38
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-bk-19x022	4001869	37
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-bk-19x028	4001870	29
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-bk-19x035	4001871	24
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-bk-19x042	4001872	20
			1 1/2	48.3	49.5	PR-TC-T-1m-bk-19x048	4009309	15
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-bk-19x054	4001873	15
			2	60.3	61.5	PR-TC-T-1m-bk-19x060	4001874	14
2 1/2					68.5	PR-TC-T-1m-bk-19x067	4001875	14
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-bk-19x076	4001876	14
						PR-TC-T-1m-bk-19x080	4001877	13
		88.9	3	88.9	90.5	PR-TC-T-1m-bk-19x089	4001878	11
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-bk-19x108	4012752	10
		114.0	4	114.3	116.0	PR-TC-T-1m-bk-19x114	22619114	8

All items are non-stock items, delivery time on request.

Kaiflex Protect TC

Tube · coated (TC)



Colour: Anthracite/Black · Length: 1 m

Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	25 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-bk-25x012	4009310	30
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-bk-25x015	4009311	30
5/8	3/4			20.0	21.0	PR-TC-T-1m-bk-25x020	4001880	25
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-bk-25x022	4001881	21
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-bk-25x028	4001882	20
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-bk-25x035	4001883	16
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-bk-25x042	4009312	12
			1 1/2	48.3	49.5	PR-TC-T-1m-bk-25x048	22613048	12
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-bk-25x054	4001884	11
			2	60.3	61.5	PR-TC-T-1m-bk-25x060	4001885	11
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-bk-25x076	4012716	9
		88.9	3	88.9	90.5	PR-TC-T-1m-bk-25x089	22613089	7
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-bk-25x108	22613108	5
		114.0	4	114.3	116.0	PR-TC-T-1m-bk-25x114	22613114	5

All items are non-stock items, delivery time on request.

Kaiflex Protect TC Tube · coated (TC)



Colour: Anthracite/White · Length: 1 m

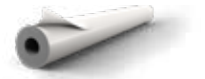
Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	13 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
	1/4	6.0			7.0	PR-TC-T-1m-wh-13x006	4012750	120
	3/8	10.0	1/8	10.2	11.0	PR-TC-T-1m-wh-13x010	4009313	95
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-wh-13x012	4012751	86
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-wh-13x015	22713015	77
5/8	3/4			20.0	21.0	PR-TC-T-1m-wh-13x020	4009314	60
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-wh-13x022	22713022	55
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-wh-13x028	4001887	43
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-wh-13x035	22713035	38
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-wh-13x042	22713042	28
			1 1/2	48.3	49.5	PR-TC-T-1m-wh-13x048	22713048	24
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-wh-13x054	4001888	23
			2	60.3	61.5	PR-TC-T-1m-wh-13x060	22713060	20
2 1/2					68.5	PR-TC-T-1m-wh-13x067	4001889	20
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-wh-13x076	22713076	17
		88.9	3	88.9	90.5	PR-TC-T-1m-wh-13x080	22713080	15
		108.0		108.0	109.5	PR-TC-T-1m-wh-13x089	22713089	15
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-wh-13x108	22713108	14
		114.0	4	114.3	116.0	PR-TC-T-1m-wh-13x114	22713114	14

Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	19 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
	3/8	10.0	1/8	10.2	11.0	PR-TC-T-1m-wh-19x010	4009315	53
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-wh-19x012	22719012	50
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-wh-19x015	22719015	43
5/8	3/4			20.0	21.0	PR-TC-T-1m-wh-19x020	22719020	38
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-wh-19x022	4009316	37
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-wh-19x028	22719028	29
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-wh-19x035	22719035	24
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-wh-19x042	22719042	20
			1 1/2	48.3	49.5	PR-TC-T-1m-wh-19x048	22719048	15
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-wh-19x054	22719054	15
			2	60.3	61.5	PR-TC-T-1m-wh-19x060	22719060	14
2 1/2					68.5	PR-TC-T-1m-wh-19x067	22719067	14
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-wh-19x076	22719076	14
		88.9	3	88.9	90.5	PR-TC-T-1m-wh-19x080	22719080	13
		108.0		108.0	109.5	PR-TC-T-1m-wh-19x089	22719089	11
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-wh-19x108	22719108	10
		114.0	4	114.3	116.0	PR-TC-T-1m-wh-19x114	22719114	8

All items are non-stock items, delivery time on request.

Kaiflex Protect TC

Tube · coated (TC)



Colour: Anthracite/White · Length: 1 m

Copper pipe Cu			Iron & steel pipe Fe		Min iD mm	25 mm Insulation thickness		
NB inch	Nom OD inch	Nom OD mm	NB inch	Nom OD mm		Dimension / Reference	Order No.	m/ carton
3/8	1/2	12.0		12.5	13.0	PR-TC-T-1m-wh-25x012	4009318	30
1/2	5/8	15.0	1/4	13.5	16.0	PR-TC-T-1m-wh-25x015	4009319	30
5/8	3/4			20.0	21.0	PR-TC-T-1m-wh-25x020	22713020	25
3/4	7/8	22.0	1/2	21.3	23.0	PR-TC-T-1m-wh-25x022	22713022	21
1	1 1/8	28.0	3/4	26.9	29.0	PR-TC-T-1m-wh-25x028	4001890	20
1 1/4	1 3/8	35.0	1	33.7	36.0	PR-TC-T-1m-wh-25x035	22713035	16
1 1/2	1 5/8	42.0	1 1/4	42.4	43.5	PR-TC-T-1m-wh-25x042	4005780	12
			1 1/2	48.3	49.5	PR-TC-T-1m-wh-25x048	22713048	12
2	2 1/8	54.0		54.0	55.0	PR-TC-T-1m-wh-25x054	22713054	11
			2	60.3	61.5	PR-TC-T-1m-wh-25x060	22713060	11
2 13/16	3	76.1	2 1/2	76.1	77.0	PR-TC-T-1m-wh-25x076	22713076	9
		88.9	3	88.9	90.5	PR-TC-T-1m-wh-25x089	22713089	7
4	4 1/4	108.0		108.0	109.5	PR-TC-T-1m-wh-25x108	22713108	5
		114.0	4	114.3	116.0	PR-TC-T-1m-wh-25x114	22713114	5

All items are non-stock items, delivery time on request.

Accessories

Coating

		Details	Dimension / Reference	Order No.	Width mm	Length m
	Protect TC Coating	Colour: Black	PR-TC-Ct-bl-1000/25	4012204	1000	25
	Protect TC Coating	Colour: White	PR-TC-Ct-wh-1000/25	259TCW100	1000	25

Accessories

Sealing Compound

		Details	Dimension / Reference	Order No.	Container type	Content	Pcs./ PU
	Protect Sealing Compound	Colour: Black	PR-Sc-bl-CR290	4004679	Catridge	290 g	12
	Protect Sealing Compound	Colour: Transparent	PR-Sc-tr-CR290	4004680	Catridge	290 g	12

Accessories

Tape

		Details	Dimension / Reference	Order No.	Width mm	Length m	Thickness mm	Pcs./ PU
Protect TC Tape								
	Protect TC Tape	Colour: Black · self-adhesive	Tp-PR-TC-bl-50/50-SA	4004687	50	50	-	30
	Protect TC Tape	Colour: White · self-adhesive	Tp-PR-TC-wh-50/50-SA	4004689	50	25	-	12

Accessories

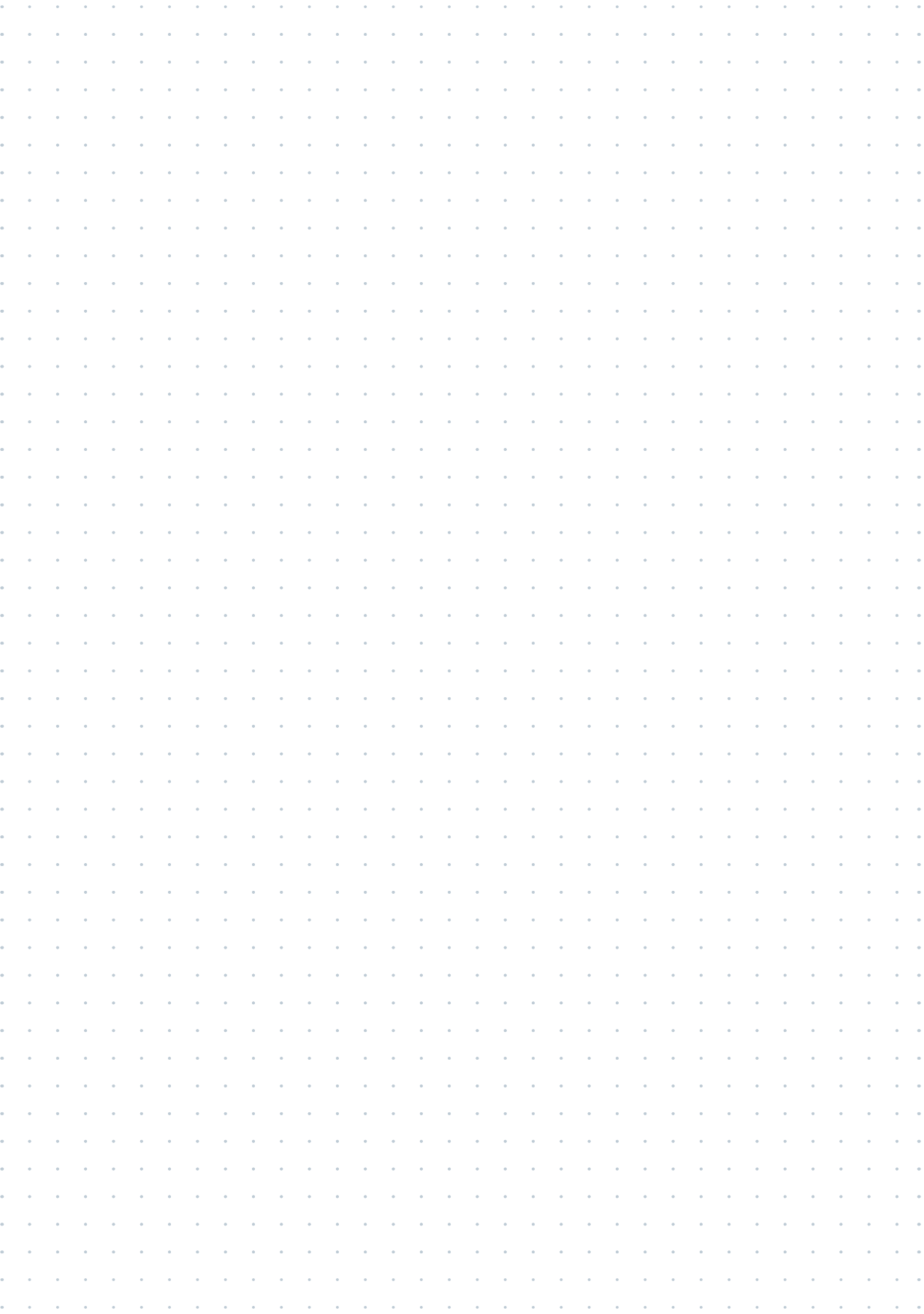
Adhesive · Cleaner

		Details	Dimension / Reference	Order No.	Container type	Content	Pcs./ PU
Adhesive							
	Kaiflex Special Adhesive 414	incl brush · toluene-free	Ad-414-CA220	4004706	Can	220 g	24
	Kaiflex Special Adhesive 414	toluene-free	Ad-414-CA660	4004708	Can	660 g	20
	Kaiflex Special Adhesive 414	toluene-free	Ad-414-CN2200	4004710	Canister	2200 g	6
Cleaner							
	Kaiflex Cleaner		Clean-CA1000	4004732	Can	1.0 l	12

Accessories

Glue pump · Knife · Gel ink pen

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



Tolerances, Limits

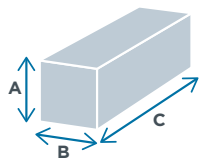
EN 14304:2009+A1:2013 · Flexible Elastomeric Foam (FEF)

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

Measurements in mm · D_i = inner diameter · d_b = Nominal thickness of product · $D_{i,D}$ = Nominal thickness of a tube

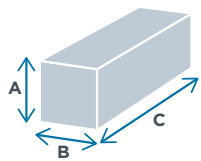
Kaiflex Protect System

Packaging types



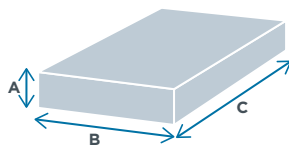
Tube · Length: 1 m

A: 400 mm
B: 400 mm
C: 1060 mm
Volume: 0.170 m³



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

A: 560 mm
B: 560 mm
C: 1060 mm
Volume: 0.332 m³



Sheet · pre-cut Length: 2 m Width: 1 m

A: 170 mm
B: 1068 mm
C: 2080 mm
Volume: 0,378 m³

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.



Kaimann GmbH

Hansastraße 2-5
33161 Hövelhof · Germany
Phone: +49 5257 9850-0
E-Mail: info.kaimann@saint-gobain.com

www.kaimann.com

The content of this document corresponds to our present state of knowledge and experience at the date of publication. No legal guarantee can be given, unless it has been explicitly agreed. The state of experience and knowledge is developing continuously. Please ensure that you always use the latest edition of this document (available at www.kaimann.com). All values are based on results obtained under typical conditions of use. The described product applications do not take special circumstances in consideration. Recipients of these technical specifications are to check with Kaimann in advance if given values are meeting the specifications of the intended area of application. Furthermore, locally applicable regulations and legal requirements must be taken into consideration. For further information please contact our customer service or sales representative.

Kaiflex®, Kaifoam®, Kaisound® and Kaifinish® are registered trademarks of the Kaimann GmbH.

© Kaimann GmbH · Subject to change without notice.

