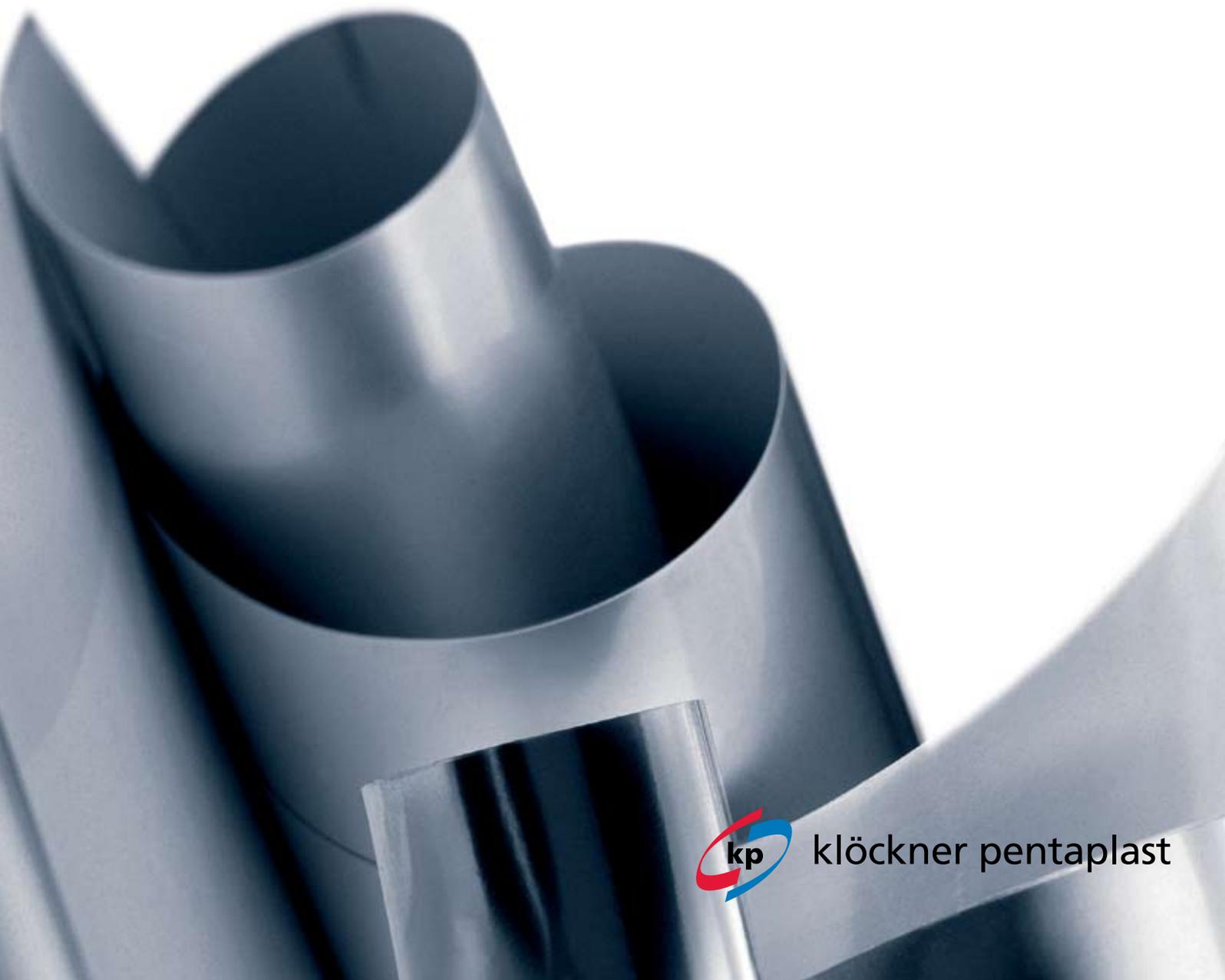




Isogenotec®
The High-Tech Insulation Cladding



klöckner pentaplast

Isogenotec® - A Shining Innovation

Isogenotec® is the high-tech insulation cladding of the future. Isogenotec® is the advanced development of Isogenopak®, the undisputed market leader in plastic insulation cladding. With its unique, new multilayer structure, Isogenotec® achieves technical and visual properties never before seen in a material of this type. The well-known advantages of Isogenopak® are reliably retained and enhanced by several important new characteristics.

A shining example of innovation. An innovation that will give the insulation market new impulse – just like Isogenopak® did before!

The attractiveness of metal, the toughness of Isogenopak®

Isogenotec® unites the lifetime flexibility of a plastic cladding with the visual properties of sheet metal. Unlike sheet metal cladding, Isogenotec® is not permanently deformed by significant mechanical stresses – it immediately resumes its original shape. This permanently safeguards the cladding and the insulation it protects against damage.

New applications

Isogenotec®'s shining surface is more than matched by its inner values: the material is highly UV-resistant, opening up whole new areas of application. Once installed, Isogenotec® cladding will remain unimpaired in either function or appearance even after many years of high UV exposure.

Lifetime perfection

Isogenotec® starts paying benefits even during installation by effectively preventing unwanted deformations, thanks to an ideal combination of rigidity, flexibility and inherent curl – it simply resumes its previous shape. And it retains this property in undiminished form over the entire lifetime of the insulation.

Thanks to its high tensile impact strength, Isogenotec® is also resistant to puncturing due to point-type mechanical exposure.

An additional important feature of Isogenotec® is its extreme chemical resistance. This resistance means that it is tough and impervious to aggressive ambient conditions.

The High-Tech Insulation Cladding with Metallic Appearance

Metallic
appearance

UV-
resistant

DIN
4102-B1



From the films expert –
for the insulation expert



Isogenotec® responds flexibly to mechanical stresses, automatically resumes its former shape and shows no signs of damage.

Excellent Appearance

Sturdy and durable

- Isogenotec® is easily recognized thanks to its unique metallic appearance, achieved through integration of an aluminum layer.
- An extremely durable top layer protects the aluminum intermediate layer against harmful external effects and corrosion, ensuring both long-term functionality and attractiveness.
- Thanks to a sophisticated endless production process, the visual properties of Isogenotec® are highly uniform; material-related structural variations, such as are common in a zinc-plated sheet metal surface, simply do not occur. All pipe cladding is absolutely smooth and uniform.
- The appearance of Isogenotec® cladding is not marred by grooves and similar connections necessary when working with metal.
- Thanks to its pleasantly smooth surface, Isogenotec® cladding is extremely easy to clean, unlike coarse-grained stamped structures, for example.
- Isogenotec®-clad pipes simply look perfect. The high rigidity of this material automatically produces smoothly formed surfaces. The broad processing width reduces the number of circumferential joints, which, thanks to the inherent curl of the material, overlap almost invisibly and always lie flat.
- Isogenotec® responds extremely flexibly to mechanical stresses, automatically resumes its original shape and in most cases shows no visible damage.
- Isogenotec® is particularly suited for use in areas where mechanical stresses are to be expected due to the pipeline layout.

Isogenotec® - a complete system

In addition to the Isogenotec® roll film for straight pipe sections, leading manufacturers of pre-formed parts and adhesive tapes offer a full range of suitable pre-formed sections and accessories, such as bends, T-sections, fitting caps, end sleeves, adhesive tapes and more.



Isogenotec® offers a complete system for all kinds of applications – clean, durable and quickly installed.

Unbeatable Advantages

Cost advantages in material, processing and applications

Isogenotec® also offers a number of significant cost advantages. As a material, Isogenotec® is less expensive than sheet metal, and is attached using extremely inexpensive plastic riveting technology. You only need one type of film, which is cut to fit any circumference and is thus usable in any situation. No extensive inventories, no risk of material mix-ups.

With its permanent curl, Isogenotec® practically lays itself around the insulation. No temporary fastening is needed - nothing ever falls off! And you don't need expensive special tools or machines - Isogenotec® can be worked using a rivet setter, scissors or knife, or laid even faster using a cutting table. High daily production rates are virtually guaranteed, even when using semiskilled workers. The XL, 1200 mm roll width makes both for high laying rates and excellent appearance.

The material is tough and non-splintering, enabling it to be riveted without the risk of tearing out. Isogenotec® is resistant to denting, both in installation and during subsequent work. Its low base weight and practical roll size simplify transportation and handling even further.

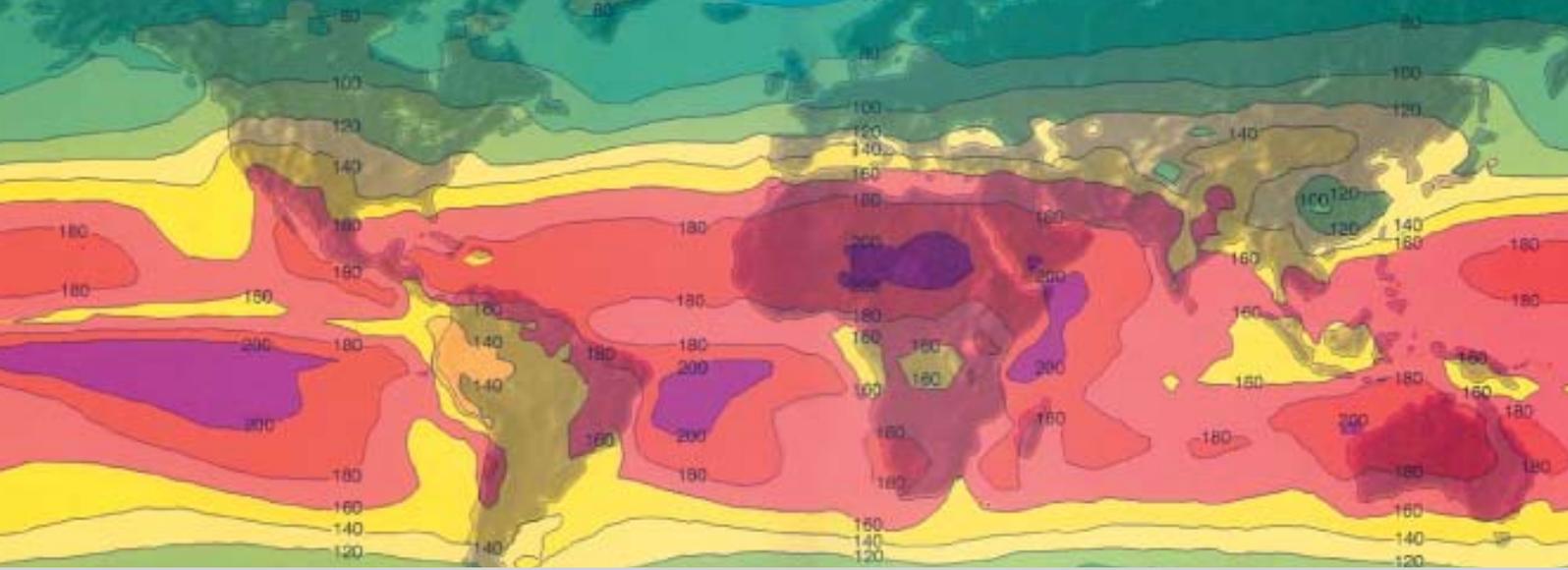
Once installed, Isogenotec® continues to pay off thanks to its long-term, maintenance-free performance: when properly laid, this high-tech cladding delivers durability, high chemical resistance and an attractiveness that just won't fade.

Environmentally friendly, hygienic and safe

- Isogenotec® is manufactured entirely without the heavy metals cadmium, lead, chromium^{VI} or any of their compounds. Also, no ozone-harming CFC and HCFC materials are used either. The material is entirely free of plasticizers. Isogenotec® is also manufactured without silicones - a feature which is particularly important for applications in paint booths or painting plants.
- Isogenotec® is physiologically safe and can be used without restriction in food processing plants.
- Very little waste is created in working with Isogenotec®, material cuttings are generally reusable.

Reduced surface temperature, enhanced safety

Due to the high emission rate of the Isogenotec® surface of 0,94, Isogenotec® surface temperature is remarkably lower as compared to metal cladding. This results in enhanced safety for skin contact. Combined with the low thermal conductivity of Isogenotec®, the perceived surface temperature is remarkably reduced.



The kLangley world map shows the average UV intensity. No problem for Isogenotec®.

60 80 100 120 140 160 180 200 220 kLy/year
 1kLy = 1 kcal/cm² = 41.84 MJ/m²
 1kLy/year = 1.33 W/m²

High UV and Weathering Resistance

UV and Weathering Resistance

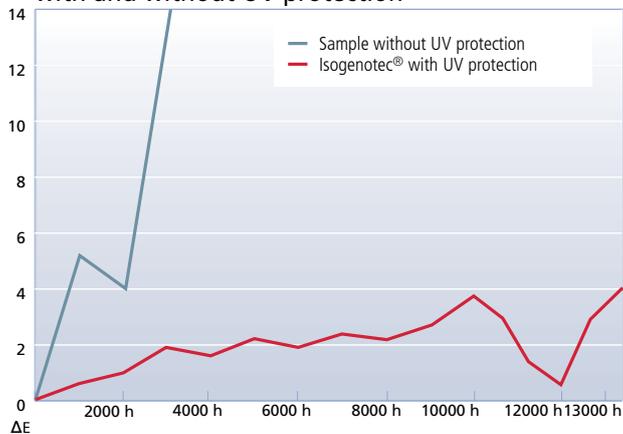
Isogenotec® is the first curling film based on proven rigid PVC that is UV-resistant.

In Germany, the standard DIN 4140 limits the use of conventional plastic cladding due to its low UV resistance. With Isogenotec®, these limits no longer apply. In supervised tests, Isogenotec® withstood more than 13.000 hours of intensive solar radiation, combined with heat exposure and water impact, without any remarkable damage. 1.000 hours of testing under these conditions are equivalent to 1-2 years of exposure to Central European climate.

New applications

Due to the successful long-term UV and weathering test results, Isogenotec® is now officially approved for outdoor applications according to the building materials test certificate P-BHH-2005-1000. In addition, Isogenotec® is also predestined for outdoor applications that are subject to UV radiation and protected against direct weathering. When used in outdoor applications, all seams have to be sealed water tightly with special Coroplast tape. Isogenotec® has proved its capabilities successfully in multiple projects since it was launched in early 2006.

Weathering stress test with and without UV protection



Weathering stress test simulating the maximum solar spectrum of the sun in addition to heat exposure and water impact. Evaluation of the weathering influence on the basis of sample color alterations.

Under these test conditions, 1.000 h test time correspond to approximately 1-2 years of exposure to Central European climate. Unprotected material fails after about 2.000 h.

Isogenotec® withstands more than 13.000 h of weathered solar radiation with hardly any deterioration.

Technical Data

Isogenotec® fulfills building code requirements

Isogenotec® meets the requirements of building materials class B1 of DIN 4102 - fire resistant as an outer encasement of mineral-fiber shells or mats of building materials class DIN 4102 A. No flammable drips in the event of a fire. In Germany, the building-materials test certificate P-BHH-2005-1000 has been issued for this product.



Isogenotec® is particularly safe: it is classified as a fire-resistant building material of the materials class DIN 4102-B1

Packaging

- Compact, space-saving packaging, required storage space per pallet: 1 m²
- Rolls individually sealed in PE cover to protect against damage and soiling
- Rolls packed lying on the pallet, thus easy to remove.
- Pallets stackable
- Roll length: 25 m
- Packing unit:
Pallet: 17 rolls of 30 m² each = 510 m²

Text for tenders

Cladding for heat-insulated piping for indoor and outdoor applications

1. Insulation material

Heat insulation made of mineral wool shells or mats at least 20 mm thick, building materials class A, fitted to pipe, sealed and attached with zinc-plated wire in accordance with DIN 4140.

2. Cladding

Surface covering made of Isogenotec®, 3-layer composite film of metallic appearance with aluminum intermediate layer and UV protection, 0.35 mm thick, materials class B1 as per DIN 4102 in accordance with certificate P-BHH-2005-1000, with permanent curl, in optimum working width of 1200 mm.

Cladding in accordance with DIN 4140, joints overlapped up to 30 mm, longitudinal seams to be closed by means of plastic rivets spaced approx. 20 cm apart. Longitudinal seams to be oriented to walls.

Cladding of bends, shut-off and regulating components using fitted pre-formed parts made of Isogenotec® thermoforming film.

Outdoor application exposed to weathering:

All seams to be masked water tightly with Coroplast Y 1232 X or Coroplast Y 1233 X tape (50 mm minimum width) specifically usable for Isogenotec® applications.

Property	Value	Unit	Testing method
Tensile impact strength	≥ 400	kJ/m ²	DIN EN ISO 8256
Tensile strength	> 35	N/mm ²	DIN EN ISO 527
Modulus of elasticity	ca. 1800	N/mm ²	DIN EN ISO 527
LOI (Limiting Oxygen Index)	35.5	% O ₂	ASTM D 2863-77
s _d -value	> 1300	m	
Emissivity ε	0.94		



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