TROCELLEN
INSULATION

ISOCOMPACT®

Piping Application

Thermal Insulation

Isocompact

TROCELLEN is a closed cell, chemically cross-linked polyolefin foam (a group which includes PE, PP, copolymers, EVA, etc.).

TROCELLEN ISOCOMPACT

It is developed to meet higher technical requirements, in which very high thermal insulation is expected. Indicated for insulation of pipe in unheated areas and outdoor. If installed on outdoor pipes, UV protection is required.

Sleeves size:

- Length: 2,00 m
- Thickness: 30, 40, 50 mm
- Standard diameter: 1/2" (22 mm) to 4" (114mm). Thickness is in compliance with law no. 10/91.

For an easier application, sleeves are equipped with special parts: bending, elbow and "T" shaped elements.

TROCELLEN ISOCOMPACT

TROCELLEN ISOCOMPACT - AL/CL1 - CL1/ALU-NET

Chemically cross-linked, closed-cell, insulating material, light grey. Multi-layered product, thickness 10 to 15 mm, certified in Class 1 according to UNI 8457/ UNI 9174 and finished outside with an embossed, scratch-resistant, metalized film, or with reinforced aluminium layer.

TROCELLEN ISOCOMPACT

TROCELLEN CLASS (CE marked)

Within TROCELLEN world for piping insulation, **TROCELLEN CLASS** means **CE marked** and **Euroclass** product portfolio, according to EN 14313.
By CLASS product range, TROCELLEN provides the answer in relation to the "new European approach" to customers of the professional application.

TROCELLEN CLASS AL ISOCOMPACT (CE marked)

Cross linked polyethylene closed cell, high thickness insulating foam for piping, light green, multi-layer, externally finished with a metalized embossed anti-scratch film.

TROCELLEN CLASS

TECHNICAL DATA

TECHNICAL CHARACTERISTICS	NORM	UNIT	TROCELLEN ISOCOMPACT AL/CL1 - CL1/ALU-NET	TROCELLEN CLASS AL ISOCOMPACT (CE MARKED)
Reaction to fire	UNI 8457 UNI 9174 EN 13501-1	-	Class 1	Euroclass E, EL
Thermal conductivity coefficient at 0 °C (λ-value)	EN 12667	W/mK kcal/mh°C	0,0345 0,0297	0,0360 0,0310
Thermal conductivity coefficient at 40 °C (λ-value)	EN 12667	W/mK kcal/mh°C	0,0400 0,0344	0,0450 0,0387
Water vapour diffusion factor (μ-value)	EN 12086 EN ISO 12572	-	≥ 12000 - ≥ 65000	≥ 15000
Density	EN ISO 845	kg/m³	30	28
Thickness	EN ISO 1923	mm	30 - 40 - 50 (see base specifications)	30 - 40 - 50 (see base specifications)
Colour	BASE Spec.	-	light grey	light green
Compression stress at 10%	EN ISO 3386/1	kPa	18,6	13
Water absorption after 28 days	ISO 2896	Vol.%	<3	<3
Dimensional stability (< 5%)	ISO 2796	°C	100	90
Maximum operative temperature range		°C	-80÷ +100	-80÷ +90
Maximum operative temperature range with mechanical stress		°C	-40÷ +100	-40÷ +90

INSTALLATION

On systems under construction, sleeves can be installed on the pipes that shall not undergo further inspection. On existing systems, sleeves are cut in the longitudinal sense (on request, the first sleeves are supplied cut for half their thickness, for an easier application).

For the gluing of the cut surfaces, use the specific **MATIBLOCK** glue, applied with a brush to both surfaces; wait until the glue is dry (test by touching), then join the two parts with a slight pressure.

The fastening efficiency is proved by immediate tear resistance. With temperature between 20 and 30 °C, the solvent evaporation time is approximately 15 minutes.

Strip AL/CL1

ACCESSORIES

For a better-looking finishing of sleeve glued parts, the following accessories are available:

AL/CL1, AL/CL1 HR TAPES AND ALUMINIUM TAPES (adhesive)

To guarantee a good aesthetic finishing, the product range also contains a series of AL/CL1 and AL/CL1 HR tapes (50 mm wide, <1 mm thick, 25 mm long), protected by siliconized paper or siliconized PE film.

Aluminium tapes:

- thickness 50 µm, types embossed, smooth, self-adhesive (smooth or embossed), Duplex (with polyester film, improved tensile strength and adhesiveness).

TROCELLEN CLASS STRIPS

Suitable for the technical and aesthetic finishing of the insulation, they can be used for sections of piping where it is difficult to apply insulating sleeves and for joints between insulation sleeves and sheets which must be first glued with **MATIBLOCK** glue.

Range:

- thickness 3 mm, types Trocellen CLASS adhesive plain and Trocellen CLASS ALU adhesive

Other types available: AL, CL1, AL/CL1, AL/CL1 HR, CL1 ALU/L, rubber.

MATIBLOCK GLUE

Special solvent-based glue used to ensure resistance up to 120°C as an alternative to the self-adhesive range of products.

Full range

Insulation of pipe in unheated areas and outdoor

THERMAL INSULATION IN HEATING SYSTEMS

TROCELLEN ISOCOMPACT RANGE (length 2,00 m)							
EXTERNAL PIPE DIAMETER (pollici)	(mm)	TROCELLEN ISOCOMPACT AL/CL1 - CL1/ALU-NET			TROCELLEN CLASS AL ISOCOMPACT (CE MARKED)		
-	6						
-	8						
-	10						
-	12						
-	14						
-	16						
3/8	17,2						
1/2	21,3	30			30		
3/4	26,9	30			30		
1	33,7	30			30		
1 1/4	42,4	30	40		30	40	
1 1/2	48,3	30	40		30	40	
2	60,3	30	40	50	30	40	50
2 1/2	76,1	30	40	50	30	40	50
3	88,9	30	40	50	30	40	50
3 1/2	101,6	30	40	50	30	40	50
4	114,3	30	40	50	30	40	50
5	140			50			50
6	168			50			50

Thickness recommended in the boiler room, cave, garage, outdoor pipes and underground passages

Sleeves with thickness 50 mm, necessary for diameters 2" (61 mm) to 6" (168 mm), are manufactured using sleeves with thickness 12 mm, as internal core, and sheet thickness 3-4 mm, multi-layered winding.

Ordinary supplement of the Official Gazette n. 242 of October 14, 1993 Annex B

DECREE OF THE PRESIDENT OF THE REPUBLIC August 26, 1993, no. 412. Regulations on standards for design, installation, operation and maintenance of thermal systems for buildings, as for energy savings, in compliance with art. 4, par. 4 of the law January 9, 1991, no.10.

INSULATION OF HEAT DISTRIBUTION NETWORKS IN THERMAL SYSTEMS

The distribution network pipes of hot liquids or water vapour of thermal systems shall be insulated with material having the minimum thickness defined in the table 1 below, according to the pipe diameter expressed in mm and the actual thermal conductivity of the insulating material expressed in W/m °C at a temperature of 40 °C

Insulation actual thermal conductivity	*External pipe diameter (mm)*					
(W/m °C)	<20	da 20 a 39	da 40 a 59	da 60 a 79	da 80 a 99	>100
0,030	13	19	26	33	37	40
0,032	14	21	29	36	40	44
0,034	15	23	31	39	44	48
0,036	17	25	34	43	47	52
0,038	18	28	37	46	51	56
0,040	20	30	40	50	55	60
0,042	22	32	43	54	59	64
0,044	24	35	46	58	63	69
0,046	26	38	50	62	68	74
0,048	28	41	54	66	72	79
0,050	30	44	58	71	77	84

Table 1

As for values of insulation actual thermal conductivity other than those listed in table 1, the minimum thickness of the insulating material is obtained through linear interpolation of the data of the same table 1. The vertical frame of the pipes shall be placed towards the inside of the building, and the insulation minimum thickness, as resulting from table 1, are to be multiplied by 0.5. As for pipes within the structure, not protruding outdoor, nor to non heated areas, the thickness, as resulting from table 1, are to be multiplied by 0.3. In case of pipes pre-insulated with heterogeneous materials or systems, or in case the system thermal conductivity is not directly measurable, the installation procedure and insulation limits are set by UNI technical standards, published before October 31, 1993 and received by the Ministry of Industry, commerce and handicraft activities within the following 30 days.

Hot air ducts for winter heating, placed in non heated areas, shall be insulated with thickness not lower than the values listed in table 1, for external pipe diameter 20 to 39 mm.

ANTI-CONDENSATION INSULATION FOR PIPE CONDITIONING AND COOLING

The insulation thickness (referred to Mollier's diagram) is calculated based on the fluid temperature in the pipe, the environmental temperature of the surrounding and the relative humidity in the air.

Formula for the superficial temperature

$$t2 = \frac{0{,}2 \cdot \lambda \cdot (ti - te)}{(d + 2s) \cdot L \cdot \frac{(d + 2s)}{d}} + te$$

t2 = surf. temperature of insulation
ti = temperature of fluid
te = ambient temperature
d = pipe diameter
s = thickness of insulation
L = Neperian log. (2.3 Log)
λ = thermal conductivity coefficient in kcal/hm °C

INSULATION THICKNESS (mm)																				
TEMPERATURE OF PIPE (°C)	ROOM TEMPERATURE AND RELATIVE HUMIDITY																			
	15 °C				20 °C				25 °C				30 °C				35 °C			
	50%	60%	70%	80%	50%	60%	70%	80%	50%	60%	70%	80%	50%	60%	70%	80%	50%	60%	70%	80%
+15							6	8		6	8	12	6	8	12	20	6	8	12	20
+10			6	8		6	8	12	6	8	12	20	6	8	12	20	8	12	20	20
+5		6	8	20	6	6	8	20	6	8	12	20	8	12	20	30	8	12	20	30
0	6	8	12	20	6	8	12	20	8	12	20	30	8	12	20	30	8	12	20	30
-5	8	12	20	30	8	12	20	30	8	12	20	30	12	20	20	30	12	20	20	40
-10	8	12	20	30	8	12	20	30	12	20	20	30	12	20	30	40	12	20	30	40
-20	12	20	30	40	12	20	30	40	12	20	30	40	20	20	30	40	20	20	30	50
-30	20	20	30	50	16	20	30	50	20	20	30	50	20	20	30	50	20	30	40	50

In order to perform a more accurate verification of the insulating thickness necessary to prevent condensation, provided that you have the required technical skills and the complete application details at your disposal, we suggest using a dedicated calculation software, such as Trocellen **Thermal Insulation** calculation software, which is available on our website.

ITEM SPECIFICATIONS

TROCELLEN ISOCOMPACT -SLEEVES AL/CL1

Sleeves in closed-cell, cross-linked polyethylene foam, density 30 kg/m³, light grey.
Multi-layered product, thickness 10 to 15 mm, certified in Class 1 according to UNI 8457/UNI 9174 and finished outside with an embossed, anti-scratch, metalized film.

- Thermal conductivity coefficient at 40 °C (λ-value) = 0,0400 W/mK (0,034 kcal/mh°C)
- Water vapour diffusion factor (μ-value) ≥ 12000
- CFC free.

TROCELLEN ROLLS AL/CL1, CL1/ALU-NET

Coating for pipe with diameter higher than 168 mm, collectors and tanks with insulation TROCELLEN rolls (h 1.50 m and thickness 6-8-10-12-16-20-24 mm).

TROCELLEN ISOCOMPACT - COPPELLE CL1/ALU-NET

Sleeves in closed-cell, cross-linked polyethylene foam, density 30 kg/m³, light grey.
Multi-layered product, thickness 10 to 15 mm, certified in Class 1 according to UNI 8457/UNI 9174 and finished outside with a reinforced aluminium layer.

- Thermal conductivity coefficient at 40 °C (λ-value) = 0,0400 W/mK (0,034 kcal/mh°C)
- Water vapour diffusion factor (μ-value) ≥ 65000
- CFC free.

TROCELLEN CLASS AL ISOCOMPACT (CE marked)

Sleeves in closed-cell, cross-linked polyethylene foam, high thickness insulating foam for piping, density 28 kg/m³, light green, multi-layer, externally finished with a metalized embossed anti-scratch film.

- Euroclass E, EL
- Classified F1, toxicity and opacity of fumes in case of fire, according to NF F 16-101
- Thermal conductivity coefficient at 40 °C (λ-value) = 0,038 W/mK (0,033 kcal/mh°C)
- Water vapour diffusion factor (μ-value) (μ) ≥ 15000.

INTERNATIONAL LOCATIONS

Lead Plant

TROCELLEN Italia S.p.A.
Sales office
Via Dante, 3
20867 Caponago (MB), Italy
Ph. +39 02 959 621
Fax +39 02 959 62 235

Polifoam Plastic Processing Co. Ltd
Táblás u. 32
1097 Budapest, Hungary
Ph. +36 1 347 98 00
Fax +36 1 280 67 08

TROCELLEN GmbH
Mülheimer Straße 26
53840 Troisdorf, Germany
Ph. +49 2241 2549000
Fax +49 2241 2549099

TROCELLEN S.E.A. Sdn Bhd
Lot 2213, Kg. Batu 9 Kebun Baru,
Jalan Kasawari
42500 Telok Panglima Garang
Selangor Darul Ehsan, Malaysia
Ph. +60 3 3122 1213
Fax +60 3 3122 1211

TROCELLEN Ibérica S.A.
C/Avila, s/n
28804 Alcalá de Henares, Spain
Ph. +34 91 885 55 00
Fax +34 91 885 55 01

TROCELLEN France
Bureau de vente
2 rue de Commères,
Immeuble les Peupliers
F-78310 Coignéres, France
Ph. +33 (0) 130 85 93 40

insulation@trocellen.com

TROCELLEN*

Trocellen is the first choice European polyolefin foam-solution provider. Through continuous innovations and successful partnerships we dedicate ourselves to one goal: protecting and providing comfort for people.

After more than 40 years, with 600 employees at seven sites and many cooperating companies, various partner universities, institutes and designers we offer solutions for our business partners in various industries such as construction and insulation, automotive, leisure and professional sport, adhesive tapes, footwear and packaging.

*Trocellen is the member of Furukawa Group.

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41° 53′ N	12° 28′ O	Italy
47° 30′ N	19° 02′ O	Hungary
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35° 40′ N	139° 49′ O	Japan FURUKAWA