

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	<b>ASSA ABLOY / Pemko Manufacturing Company</b>
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150070-IBA1-EN
Issue date	10.04.2015
Valid to	09.04.2020

## Hinges and Handles – Pemko Perimeter Gasketing **ASSA ABLOY / Pemko Manufacturing Company**

[www.bau-umwelt.com](http://www.bau-umwelt.com) / <https://epd-online.com>



## 1. General Information

### ASSA ABLOY / Pemko Manufacturing Company

**Programme holder**

IBU - Institut Bauen und Umwelt e.V.  
Panoramastr. 1  
10178 Berlin  
Germany

**Declaration number**

EPD-ASA-20150070-IBA1-EN

**This Declaration is based on the Product Category Rules:**

Locks and fittings , 07.2014  
(PCR tested and approved by the independent expert committee (SR))

**Issue date**

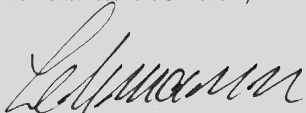
10.04.2015

**Valid to**

09.04.2020



Prof. Dr.-Ing. Horst J. Bossenmayer  
(President of Institut Bauen und Umwelt e.V.)



Dr.-Ing. Burkhard Lehmann  
(Managing Director IBU)

### Pemko Perimeter Gasketing

**Owner of the Declaration**

Pemko Manufacturing Company  
5535 Distribution Drive  
Memphis, TN 38141 USA

**Declared product / Declared unit**

The declaration represents 1 foot of Head & Jamb Gasket – Pemko Perimeter Gasketing consisting of the following items:

- A306 aluminum retainer
- PK47 PemkoPrene™ gasket
- SP8055 Steel Fastener

**Scope:**

This declaration and its LCA study are relevant to the Pemko Perimeter Gasketing manufactured from components sourced from international Tier-1 suppliers. The manufacturing occurs in Memphis, Tennessee

**Verification**

The CEN Standard EN 15804 serves as the core PCR

Independent verification of the declaration  
according to ISO 14025

internally  externally



Dr. Wolfram Trinius  
(Independent verifier appointed by SVR)

## 2. Product

### 2.1 Product description

Product name: Pemko Perimeter Gasketing

Product characteristic:

- Pemko perimeter gasketing consists of an aluminum channel which accepts a PemkoPrene™ gasket designed to be soffit-applied to the jamb and header of an opening effectively sealing any gap between the door and frame.
- The line includes models which can be mounted to either wood or hollow metal doors.
- The line includes models which can be applied in either external or internal applications.
- This line is provided with standard sheet metal fasteners, but special fasteners are available. Examples include self-tapping/self-drilling and security fasteners.
- All Pemko perimeter gasketing is available in either single stick lengths (i.e. 36", 84", 96") or as jamb set lengths (i.e. 3684, 4896).
- Standard color for the aluminum is mill finish, but is also available in clear anodized, bright dip gold anodized, dark bronze anodized, gold anodized, satin nickel anodized



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aluminum, or white. The gasket portion, with a mill finish part, comes standard as gray, but black is also available.

- This Pemko perimeter gasketing option seals gaps up to 3/8", but within the entire line options exist for a variety of gap dimensions.

**2.2 Application**

Pemko perimeter gaskets consist of a variety of solutions for sealing the gap between a door and the jamb in exterior and interior applications and on hollow metal or wood doors. Common application examples are: Office Buildings, Healthcare Facilities, School/University Buildings, Urban Renewal Projects, Mercantile Buildings, Manufacturing Facilities, Warehouses and Factories, Government Buildings, Hospitality Environments, etc.

**2.3 Technical Data**

For the declared product, the following technical data in the delivery status must be provided with reference to the test standard.

**Technical data**

Parameter	Value
Available Finishes:	Mill Finish Aluminum
Available Sizes:	up to 180"
Width:	1-1/8" (28.57 mm)
Height:	1/4" (6.35 mm)
Insert Type:	PemkoPrene

**2.4 Placing on the market / Application rules**

The standards that can be applied for Pemko Perimeter Gasketing are:

- UL10b Standard for Fire Tests of Door Assemblies
- UL10c Standard for Positive Pressure Fire Tests of Door Assemblies
- UL1784 Air Leakage Tests of Door Assemblies
- UL 2818 GreenGuard Certification Program for Chemical Emissions for Building Materials, Finishes, and Furnishings
- ASTM E283-04 (2012) Air Leakage Through Exterior Windows, Curtain Walls, and Doors
- ASTM E90-2009 Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- ANSI/BHMA A156.22 Door Gasketing Systems.

**2.5 Delivery status**

Pemko Perimeter Gasketing is delivered that is comparable to the full length or longest length ordered.

**2.6 Base materials / Ancillary materials**

The primary product components and/or materials must be indicated as a percentage mass to enable the user of the EPD to understand the composition of the product in delivery status.

The average composition for Pemko Perimeter Gaskets is as following:

Component	Percentage in mass (%)
Aluminum	81.71
Plastics	15.85
Stainless Steel	2.44
Total	100.0

**2.7 Manufacture**

The Pemko Perimeter Gaskets utilize an Alcoa 6063-T6 hardened aluminum alloy extruded aluminum channel and an Exxon-Mobile Thermoplastic Elastomer-type gasket (PemkoPrene™). The aluminum channel is cut and punched (with slotted holes for adjustment) per order and then receives the PemkoPrene gasket before packaging. Manufacturing is done in an ISO14001-2014 certified facility in Memphis, Tennessee.

**2.8 Environment and health during manufacturing**

ASSA ABLOY is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates.

- Pemko's Perimeter Gaskets are third party certified GREENGUARD Gold by UL Environment
- Environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and Environment Management program effectiveness is evaluated.
- Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- Any waste metals during machining are separated and recycled. The waste from the water-based painting process is delivered to waste treatment plant.

**2.9 Product processing/Installation**

Pemko Perimeter Gaskets are distributed through a network of distributors and are installed by general contractors, end users, and homeowners.

**2.10 Packaging**

Pemko Perimeter Gaskets are packed in a cardboard box with corrugated carton inlays. The packaging is fully recyclable.

80% of carton is made from recycled material. 100% of paper documents are made from recycled material.

Material	Value (%)
Cardboard/paper	100.0
Total	100.0

**2.11 Condition of use**

Under normal use, Pemko Perimeter Gasketing requires no maintenance or cleaning efforts and should last a minimum of 5 years before requiring replacement, although material has proven to last longer in some applications. To ensure aesthetic appearance only, minimal cleaning may be needed periodically. Cleaning requires a soft rag and a mild soap/warm water mixture to remove any dirt or dust that may have accumulated from general use.

**2.12 Environment and health during use**

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

PemkoPrene™ has been tested to meet the requirements of UL2818 for low VOC content and has achieved GREENGUARD Gold status through testing with UL Environment, a third party certification agency.

**2.13 Reference service life**

Approved for a minimum of 5 years under normal circumstances, although materials proven to last longer in many applications.

**2.14 Extraordinary effects**

**Fire**

Suitable for use in fire and smoke doors (UL10B and UL1C).

Smoke Tested - UL1784 - tested in accordance with UL 1784-2001 - Air Leakage Tests of Door Assemblies, and meet the performance criteria for allowable air leakage as specified in NFPA 105-99 Installation of Smoke Control Door Assemblies. Meets the requirements for category H - Smoke Seals.

**Water**

Contains no substances that have any impact on water in case of flood.

**Mechanical destruction**

No danger to the environment can be anticipated during mechanical destruction.

**2.15 Re-use phase**

The product is possible to re-use during the reference service life and be moved from one door to another. The majority, by weight, of components is Aluminum alloy, plastic, and steel which can be recycled.

The majority, of components is aluminum which can be recycled. The perimeter gasket can be mechanically disassembled to separate the different materials. 100% of the materials used are recyclable.

**2.16 Disposal**

No disposal is foreseen for the PemkoPrene™ nor for the corresponding packaging.

**2.17 Further information**

For additional information on our products, please visit our website or contact our Customer Service Department  
 Phone: 1-800-824-3018  
 Web Address: www.pemko.com

**3. LCA: Calculation rules**

**3.1 Declared Unit**

The declaration refers to the functional unit of 1 piece of Pemko Perimeter Gasket as specified in Part B requirements on the EPD for PCR Windows and doors/IBU PCR Part B/:

**Declared unit**

Name	Value	Unit
Declared unit	1	Foot (30.48 cm) of perimeter gasket
Conversion factor to 1 kg	26.89	-

**3.2 System boundary**

Type of the EPD: cradle to grave - with Options  
 The following life cycle phases were considered:

Production stage:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing

Construction stage:

- A4 - Transport from the gate to the site

End-of-life stage:

- C2 – Transport to waste processing
- C3 – Waste processing for recycling and
- C4 – Disposal (landfill)

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or

disposal of final residues.

- D - Declaration of all benefits or recycling potential from End-of-Life and A5.

**3.3 Estimates and assumptions**

Transport:  
 For materials and pre-products the actual means of transport and distances, provided by the suppliers, were considered.

EoL:  
 In the End-of-Life phase a recycling scenario with 100% collection rate was assumed.

**3.4 Cut-off criteria**

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than 1% in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

**3.5 Background data**

For life cycle modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by PE INTERNATIONAL AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and

documented datasets which are documented in the online

GaBi-documentation /GaBi 6 2013D/.

To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

### 3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.

PE INTERNATIONAL performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the GaBi 6 software database. The last revision of the used background data has taken place not longer than 10 years ago.

### 3.7 Period under review

The period under review is 2013/14 (12 month average).

### 3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD the following specific life cycle inventories for the WIP are considered:

- Waste incineration of plastic
- Waste incineration of paper
- Waste incineration of wood

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

### 3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

## 4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

#### Reference service life

Name	Value	Unit
Reference service life	5	a

#### End of life (C1-C4)

Name	Value	Unit
Collected separately Aluminum, Stainless Steel, Plastics	0.037	kg
Reuse Plastics	0.0059	kg
Recycling Aluminum	0.030	kg
Recycling Stainless Steel	0.00091	kg

#### Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste type (including packaging)	0.037	kg
Recycling Aluminum	71.72	%
Recycling Stainless Steel	2.14	%
Thermal Treatment Plastics	13.91	%
Reuse Paper packaging (from A5)	12.23	%

## 5. LCA: Results

Results shown below were calculated using CML Methodology.

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>1)</sup>	Refurbishment <sup>1)</sup>	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of Gasket PemkoPrene

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Global warming potential	[kg CO <sub>2</sub> -Eq.]	3.82E-01	8.80E-04	7.34E-03	8.80E-04	0.00E+00	1.47E-02	-2.87E-01
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	9.16E-11	4.21E-15	3.36E-14	4.21E-15	0.00E+00	4.43E-14	1.34E-10
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	1.83E-03	4.03E-06	1.67E-06	4.03E-06	0.00E+00	3.75E-06	-1.58E-03
Eutrophication potential	[kg (PO <sub>4</sub> ) <sup>3-</sup> -Eq.]	1.01E-04	9.20E-07	2.92E-07	9.20E-07	0.00E+00	2.84E-07	-7.33E-05
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	1.36E-04	-1.30E-06	1.19E-07	-1.30E-06	0.00E+00	1.82E-07	-8.60E-05
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	9.00E-07	3.32E-11	1.32E-10	3.32E-11	0.00E+00	9.73E-10	-8.92E-08
Abiotic depletion potential for fossil resources	[MJ]	4.01E+00	1.21E-02	2.06E-03	1.21E-02	0.00E+00	6.23E-03	-2.75E+00

### RESULTS OF THE LCA - RESOURCE USE: 1 piece of Gasket PemkoPrene

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.46E+00	-	-	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of renewable primary energy resources	[MJ]	1.46E+00	4.78E-04	1.92E-04	4.78E-04	0.00E+00	4.56E-04	-1.23E+00
Non renewable primary energy as energy carrier	[MJ]	4.96E+00	-	-	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	4.96E+00	1.22E-02	2.41E-03	1.22E-02	0.00E+00	6.92E-03	-3.53E+00
Use of secondary material	[kg]	1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	[m <sup>3</sup> ]	3.73E-03	3.38E-07	2.14E-05	3.38E-07	0.00E+00	3.60E-05	-3.23E-03

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### 1 piece of Gasket PemkoPrene

Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.29E-04	2.77E-08	1.66E-07	2.77E-08	0.00E+00	4.84E-07	-4.60E-05
Non hazardous waste disposed	[kg]	5.47E-02	1.53E-06	1.84E-04	1.53E-06	0.00E+00	1.37E-03	-4.68E-02
Radioactive waste disposed	[kg]	3.78E-04	1.59E-08	1.41E-07	1.59E-08	0.00E+00	2.76E-07	-3.08E-04
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
Materials for recycling	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.65E-02	0.00E+00	-
Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
Exported electrical energy	[MJ]	0.00E+00	0.00E+00	9.28E-03	0.00E+00	0.00E+00	2.82E-02	-
Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.62E-02	0.00E+00	0.00E+00	7.73E-02	-

## 6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

Production phase (module A1-A3) contributes between 96 and 100% to total impact assessment. This stage is dominated by upstream emissions associated with steel- and secondary aluminum manufacturing processes. Aluminum accounts with app. 82% to the overall mass of the product,

therefore, the impacts are in line with the mass composition of the product

The environmental impacts for the transport (A2) have a negligible impact within this stage.

In the end-of-life phase, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

## 7. Requisite evidence

Not applicable in this EPD.

## 8. References

### Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (pub.):  
Generation of Environmental Product Declarations (EPDs);

### General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04  
[www.bau-umwelt.de](http://www.bau-umwelt.de)

### IBU PCR Part A

Institut Bauen und Umwelt e.V., Königswinter (pub.):  
Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013  
[www.bau-umwelt.de](http://www.bau-umwelt.de)

### IBU PCR Part B

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Locks and fittings.  
[www.bau-umwelt.com](http://www.bau-umwelt.com)

### ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

### EN 15804

EN 15804:2012+A1:2014: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

### DIN EN 1154

DIN EN 1154: Building hardware - Controlled door closing devices - Requirements and test methods (includes amendment A1:2002)

### DIN EN ISO 14001

Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009)

### ANSI/BHMA A156.22-2013

ANSI/BHMA A156.22-2013: Door Gasketing Systems

### ASTM E90

ASTM E90: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

### ASTM E283

ASTM E283: Air Leakage Through Exterior Windows, Curtain Walls, and Doors

### NFPA 105

NFPA 105: Installation of Smoke Control Door Assemblies

### UL 10b

UL 10b: Standard for Fire Tests of Door Assemblies

### UL 10c

UL 10c: Standard for Positive Pressure Fire Tests of Door Assemblies

### UL 1784

UL 1784: Air Leakage Tests of Door Assemblies

### UL 2818

UL 2818: GREENGUARD Certification Program For Chemical Emissions for Building Materials, Finishes, and Furnishings

## 9. Annex

Results shown below were calculated using TRACI Methodology.

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>(1)</sup>	Refurbishment <sup>(1)</sup>	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 piece of Gasket PemkoPrene

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
GWP	Global warming potential	[kg CO <sub>2</sub> -Eq.]	3.82E-01	8.80E-04	7.34E-03	8.80E-04	0.00E+00	1.47E-02	-2.87E-01
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	9.74E-11	4.48E-15	3.57E-14	4.48E-15	0.00E+00	4.72E-14	1.43E-10
AP	Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	1.73E-03	5.26E-06	2.03E-06	5.26E-06	0.00E+00	4.40E-06	-1.48E-03
EP	Eutrophication potential	[kg N-eq.]	1.93E-04	3.72E-07	1.17E-07	3.72E-07	0.00E+00	1.34E-07	-3.53E-05
Smog	Ground-level smog formation potential	[kg O <sub>3</sub> -eq.]	1.69E-02	1.08E-04	4.73E-05	1.08E-04	0.00E+00	3.46E-05	-1.29E-02
Resources	Resources	[MJ]	3.98E-01	1.75E-03	2.41E-04	1.75E-03	0.00E+00	6.41E-04	-2.47E-01

### RESULTS OF THE LCA - RESOURCE USE: 1 piece of Gasket PemkoPrene

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.46E+00	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.46E+00	4.78E-04	1.92E-04	4.78E-04	0.00E+00	4.56E-04	-1.23E+00
PENRE	Non renewable primary energy as energy carrier	[MJ]	4.96E+00	-	-	-	-	-	-
PENRM	Non renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-
PENRT	Total use of non renewable primary energy resources	[MJ]	4.96E+00	1.22E-02	2.41E-03	1.22E-02	0.00E+00	6.92E-03	-3.53E+00
SM	Use of secondary material	[kg]	1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of non renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	[m <sup>3</sup> ]	3.73E-03	3.38E-07	2.14E-05	3.38E-07	0.00E+00	3.60E-05	-3.23E-03

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### 1 piece of Gasket PemkoPrene

Parameter	Parameter	Unit	A1-3	A4	A5	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1.29E-04	2.77E-08	1.66E-07	2.77E-08	0.00E+00	4.84E-07	-4.60E-05
NHWD	Non hazardous waste disposed	[kg]	5.47E-02	1.53E-06	1.84E-04	1.53E-06	0.00E+00	1.37E-03	-4.68E-02
RWD	Radioactive waste disposed	[kg]	3.78E-04	1.59E-08	1.41E-07	1.59E-08	0.00E+00	2.76E-07	-3.08E-04
CRU	Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.65E-02	0.00E+00	-
MER	Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
EEE	Exported electrical energy	[MJ]	0.00E+00	0.00E+00	9.28E-03	0.00E+00	0.00E+00	2.82E-02	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	2.62E-02	0.00E+00	0.00E+00	7.73E-02	-





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