

Dinamica PURE

Non-woven suede for internal coverings for the Automotive sector

MIKO

Environmental Product Declaration



INTERNATIONAL EPD® SYSTEM

Programme	The International EPD® System www.environdec.com
Programme operator	EPD International AB
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PCR	PCR 2011:06, vers. 4.0.0
Geographical scope	Global

An EPD should provide current information, and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

This EPD is compliant with ISO 14025



1 | Company and product description

1.1 The Group

Miko S.r.l. was established in 1997 in Gorizia as a producer for the furniture sector. Miko's core business is the production of **Dinamica®**, a non-woven suede which is obtained in part by using **recycled polyester**¹, produced by applying the principles of the circular economy. Through the years, Miko has broadened its product range to respond to the demands of other areas of application including the automotive sector. Today, internal car coverings constitute the main sector of use for Dinamica®.

In 2015, Miko was acquired by **Sage Automotive Interiors**, one of the world's leading providers of automotive interior fabrics with headquarters in South Carolina (U.S.) and in 2018 the Sage Group was purchased by the Japanese company **Asahi Kasei**, the producer of the raw material of Dinamica®.

1.2 The production sites

Miko's headquarters are in Gorizia, via Ressel 3, where the final steps of the process take place and the raw material supplied by **Asahi Kasei** is transformed, dyed and finished. Miko's Dinamica production is in Italy and the company distributes mainly in Europe. Sage supports the growth of the business with its sales and design offices in various countries.

The production of Dinamica® for the automotive sector has been continuously expanding since 2010 and currently accounts for 95% of Miko's production. Following significant revenue increases, the Sage Group and Asahi Kasei have adopted important commercial and production strategies based on new car programs.

1.3 Life Cycle Thinking and EPD Process

Over the years, Miko has demonstrated **its constant and active commitment to preventing and minimizing the impacts of its processes and products on the environment**, a commitment to which the adopted Environmental Policy bears witness.

Miko considers **respect for the environment and sustainable development** as strategic factors in the development of its activities and decisive for consolidating its leadership in the market. For these reasons, the organization has adopted a ***Life Cycle Thinking approach*** and credible communication of the environmental performance of its products.

With the aim of making systematic the method applied for the first **EPD® certification of the Dinamica® Auto** line issued in 2012 to all the company's products, Miko laid the foundations of a project completed the year after with the certification of the EPD® Process.

This certification gives Miko the possibility to internally handle the management of EPD® data involved in the verification procedure by itself and issue new EPDs for registration. In this context, the strategic objectives pursued by Miko are:

- to communicate the environmental data of its products through EPD® certifications;
- to monitor the environmental impacts associated with the life cycle of products through LCA;
- to improve the environmental performance of products, in synergy with the objectives of the environmental policy;
- | to activate partnerships with its customers and suppliers in order to obtain information about the environmental performance of products during the various stages of the supply chain, and to evaluate opportunities for improvement;
- | to provide guidance to stakeholders through specific initiatives, to raise external awareness and communication activities, and to train the employees on the most important environmental issues.

Miko's attention to the environment is also highlighted by the certification of the Environmental Management System (EMS) in accordance with the **ISO 14001 standard**, which allows to systematically monitor the impacts of the activities carried out by the various production phases and which guarantees regulatory compliance of the organization.

Miko's production processes are certified by **ISO 9001 and ISO / TS 16949**, which certify the compliance of its business processes with the most advanced quality management system in the automotive industry. Starting from February 2018, Miko has obtained the **IATF 16949:2016** certification which replaces the **ISO / TS 16949**.

Taking into account the requests of the clients in the automotive sector and, with a view to constant commitment to environmental and social responsibility and supply chain control, following the latest requests from automotive customers, Miko has completed the SAQ 5.0 obtaining a B score (last updated at the time of publication of the EPD: 09/2024).

SAQ 5.0 is a Sustainability Assessment questionnaire which covers the topics: Company Management, Human Rights and Working Conditions, Health and Safety, Business Ethics, Environment, Responsible Supply Chain Management and Responsible Sourcing of Raw Materials.



For further updates on the Miko's sustainability commitments please find additional information at the following website:

csr.miko.srl



Improvements at plant level

In 2024, Miko **completed the production expansion process** consisting of the construction of an expansion of existing facilities and the addition of new production equipment and machinery to support the growth of the business. The Company has also **upgraded the heat generators**, replacing them with higher-performance models.

Furthermore, since 2013, Miko has covered part of its electrical energy needs through renewable energy from the 1 MW photovoltaic plant located on the roof of the production plant, further evidence of its commitment to the application of the fundamentals of the Circular Economy. In addition, starting from 2021, **the company purchases the remaining amount of electricity from renewable sources** covered by Guarantee of Origin.

With a consistent focus on enhancing process efficiency, Miko has also implemented significant projects such as introducing a new **raw material with 70% and 90% of black fibers** in order to reduce the amount of dyestuffs used in dark-based recipes.

1.4 Responsibility

On July 26th 2013, the Board of Directors of Miko S.r.l. formally adopted the **Organization and Management Model**, in accordance with the Legislative Decree no. 231/01 (Liability of legal persons), together with the relevant Code of Conduct and OMM reviewed in 2021 in order to adapt to current regulatory changes.

This fundamental document is geared to ensure fairness and transparency in the conduct of business and corporate activities, to protect its position and image, as well as respect the expectations of its stakeholders.

In 2024 Miko obtained the authorization for emissions into the atmosphere, discharge of industrial wastewater and compliance with the forecast of the future acoustic zoning of the industrial zone with a validity of 15 years.

Miko implemented and periodically tested an emergency management (accident prevention and protection system) technically updating its staff and training for specific risk scenarios.



1.5 The product

The product covered by this EPD is Dinamica® Pure, Art: 100.E554
Dinamica® is a non-woven suede which is produced **without the use of organic solvents but using a water-based process**.

The manufacturing process used by Dinamica® makes it possible to extract fewer virgin raw materials since it uses a part of **recycled fibers from waste products** which would otherwise be sent to landfill sites or incinerated, thereby reducing CO₂ emissions and other environmental impacts associated with these processes.

With a view to always supply high quality Dinamica suede, in 2020 Miko designed a **new line of Dinamica® for the automotive sector called Pure** featuring a much higher recycled content². This was obtained through the substitution of the inner scrim which is now made from recycled polyester and fibers coming from a mixture of pre and post-consumer polyester ensuring the same characteristics that define Dinamica and standards of technical performance.

Under the microscope, Dinamica® is composed of three layers: a face, inner scrim and backing. Submerged in a water solution, the inner scrim attracts small polyester fibers, which are suspended in the liquid, to both surfaces; then, these are compacted using a water-based needle punching process. The suede is subsequently immersed in a **water-based polyurethane bath**, without using solvents.

This process compacts the fibers, making them elastic and resistant. During the dyeing and finishing stage, the production cycles are optimized and monitored managing the energy consumption at best and minimizing the waste of chemical products and water which is then drained through Miko's water purifier and partially re-used.

Dinamica Pure has received the "PETA-approved Vegan" certification, attributed by PETA to products that do not use raw materials of animal origin in the making of their products.

Dinamica® Pure (art: 100.E554) is in the same line of products that include: Dinamica Pure Stretch, Dinamica Pure Wide, Dinamica Pure Super Wide, Dinamica Pure LT, Dinamica Pure Stretch LT.



AsahiKASEI

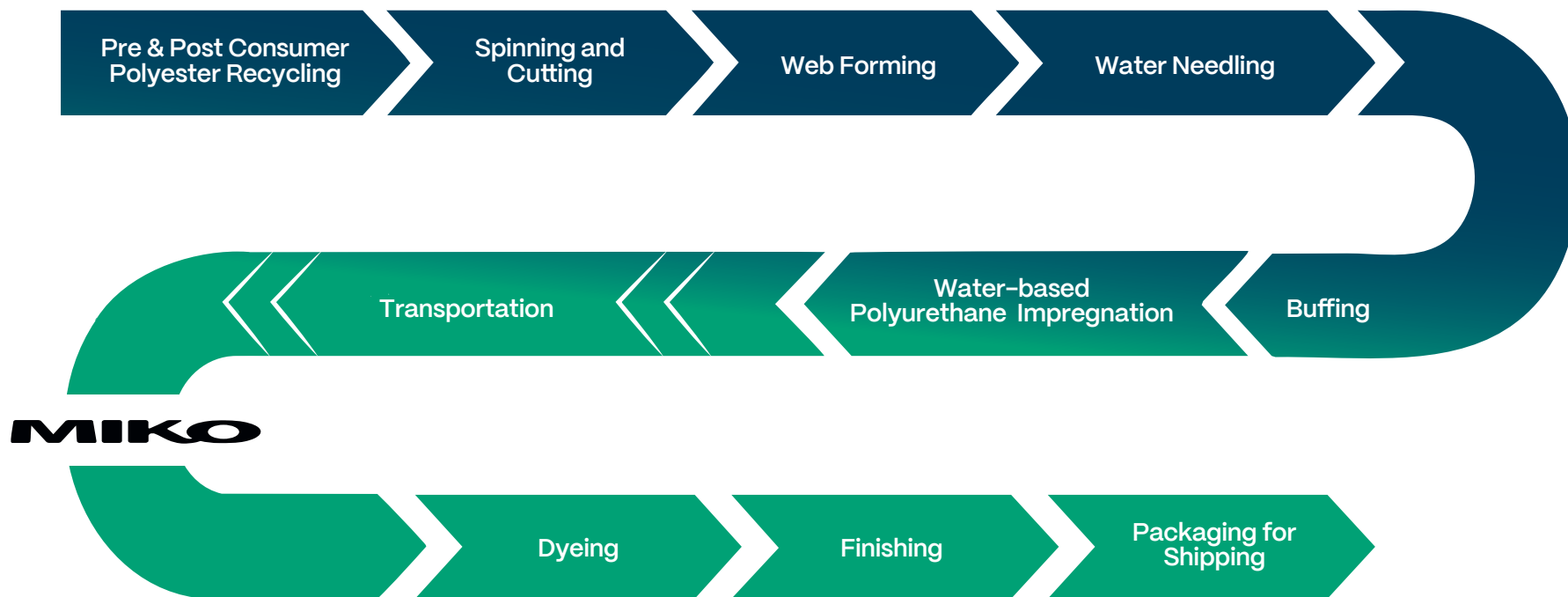


Fig. 1.2 – Dinamica® production process from Asahi Kasei to Miko

Physical & mechanical properties of Dinamica® Pure

Dinamica® Pure (art: 100.E554) is tested according to the requirements of the automotive sector through the application of control plans that include all the different regulations applicable by customers. The following table contains a summary of the methods used. Miko applies and refers to these widely used international standards while testing different properties of Dinamica®.

The selection of the standards presented in the table below contains a whole set of simulations of the performance of the product when it is processed and put on the market:

Type of test	Test method	Unit	Value
Weight	ISO 29073/1	g/m ²	300
Thickness	ISO 5084	mm	1,10
Usable width	EN 1773	mm	≥ 1400
Tensile strength	ISO 13934/1	N/5cm	≥ 600
Tear strength	ISO 13937/2	N	≥ 20
Abrasion resistance with Martindale	ISO 12947	Cycles	50.000
Flame behavior	FMW SS 302	mm/min	≤ 100
Color tolerance versus master sample		> 4 Grey scale (ISO 105-A02)	

Tab. 1.1 – Technical specification of Dinamica® Pure

The above data is indicative and generally represents the Dinamica® Pure product line. Dyeing and physical-mechanical performances of Dinamica® Pure are established ad hoc in specific technical specifications according to the client's needs.

1.6 Content declaration

DINAMICA® PURE 100.E554

90%

Polyester

10%

Polyurethane

75%

Recycled
material content

The recycled polyester comes from pre-consumer and post-consumer materials.

1.7 Information on the phases of use and end-of-life management

Dinamica® Pure is a suede used to cover seats, pillows, bolsters, armrests, piping, headrests, and parcel shelf. Thanks to its excellent performance, it is also suitable for bolster and armrest applications where the material is subjected to a high level of abrasion.

At the end of its life cycle, Dinamica® is disposed of in compliance with the directives concerning use and disposal of vehicles in the various countries.



2 | Environmental performance

The environmental performance of Dinamica® has been assessed using the LCA (Life Cycle Assessment) analysis method, starting from the extraction of the raw materials up to the completion of the finished product and its packaging. The end-of-life stage of the product and its packaging is also included.

The study was carried out in conformity with the ISO 14040 standard, following the Product Category Rules (PCR), approved by the technical committee of the International EPD System: PCR 2011:06 NONWOVENS FOR CLOTHING, PROTECTIVE CLOTHING AND UPHOLSTERY. SimaPro v 9.5 software was used for the development of the LCA model.

2.1 Declared unit

The declared unit is represented by 1 m² of Dinamica® Pure non-woven suede with a weight of 300 g//m².

2.2 System boundary

The system boundary, presented in Figure 2.1, is cradle-to-gate plus end-of-life. The life cycle of the product is divided into three main stages: upstream, core and downstream processes.

The Upstream Processes include:

- extraction and processing of the raw materials;
- recycling processes of secondary materials from other product life cycles;
- production of components for the manufacturing of the raw non-woven suede;
- production of chemicals for dyeing, finishing and water treatment;
- production of packaging for the non-woven suede and the finished product;
- transport of raw materials and components along the upstream supply chain;
- transport of waste for the production of recycled polyester fibers;
- generation of electricity and production of fuels, steam and other energy carriers used in upstream processes.

The Core Processes include:

- production of raw non-woven suede;
- dyeing and finishing;
- treatment of process water;
- transport of components for the production of raw non-woven suede;
- transport of chemicals for dyeing, finishing and water treatment;
- transport of the raw non-woven suede;
- transport and treatment of waste produced in the core processes;
- generation of electricity and production of fuels, steam and other energy carriers used in core processes.

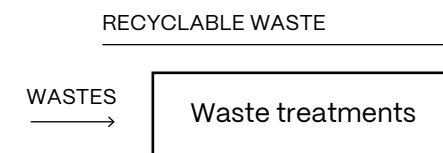
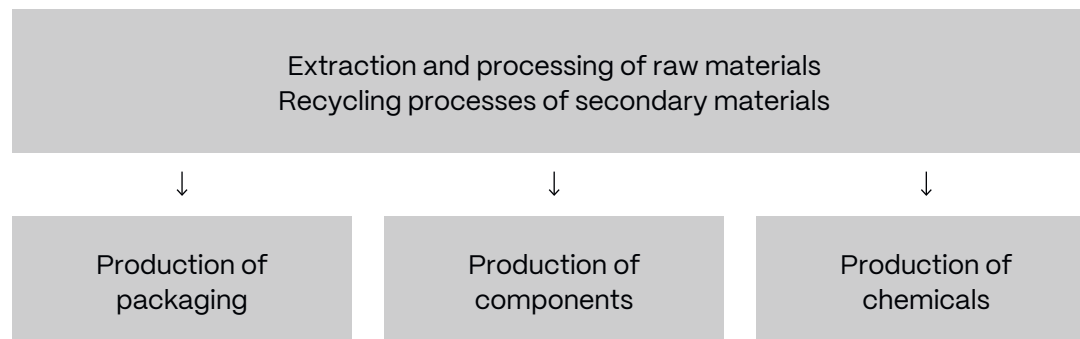
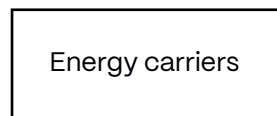
Moreover, Miko R&D activities (electricity consumption, chemicals, etc.) are included in the Core Processes.

The Downstream Processes include:

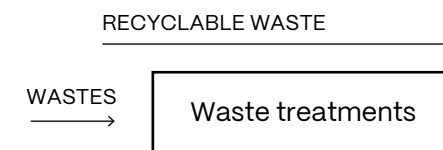
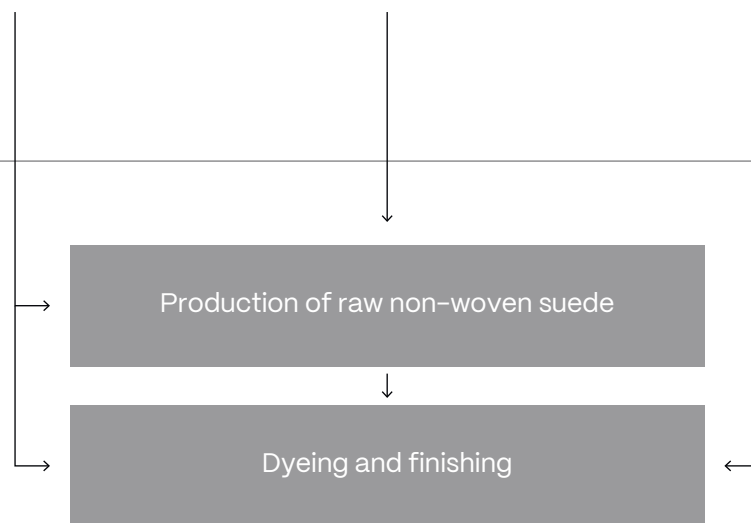
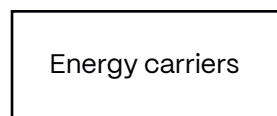
- end-of-life treatment of the used product and its packaging, including transportation;
- generation of electricity and production of fuels, steam and other energy carriers used in downstream processes.

Product distribution and use stage are excluded from the system boundary, in accordance with the reference PCR.
The production and end-of-life processes of infrastructure and capital goods are excluded for upstream, core and downstream processes.

Upstream



Core



Downstream

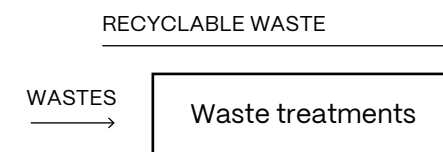
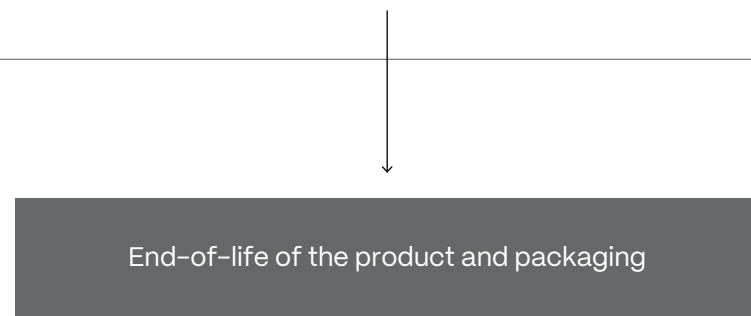
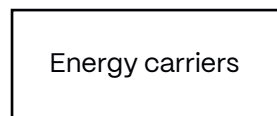


Fig.2.1 – System boundary

2.3 Cut-off rules

Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included. Also, 99% of the mass of the product content and 99% of the energy use of the product life cycle was accounted for.

2.4 Data quality

The data quality requirements considered in the study are those laid down in the referenced PCR document. In line with these rules, specific data for the fiscal year **2023** (from April 1, 2023, to March 31, 2024) were used for the core processes, as well as selected generic data taken from the Ecoinvent v.3.10 database for upstream and downstream processes.

Upstream processes



RAW MATERIALS & PACKAGING PRODUCTION

Extraction and processing of the raw materials, the production of all input materials for the raw non-woven, the dyeing and finishing as well as for the production of packaging.

Core processes



RAW MATERIALS TRANSPORT

Transport of the raw materials for the core processes.



RAW NON-WOVEN SUEDE PRODUCTION

Core processes carried out by Asahi Kasei (Japan) include all the operations for the production of raw non-woven suede.



DYEING AND FINISHING

Core processes carried out by Miko (Italy) include all the operations for dyeing and finishing of the raw non-woven suede which lead to the creation of Dinamica®

Downstream processes



END-OF-LIFE OF THE PRODUCT AND ITS PACKAGING

The product at its end of life is usually included in the fraction known as Automotive Shredder Residue (ASR), generated after processing End-of-Life Vehicles. In the European context this residue is commonly disposed of in landfill, therefore this scenario has been applied for the end of life of the product in the LCA model. The transport of the waste to the landfill is also included.

2.5 Results of the environmental performance indicators

Here below are the results of the life cycle impact assessment of Dinamica® Pure. The data concern the production of 1 m² of non-woven suede, divided into Upstream, Core and Downstream Processes.

Version 2.0 of impact categories, as defined in the specific section of www.environdec.com, is used. This version adopts the main indicators of the EN 15804:2012+A2:2019/AC:2021 standard and the characterization factors deriving from the EF 3.1 method. In the tables totals may not match because of rounded data.

Impact category indicators			Upstream		Core			Sub-Total Cradle-to-gate	Downstream	Total
Parameter		Unit	Raw materials production	Packaging production	Raw materials transport	Raw non-woven suede production	Dyeing and finishing		End-of-life	
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	1,75	0,14	0,85	1,26	1,21	5,21	0,04	5,25
	Biogenic	kg CO ₂ eq.	4,2E-02	-1,4E-02	1,0E-04	1,1E-02	1,5E-01	1,9E-01	5,1E-02	2,4E-01
	Land use and land transformation	kg CO ₂ eq.	1,1E-03	6,5E-04	8,8E-05	1,0E-04	1,3E-04	2,1E-03	6,7E-06	2,1E-03
	Total	kg CO ₂ eq.	1,79	0,12	0,85	1,27	1,36	5,40	0,09	5,49
Ozone layer depletion (ODP)		kg CFC 11 eq.	2,9E-06	3,1E-09	1,3E-08	2,2E-08	3,0E-08	3,0E-06	3,6E-10	3,0E-06
Acidification potential (AP)		mol H+ eq.	9,0E-03	6,1E-04	4,5E-03	5,0E-03	1,4E-03	2,0E-02	7,6E-05	2,1E-02
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	4,4E-04	4,7E-05	1,6E-05	1,7E-04	7,6E-05	7,4E-04	1,4E-06	7,5E-04
	Aquatic marine	kg N eq.	1,7E-03	1,8E-04	1,6E-03	8,5E-04	3,7E-04	4,7E-03	1,2E-03	5,9E-03
	Aquatic terrestrial	mol N eq.	1,5E-02	1,6E-03	1,8E-02	8,4E-03	3,9E-03	4,7E-02	3,0E-04	4,7E-02
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	7,5E-03	5,9E-04	5,6E-03	3,0E-03	2,8E-03	1,9E-02	1,1E-04	2,0E-02
Abiotic depletion potential (ADP)*	Metals and minerals	kg Sb eq.	1,4E-05	6,5E-07	3,1E-07	3,0E-07	9,8E-07	1,7E-05	5,1E-08	1,7E-05
	Fossil resources	MJ, net calorific value	31,5	2,61	11,2	15,2	18,1	78,6	0,27	78,9
Water deprivation potential (WDP)*		m ³ world eq. deprived	1,1E+00	6,5E-02	1,8E-02	8,1E-02	5,8E-01	1,8E+00	-4,6E-02	1,8E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Resource use indicators			Upstream		Core			Sub -Total Cradle-to-gate	Downstream	Total
Parameter		Unit	Raw materials production	Packaging production	Raw materials transport	Raw non-woven suede production	Dyeing and finishing		End-of-life	
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1,76	0,42	0,05	8,96	4,66	15,9	0,00	15,9
	Used as raw materials	MJ, net calorific value	0,00	0,97	0,00	0,00	0,00	0,97	0,00	0,97
	Total	MJ, net calorific value	1,76	1,39	0,05	8,96	4,66	16,8	0,00	16,8
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	25,9	2,61	11,2	15,2	18,1	73,0	0,27	73,3
	Used as raw materials	MJ, net calorific value	5,60	0,00	0,00	0,00	0,00	5,60	0,00	5,60
	Total	MJ, net calorific value	31,5	2,61	11,2	15,2	18,1	78,7	0,27	78,9

The option chosen for the calculation of primary energy use Indicators is "B"³

Any comparison of the results of the environmental performance indicators in this EPD with previous EPDs issued by Miko S.r.l. under the International EPD® System program, should be avoided as the current results have been calculated using an updated version of the PCR. This updated version includes, for instance, a new method for calculating impact categories and a different configuration of system boundary.





3 | Programme information and contacts

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Technical support: **Dr. Paolo Simon Ostan, appointed
LCA specialist for Miko S.r.l. EPD® Process**

Product Category Rules (PCR)

PCR 2011:06 NONWOVENS FOR CLOTHING, PROTECTIVE CLOTHING AND UPHOLSTERY, v. 4.0.0, CPC 27922

PCR review was conducted by: The Technical Committee of the International EPD® System, chair review: Paola Borla. The review panel may be contacted via info@environdec.com.

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006 via:
x EPD verification by EPD Process Certification*

Internal auditor: Igor Muzzolini, Miko S.r.l.

Third-party verification: SGS Italia S.p.A., Via Caldera, 21, 20153 Milano (Italy) is an approved certification body accountable for third-party verification.

Third-party verifier is accredited by: ACCREDIA, accreditation number: 0005VV

*For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v4, Section 7.5.

EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

Miko s.r.l has the sole ownership, liability and responsibility of the EPD.

References

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