Program EPDPoland
Operator: MULTICERT Sp. z o.o.

EPD Environmental Product Declaration
EPD VERIFIED
EPD POLAND

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Product name:
Polypropylene spacer rings

Producer:
POLIAMID PLASTICS Sp. z o.o.

POLiAMID PLASTICS

Issued on 8 August 2025
Valid until 8 August 2030

GENERAL INFORMATION

EPD OWNER

Manufacturer / EPD Holder	POLIAMID PLASTICS Sp. z o.o.
Address	ul. Zajęcza 3, 57-300 Kłodzko, Poland
Contact details	Jarosław Baranowski info@poliamid.com
Website	https://poliamid.com

PRODUCT IDENTIFICATION

Product name	Polypropylene spacer rings
Place(s) of production	Kłodzko, Polska

EPD INFORMATION

EPD Poland program operator	Multicert Sp. z o.o. Ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl, epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Izabela Sztamberek-Sochan, Ph.D.
EPD number	EPD-P 02.05.2025
Registration:	EPD Polska www.epd.org.pl
Publishing date	8 August 2025
EPD valid until	8 August 2030
Reasons for performing LCA	B2B
Accountability	The EPD Holder is responsible for the information provided and evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life cycle assessment data nor supporting evidence.

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

COMPANY INFORMATION

HOLDER OF THE EPD

POLIAMID PLASTICS Sp. z o.o.
ul. Zajęcza 3, 57-300 Kłodzko
Poland

COMPANY PROFILE

POLIAMID PLASTICS is a Polish family-owned company established in 1989, specializing in the production of high-quality plastic components using injection molding technology. With decades of experience and continuous development, the company operates in two key areas.

The first area includes proprietary products designed for infrastructure and industrial applications, such as rings and accessories for pre-insulated pipes, pipe covers of various types, and protective caps for industrial valves. The second area involves the production of custom components tailored to specific customer requirements across industries such as automotive, electronics, energy, and construction.

POLIAMID PLASTICS operates a modern production facility equipped with 44 injection molding machines with clamping forces ranging from 35 to 1300 tons. The site features an integrated material feeding system, centralized cooling, and a heat recovery system to improve energy efficiency. The company also maintains its own tool shop and R&D department, enabling full control over product development and manufacturing processes.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Plastic spacer rings are used in pre-insulated pipe systems manufactured using the semi-continuous method. They serve to stabilize the carrier pipe within the outer casing pipe and to maintain the designed distance between them. This enables uniform and effective filling of the space with thermal insulation, which is essential for minimizing heat loss or preventing unwanted temperature increases when transporting cooling media.

The rings are mounted directly onto the carrier pipe at regular intervals. Proper positioning of the carrier pipe prevents deformation or displacement during the insulation pouring process, which contributes to the durability and performance of the entire system.

The product range of spacer rings includes the folowing types of products:

Centerrings

Sizes from DN 20 (26.9) to DN 1200 (1219.2) series 0, I, II, III, IV available.

Centerrings with lock

Sizes DN 20 (26.9) to DN 200 (219.1) series I, II, III available.

Double rings

Sizes 2 x DN 20 (26,9) to 2 x DN 200 (219,1 series I, II, III available.

Folding rings

Sizes DN 250 (273.0) to DN 1200 (1219.2) series 0, I, II, III, IV available.

Accessories

Plugs, supports, nozzles and everything else needed for the production, transport and installation of pre-insulated pipes.

PRODUCT APPLICATION

Polypropylene spacer rings are versatile centering and support elements used wherever precise alignment, load bearing and thermal isolation of pipes or structural components are required.

District-heating/cooling pipes: Center steel carrier pipes within rigid-PUR insulation and PE casing (EN 13941-1, EN 253, EN 448).

Industrial process piping: Support hot-oil and chemical lines inside secondary containment jackets (–40 °C to +95 °C).

Manhole and gully covers: Act as adjustment (infill) rings under frames, meeting EN 124 strength classes B125–D400.

Precast-concrete formwork: Serve as spacers between cores and liners; protect rebar ends during transport.

HVAC ducts & cable trays: Center circular ducts in shafts and support trays inside conduits for fire-stop integrity.

Custom assemblies: Precision standoffs in filters, battery modules, solar-panel mounts, and other bespoke polymer solutions.

PRODUCT STANDARDS

The product complies with:

EN 13941-1:2019 – Design and installation of pre-insulated bonded single and twin pipe systems

EN 253:2003 – District heating pipes: factory-made thermal-insulated bonded single and twin pipe systems

EN 448:2009 – District heating pipes: fittings for pre-insulated pipe–in-pipe assemblies

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://poliamid.com

PRODUCT RAW MATERIAL COMPOSITION

The spacer rings are manufactured entirely from 100 % virgin polypropylene homopolymer. The raw-material granules are processed via high-precision injection molding to form the finished rings.

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1% (1000 ppm).

PRODUCT LIFE-CYCLE

RAW MATERIALS ACQUISITION TRANSPORT (A1, A2)

Modules A1 and A2 encompass the production and delivery of virgin polypropylene granules used to mold spacer rings. Polymerization plants manufacture 100 % new PP homopolymer or copolymer granules to meet specified mechanical and thermal performance. These semi-finished polymer granules are sourced from certified European petrochemical producers. Transportation under Module A2 covers road freight using EU-average heavy-goods-vehicle datasets for distance (approx. 200 km) and fuel consumption.

MANUFACTURING (A3)

The production of polypropylene spacer rings takes place at Poliamid Sp. z o.o.'s state-of-the-art injection-molding facility in Kłodzko (Poland). The process begins with 100 % virgin polypropylene homopolymer granules, which are carefully unloaded, logged into the quality-management system and transferred into desiccant dryers. There the resin is held at the temperature and duration specified in the raw material specification until moisture content falls below expected level, ensuring defect-free molding.

Next, the dried granules feed into a heated barrel of a high-clamp-force injection press (200–1 300 t). A reciprocating screw melts and homogenizes the polymer under precisely controlled temperature and back-pressure settings. The molten plastic is then injected at 800–1 200 bar into precision-machined steel molds. A pack-and-hold phase compensates for shrinkage as the polymer cools against water-cooled mold channels.

After a 20–40-second cooling interval, the mold opens and ejector pins transfer the newly formed rings, which are then manually collected by the operator. During this stage, gate vestiges and flash are removed to ensure smooth edges and uniform wall thickness. Each ring undergoes appropriate quality control procedures to ensure compliance with dimensional and surface requirements. Any parts found to be outside specification are manually segregated and returned to the granule reprocessing stream.

Approved rings are bulk-loaded into customers' returnable wooden crates (most common) or, for smaller sizes, placed in polyethylene bags within those crates. Crates are labeled with product code, dimensions, batch number and production date, then staged in the shipping area and loaded onto covered trailers for delivery. From granule drying through molding, inspection and crate-loading, this tightly controlled sequence ensures every polypropylene spacer ring meets Poliamid's ISO 9001:2015 requirements for performance, traceability and on-time dispatch.

TRANSPORT TO CUSTOMER (A4)

Finished polypropylene spacer rings are delivered from the Kłodzko facility to the customer by road over an average distance of 200 km. Rings are loaded in customers' returnable wooden crates (or, for smaller sizes, in polyethylene bags within those crates) and secured on flatbed or box trucks using straps to prevent shifting. Vehicles conform to Euro 5 emission standards and carry loads up to 16 t.

END OF LIFE (C2, C3, C4, D)

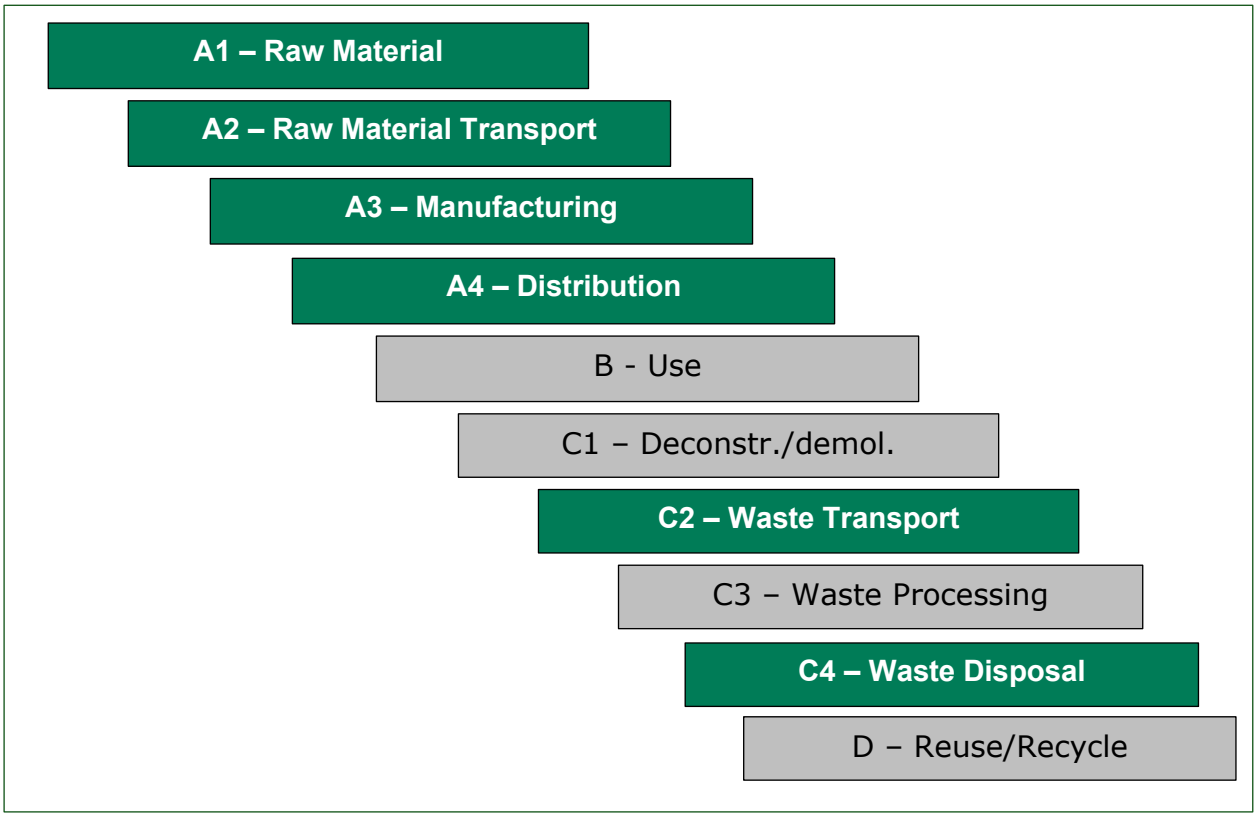
Modules C1 & C3 have not been declared, because polypropylene spacer rings are permanently embedded in rigid polyurethane foam and bonded to the service pipes within pre-insulated assemblies. Separation for disassembly is infeasible, so at end of life entire pipe sections—including spacer rings, foam, carrier pipe and casing—are removed together and no individual elements are recovered.

Module C2 assumes that these spent pipe sections (with embedded spacer rings) are transported 50 km by lorry (> 16 t, Euro 5) to a disposal facility.

Module C4 (Landfill) covers the 100 % of used spacer rings and all other pipe-system components, which are landfilled as a single composite waste stream.

Because the end-of-life scenario involves full landfill of the spacer rings together with the rest of the network elements, Module D yields no recovery or recycling credits.

Diagram 1 - Life cycle stages:



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2024 year

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 kg
Mass per declared unit	1 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	-

SYSTEM BOUNDARY

The scope of the EPD is "cradle to gate with options". The modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), and A4 (Distribution), C2 (Waste Transport) and C4 (Waste Disposal) are included in the study.

Product stage				Assembly stage		Use stage						End of life stage				Beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MNR	MND	MND	MND	MND	MND	MND	MND	MNR	X	MNR	X	MNR
Raw materials`	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse / Recovery / Recycling potential

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the *EN 15804:2012+A2:2019*. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes which data are available for are included in the calculation. There is no neglected unit process more than 1% of total mass and energy flows. The total neglected input and output flows do also not exceed 5% of energy usage or mass. The life cycle analysis includes all industrial processes from raw material acquisition to production, and distribution.

The production of capital equipment (including re-usable molds), construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy, and water use related to company management and sales activities are excluded.

ESTIMATES AND ASSUMPTIONS

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- Module (A1): 100% Mass Balance is considered for all the raw material information provided by Cermont and relevant ecoinvent datasets are used.
- Module (A2): The average transport distances were calculated based on locations of all suppliers and allocated as per the declared unit.
- Module (A3): Energy and water resources were considered and taken into account as disclosed. Furthermore, the management of on-site waste was handled.
- Module (A4): Transportation, packaging and sales information was taken into account.
- Module (C2): 50 kms of distance is taken as an average for the transportation of waste to landfill.
- Module (C4): Landfilling of 100% of used spacer rings was assumed.

ALLOCATION

The allocation is carried out in accordance with the provisions of EN 15804. The information provided for the year 2024 includes all spacer rings produced at Poliamid Plastics facilities during that year. Due to the similarity in production resources and processing stages, an average based on product weight was applied. Input and output data from production are inventoried and allocated on a mass basis to the declared functional unit of 1 kilogram.

Data Quality

For foreground data, the LCA study relies on high-quality primary data gathered by Poliamid Plastics for the year 2024, including average transport distances for material supplies and final product shipments. All relevant background data sets have been sourced from the OpenLCA software's database: ecoinvent 3.9.1, which includes consistent and well-documented data sets accessible in the ecoinvent online database or through the ecoinvent database documentation.

Geographic Representativeness

The specified land or region where the product system is manufactured and managed is Poland, Europe.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact indicator	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Acidification	mol H+ eq.	7,16E-03	1,43E-04	1,46E-02	1,44E-04	MNR	MNR	MNR	3,59E-05	MNR	8,48E-05	0,00E+00
Climate change – total	kg CO2 eq.	2,50E+00	4,94E-02	2,08E+00	4,95E-02	MNR	MNR	MNR	1,24E-02	MNR	1,09E-01	0,00E+00
Climate change – fossil	kg CO2 eq.	2,49E+00	4,93E-02	2,07E+00	4,95E-02	MNR	MNR	MNR	1,24E-02	MNR	1,09E-01	0,00E+00
Climate change – biogenic	kg CO2 eq.	9,46E-03	3,09E-05	1,37E-02	3,10E-05	MNR	MNR	MNR	7,75E-06	MNR	1,09E-04	0,00E+00
Climate change – LULUC	kg CO2e	1,18E-03	1,52E-05	7,19E-04	1,53E-05	MNR	MNR	MNR	3,82E-06	MNR	6,78E-06	0,00E+00
Abiotic depletion of fossil resources	MJ	7,55E+01	6,68E-01	2,35E+01	6,70E-01	MNR	MNR	MNR	1,68E-01	MNR	2,52E-01	0,00E+00
Eutrophication, aquatic freshwater	kg P eq.	4,25E-04	3,13E-06	2,40E-03	3,14E-06	MNR	MNR	MNR	7,86E-07	MNR	1,27E-06	0,00E+00
Eutrophication, aquatic marine	kg N eq.	1,42E-03	4,81E-05	2,11E-03	4,82E-05	MNR	MNR	MNR	1,21E-05	MNR	2,10E-03	0,00E+00
Eutrophication, terrestrial	mol N eq.	1,47E-02	5,23E-04	1,84E-02	5,25E-04	MNR	MNR	MNR	1,31E-04	MNR	3,39E-04	0,00E+00
Abiotic depletion, minerals & metals	kg Sbe	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	0,00E+00
Ozone depletion	kg CFC11e	1,08E-07	9,56E-10	9,36E-09	9,59E-10	MNR	MNR	MNR	2,40E-10	MNR	2,91E-10	0,00E+00
Photochemical ozone formation	kg NMVOC eq.	1,28E-02	2,26E-04	5,29E-03	2,27E-04	MNR	MNR	MNR	5,67E-05	MNR	1,35E-04	0,00E+00
Water use	m3e depr.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	0,00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact indicator	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
EN15804 (EF 3.0) | Potential Comparative Toxic Unit for humans - non-cancer effects (HTP-nc)	CTUh	2,41E-08	5,13E-10	3,01E-08	5,14E-10	MNR	MNR	MNR	1,29E-10	MNR	2,90E-08	0,00E+00
EN15804 (EF3.0 & 3.1) | Potential Comparative Toxic Unit for humans - cancer effects (HTP-c)	CTUh	9,04E-09	2,87E-10	2,68E-09	2,87E-10	MNR	MNR	MNR	7,19E-11	MNR	7,11E-11	0,00E+00
EN15804 (EF3.0 & 3.1) | Potential incidence of disease due to PM emissions (PM)	Disease Incidence	5,66E-08	3,24E-09	2,46E-08	3,25E-09	MNR	MNR	MNR	8,13E-10	MNR	1,83E-09	0,00E+00

USE OF NATURAL RESOURCES

Impact indicator	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Resource | Total use of non-renewable primary energy resources (PENRT)	MJ	7,55E+01	6,68E-01	2,35E+01	6,70E-01	MNR	MNR	MNR	1,68E-01	MNR	2,52E-01	0,00E+00
Resource | Total use of renewable primary energy resources (PERT)	MJ	1,86E+00	1,29E-02	2,54E+00	1,29E-02	MNR	MNR	MNR	3,23E-03	MNR	4,00E-03	0,00E+00
Resource | Use of net fresh water (FW)	m3	1,37E-02	9,06E-05	6,08E-02	9,09E-05	MNR	MNR	MNR	2,27E-05	MNR	-3,70E-03	0,00E+00
Resource | Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	0,00E+00
Resource | Use of secondary materials (SM)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	0,00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	6,27E-02	5,90E-04	8,45E-02	5,92E-04	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR
High Level Radioactive waste	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Intermediate and Low-Level Radioactive waste	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste	kg	1,76E+01	7,47E-03	3,03E-01	7,50E-03	MNR	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MND	MNR	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	MNR	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

MND abbreviation stands for Module Not Declared, MNR stands for Module Not Relevant

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	The ecoinvent v 3.9.1 Electricity, medium voltage, production mix, Poland - supplemented by actual national KOBiZE data.
Electricity kgCO2e / kWh	0,701 kg CO_2e / kWh

Transport scenario documentation

Scenario parameter	Value
A4 average transport distance, km	200 km
Transport capacity utilization, %	100%
Vehicle type	Euro 5 standard, 16-ton truck (flatbed or box)
Load securing method	Straps, within returnable wooden crates or polyethylene bags (for small rings)
Packaging type	Returnable wooden crates; polyethylene bags for smaller items
Transport mode	Road

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.9.1.

EN 15804:2012+A2:2019 Sustainability in construction works - Environmental product declarations - Core rules for the product category of construction products.

ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework

ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation

KOBiZE Wskaźniki emisyjności CO2, SO2, NOx, CO i pyłu całkowitego dla energii elektrycznej. December 2023

ISO 20915:2018 Life cycle inventory calculation methodology for steel products

EPD VERIFICATION:

The verification procedure for this Environmental Product Declaration (EPD) has been carried out in accordance with the requirements of ISO 14025 standards. Once the verification process is complete, the EPD remains valid for a period of 5 years. There is no need to recalculate the parameters contained in the EPD after this period, provided that the data underlying the declaration have not changed substantially.

EPD CONTRIBUTORS

Manufacturer representative	Jarosław Baranowski
EPD verifier	Izabela Sztamberek-Sochan, Ph.D.

Note: The sole ownership, liability, and liability of this declaration are with the owner. Construction product declarations may not be comparable if they do not comply with EN 15804. For detailed information on comparability, please refer to EN 15804 and ISO 14025.

EPD Poland Certificate

Reg. No. EPD-P 04.08.2025

CERTIFICATE

EPD TYPE III DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

This document confirms that the Enviromental Product Declaration developed by
POLIAMID PLASTICS Sp. z.o.o.
for Polypropylene spacer rings
manufactured in accordance with standards
EN 13941-1:2019, EN 253:2003,
EN 448:2009
and that the data contained therein has been prepared correctly.

Verification carried out by:
Izabela Sztamberek Sochan, Ph. D.

Program Manager
Grzegorz Suwara

This document is valid until August 8, 2030, or until EPD is deregistered and its publication on the website www.epd.org.pl is discontinued.

EPD Polska Registration Office,
Warsaw, August 8, 2025

www.epd.com.pl