Environmental
Product
Declaration

EPD®

ECO PLATFORM EPD EN 15804 VERIFIED

abn PIPE SYSTEMS

In accordance with UNE EN ISO 14025 and UNE EN 15804 for:

Multilayer Polypropylene Pipes produced by:

ABN// INSTAL CT FASER RD
ABN// EVAC ENERGY PLUS




Programme: The International EPD® System, www.environdec.com
Programme operator: EPD International AB
EPD registration number: S-P-00811
ECO EPD registration number: ECO EPD 00000834

Publication date: 2019-03-25
Last revision date: 2021-01-29
Valid until: 2024-03-05

Introduction

With more than 30 years of experience, ABN is present in more than 20 countries around the world, all thanks to its business model based on a strong business strategy. Currently it's one of the Spanish companies with the largest growth in the sector, innovating and developing new products and solutions in response to the market.

General information

01 General information

• MANUFACTURER AND OWNER OF THE EPD

ABN Pipe Systems: Production plant certified by UNE EN ISO 9001:2015 and UNE EN ISO 14001:2015 for the following scope:

Production of compounding and pipe systems fabricated with thermoplastics materials.

HEAD OFFICES
HEAD OFFICES

Estrada Baños de Arteixo, 28
Parque Empresarial Agrela
15008 A Coruña (Spain)
T. +34 902 202 532

PRODUCTION SITE
PRODUCTION SITE

Parque Empresarial Medina On
Autovía A6, km 152
47400 Medina del Campo (Spain)
T. +34 983 020 510

CERTIFICATES |

AENOR Empresa Registrada UNE-EN ISO 9001 ER-1088/2008
AENOR Gestión Ambiental UNE-EN ISO 14001 GA-2016/0229

*WRAS Y FM EN PROCESO.

• DESCRIPTION OF THE PRODUCT

This EPD address the environmental performance of two families of multi-layer polypropylene (pipe and fittings) for different applications for as building and construction applications: pressure pipes with the generic name ABN// INSTAL CT FASER RD and non-pressure pipes ABN// EVAC ENERGY PLUS.

• DECLARED UNIT

1 kg of piping system

The declared unit includes pipes and fittings.

• NAME OF THE PCR

Construction products and construction services :

Register nº: 2012:01, ver: 2.3 | Date: 2018-11-15 | Valid until: 2020-03-03

• SCOPE

Within this study a life cycle analysis according to ISO 14040/44 is performed for FASER and ENERGY pipe families manufactured by ABN Pipe Systems, at its production plant located in Medina del Campo (Spain).

This analysis relies on transparent, plausible and documented data. All the model assumptions, which influence the results, are declared. The life cycle assessment is representative for the two products declared for the given system boundaries. LCA covers manufacturing of both types of piping systems from cradle to gate (A1-A3).

• PROGRAM OPERATOR

The International EPD® System. EPD International AB

DECLARED ISSUED | 2019-03-25 **VALID UNTIL |** 2024-03-05

02 About the company

Our company is a reference in the development of thermoplastic compounds and the most innovative piping systems in the market, created for the circular economy.

Abn is the leading Spanish manufacturer of compound and piping systems in thermoplastic materials.

Currently it's one of the Spanish companies with the largest growth in the industry, innovating and developing new products and solutions in response to the market.

Our commitment is the development of high-quality products to guarantee effective, safe and sustainable long-term results.

Our headquarters are located in the city of A Coruña and our Production Site in Medina del Campo, Valladolid (Spain).

A commitment with people

Our vision

- To be the leader in the development of the most innovative thermoplastic compounds and piping systems in the market designed for the circular economy.

Our mission

- That our customers and associates rely on us as their partners to meet their needs.
- To develop innovative systems that bring an added value, ensuring a sustainable future contributing to thr circular economy.
- To build a team of highly motivated people who are focussed on continuous improvement.

Our values

- Honesty and integrity
- Creativity and innovation
- Environmental protection
- Sustainability
- Efficiency
- Quality
- Legal compliance

Our history

1988

ABN starts up

The ABN Group started its activities by incorporating Abastecimientos del Norte, a company dedicated to the marketing and distribution of pipe systems and fittings for infraestructure, building and industry.

2001

ABN Pipe Systems

ABN Pipe Systems started in 2001, as a nationwide distribution company of building products, offering the latest developments in the pipe system industry from countries like Austria, Germany or Italy.

2008

Our own production starts

The start of the own production of piping systems in thermoplastic materials.

Headquarters
A Coruña

Production site in
Medina del Campo

2009

New Division of Thermoplastic Compounds

The Compound Division is focused in the development, production and marketing of thermoplastic compounds with a high added value, with an annual production capacity exceeding 20,000 Tons. The Compound Division is certified for its quality management system in accordance with the UNE EN ISO 9001 and UNE EN ISO 14001.

2010

R&D Plan

We are focused in the development of innovative projects that grant us with an ongoing new products development and that make our services more efficient and competitive improving quality, efficiency and the environment.

At Abn we strongly believe that being one step ahead in the market is a differentiating factor, and that's why we foster innovation through our ongoing new project process.

The present

Goal: Sustainable Production

At Abn we more forward and design our products to be eco-friendly for sustainable buildings, meeting the demands established by certifying companies of sustainable construction.

Design and development of products for the circular economy

ABN today

ABN today

Abn Group is structured in five business units:

ABN Pipe Abastecimientos, company dedicated to distribution of piping systems for building, civil works and industry in the Galician Federal State (Spain).

ABN Pipe Systems, specialized in the manufacturing of thermoplastic compounds and piping systems on national and international level.

ABN Americas, company leading the international expansion in the Americas and Asia.

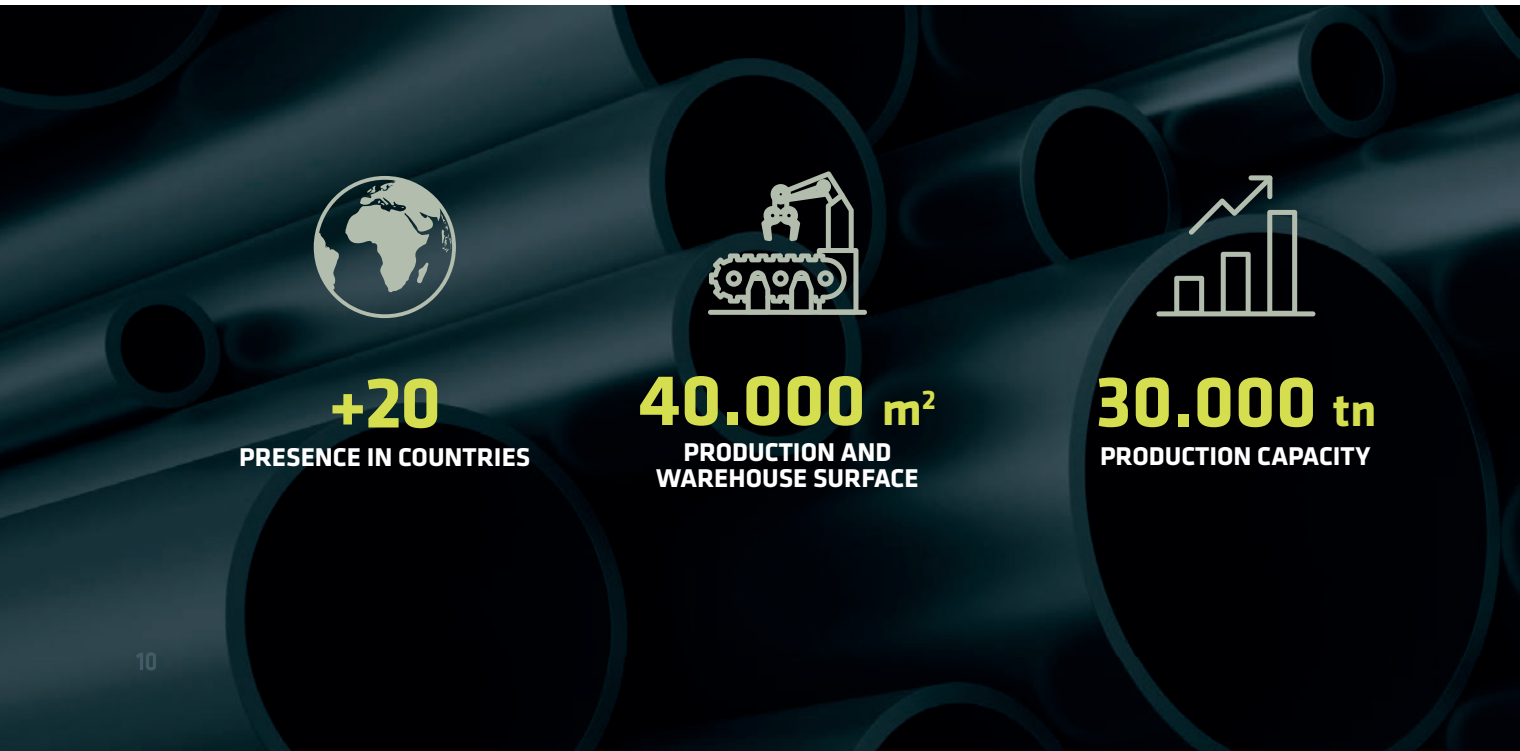
GROUP ENTITIES

abn ABASTECIMIENTOS

abn PIPE SYSTEMS

abn AMERICAS

abn DIGITAL



+20
PRESENCE IN COUNTRIES

40.000 m²
PRODUCTION AND WAREHOUSE SURFACE

30.000 tn
PRODUCTION CAPACITY

ABN Digital, digital platform designed by and for the sector, which has the mission to streamline and facilitate those processes in which technology can become our best ally.

ABN Gestión, holding company providing support services to the group.

Abn is present in more than 20 countries around the world, thanks to a flexible business model based on a strong business strategy.

PRESENCE IN

+20

COUNTRIES

+45
OWN PATENTS

+1.000
CLIENTS

+150
EMPLOYEES AND PARTNERS

EPD® Environmental Product Declaration

ABN commitment

The strategy of Corporate Social Responsibility (CSR) establishes as basic principles of its activity the commitment to the sustainable development and the creation of a long-term value.

We are Sygnatory Partners of the **United Nations Global Covenant** showing our commitment with **Sustainable Development Goals (SDG)**. We are a part of the **Pact for Circular Economy**, whose purpose is to include the main economic and social stakeholders in Spain in the transition into the new economy model, same to participate in the **Operation Clean Sweep (OCS)** initiative, by ANAIP, targeting "Zero pellets loss".

The **UNE EN ISO 14001 Certification** ended up in the creation of a work methodology towards more effective consumption control and waste management.

Our CSR strategy can be summarized in the following goals:

HUMAN RIGHTS

- To support and comply with the Basic Human Rights.
- To erradicate of all forms of forced or abusive labour.
- To promote equality access and no discrimination between women and men.
- To promote the integration of the less favoured communities.
- To fight corruption in all shapes or forms, including extortion and bribery.

itment

ENDORSEMENTS I

Operation Clean Sweep®

PACTO POR UNA ECONOMÍA CIRCULAR

GOBIERNO DE ESPAÑA · MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

THE GLOBAL COMPACT
WE SUPPORT

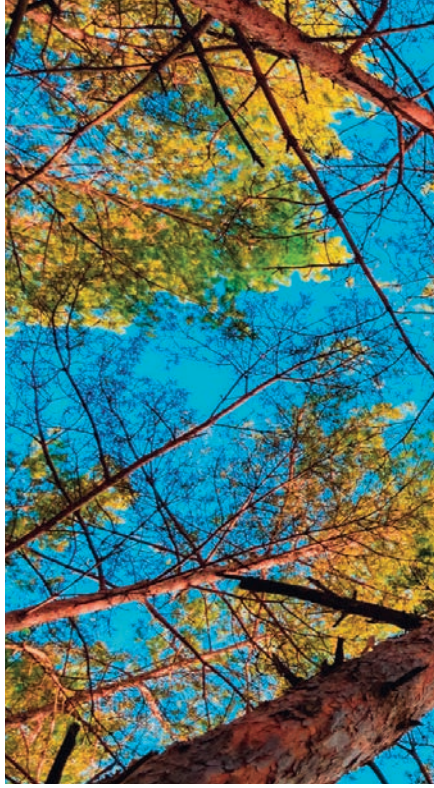
At ABN we also adhere actively to the following goals for sustainable development (SDG):

- 5 GENDER EQUALITY — **Gender equality**
- 6 CLEAN WATER AND SANITATION — **Clean water and sanitation**
- 8 DECENT WORK AND ECONOMIC GROWTH — **Decent work**
- 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE — **Industry and innovation**
- 10 REDUCED INEQUALITIES — **Reduced inequalities**
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION — **Responsible consumption and production**

PRODUCTS

- To analyze the life cycle of our products and our manufacturing system.
- To improve the quality of our products, complying with the most demanding fire reaction regulations, creating halogen-free systems, with low emission of smoke and no toxicity.
- We have develop the Environmental Product Declaration (EPD) for our main families and introducing improvement parameters that would reduce our environmental footprint.
- To increase the consumption of recycled raw materials regarding the consumption of virgin raw materials.

EPD® Environmental Product Declaration



Abn commitment

ECO-DESIGN

- To work with the most innovative raw materials in the market in order to achieve high performance products, more resistant and more durable.
- To create new safer and more efficient assembly techniques.
- To optimize the use of the raw materials targeting a weight reduction of up to 30%.

ENERGY

Reduce the consumption of fossil fuels, like diesel, chemical for treatments and other substances used for machine maintenance.

Increase the use of renewable energies in our Production Plant in Medina del Campo.

PACKAGING

Reduction of packaging costs ratio of our products per ton manufactured. Targeting wood, plastic and cardboard.

WATER CONSUMPTION

- To reduce the water consumption by recycling and reduce cutting treatment costs and cooling processes.
- To put in place an integral management of waste and storm water cycle.

POWER CONSUMPTION

- To increase the use of renewable energies in our headquarters in A Coruña and in our Production Site in Medina del Campo, Spain.
- To reduce the consumption of kilowatts per ton manufactured.

Abn commitment

WASTE

- To promote non-harzarous waste discrimination.
- To reduce CO_2 ratio per ton shipped on truck.

TRANSPORTATION

- To work with ISO 14001 certified forwarders.
- To work with partners located close to our facility to reduce gas emissions.

CIRCULAR ECONOMY

CO_2 RAW MATERIALS

ECODESIGN

USAGE

RECYCLING

PLASTIC PRODUCTION

PRODUCT MANUFACTURING

AFTER USAGE

ENERGY

EPD IMPLEMENTATION

WHAT IS AN EPD?

- An EPD is a Certified Product Environmental Declaration, which provides environmental life cycle data of a product or service, in accordance with the international standard UNE EN ISO 14025.
- The International EPD® System is a program to develop and register EPDs of any type of goods and services. The system is international and verified by third party.

GENERAL OBJECTIVES

- To identify our impact on the environment.
- to recognize our responsibility and influence in high impact environmental processes, such as global warming and the preservation of resources.
- To quantify the environmental impact based on comparable and measurable parameters for any product.
- Once obtained the EPD: to work continuously to minimize the environmental impact of a product placed on the market.
- to give the final client truthful and verified information of our systems.

EPD® Environmental Product Declaration

Product description

03 Product description

This EPD covers our main families of polypropylene multilayer pipes, named generically as ABN//EVAC ENERGY PLUS and ABN//INSTAL CT FASER RD families. Both families are intended for building and construction applications, and they are composed by different types of pipes and fittings, according with the final application, sharing the same composition and the same main raw material (polypropylene):

ABN//EVAC ENERGY PLUS. Soundproof drainage system, pipes and fittings, for soll and waste systems. Produced in three polypropylene compound layers, with mineral reinforcement to get the proper acoustic insulation and with fire retardant additives that make it fire resistant halogen free, obtaining the classification (B-s1,d0).

ABN//INSTAL CT FASER RD. Piping system manufactured for different applications: for hydraulic lines at pressure and temperature, recycled water, fire networks, etc. Manufactured in three polypropylene PPR CT RP layers, with anti-expansion micro-fibres, antimicrobial protection, resistance to disinfection processes, anti-incrustation protection, ultraviolet UV protection, with reaction to fire classification B-s1, d0, halogen free and 100% recyclable. The family of pipes is completed with two types of fittings: **FITTING RD and our new system WELDING ELECPIPE**, that saves up to 75% in installation times.

ABN// EVAC ENERGY PLUS

ABN// INSTAL CT FASER RD

ABN// INSTAL CT FASER RD (*Green colour)

ABN// INSTAL CT FASER RD FIRE

ABN// INSTAL CT FASER RD RECYCLING

ABN// INSTAL FITTING RD

ABN// WELDING ELECPIPE

- **UN CPC CODE FOR BOTH FAMILIES**

363 Semi-manufactures of plastics

3632 Tubes, pipes and hoses, and fittings therefore, of plastics

These pipe and fittings families include other ones that the manufacturer may have requested as trademark extensions with completely identical features:

- Polypipe MECFLOW
- Polypipe CLICKWELD
- Rotoplas Tuboplus Clima | Agua Helada
- Rotoplas Tuboplus Contra Incendios

EPD® Environmental Product Declaration

Application fields

- Soil and waste systems
- Rainwater systems
- Siphonic roof drainage
- Aerothermal
- Ventilation systems

ABN // EVAC ENERGY PLUS

NOISE-INSULATED PIPE SYSTEM

Soundproof drainage system in 3 polypropylene compound layers, with mineral reinforcement and fireproof additive. With reaction to fire classification B-s1, d0, halogen free, very low smoke emission, resistant to high and low temperatures (-20 to 95°C), high ring stiffness SN 6, external layer with ultraviolet UV protection, interior layer with anti-incrustation protection, seismic protection and 100% recyclable. Among its benefits: very low acoustic transmission, low smoke quantity and density, no toxicity, great versatility (only one solution for different uses) and flexibility, lightness, the smallest environmental impact and the best performance indicator on the market. **Eco-designed for a circular economy and sustainable buildings.**

AENOR Producto Certificado — Tubería UNE EN 1451 | Accesorios UNE EN 1451 | Tubería UNE EN 13501 | Accesorios UNE EN 13501 | Sistema UNE EN 14366

1

EXTERNAL LAYER OF PP+UV+RF

This outer protective layer provides a high resistance to impact and atmospheric agents. It is also resistant to UV rays.

2

INTERMEDIATE LAYER OF PP+CM+RF

The mineral reinforcement in the intermediate layer plays a key role in providing excellent shock and vibration absorption to the ENERGY PLUS. It provides greater stiffness and stability, and resists fire without releasing toxic fumes, as it is halogen free.

3

INTERNAL LAYER OF PP+AF

It provides a high hot water resistance (up to 97°C) as well as to chemical substances and abrasion. It incorporates an anti-fulling additive which provides a slide effect, generating anti-incrustation protection.

REACTION TO FIRE CLASSIFICATION

Fire behaviour		Smoke emission			Drops in flames	
B	-	s	1	,	d	0

STANDARDS

- **UNE EN 1451**
- **UNE EN 14366**
- **UNE EN 13501**. Fire reaction classification report B-s1, d0, performed by Afiti Licof.
- **UNE EN ISO 11925, UNE EN ISO 13823.** Fire reaction tests in accordance with regulations, performed by Afiti Licof.
- **Optical smoke density test,** performed by the Gaiker Technology Centre.
- **Test for determining the amount of halogen gas** performed by the Gaiker Technology Centre.

APPROVALS

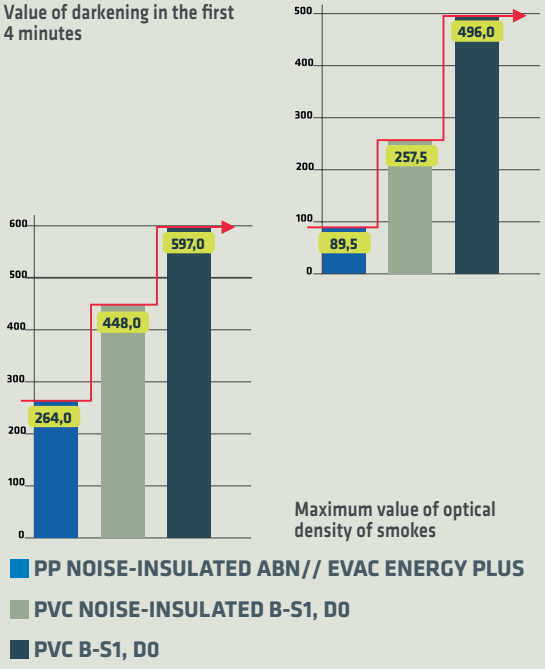
- **AENOR: UNE EN 1451**. Product
- **AENOR: UNE EN 13501**. Reaction fo fire
- **AENOR: UNE EN 14366**. Acoustic behaviour

RANGE OF PRODUCTS

- 40-315 mm

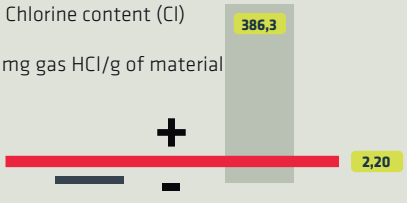
Smoke test

Test for measuring the smoke density generated during the combustion of pipes.



Halogen test

It specifies a method for determining the amount of halogenated acidic gases produced during combustion.



The limit value is 5% of the chlorine content (expressed in HCL).

EPD® Environmental Product Declaration

Application fields

- Potable water application
- Air conditioning systems
- Healting systems
- Fluids at high and low temperatures for industry

ABN // INSTAL CT FASER RD

POLYPROPYLENE PPR CT FASER RP

Piping system for hydraulic lines at pressure and temperature. Manufactured in 3 polypropylene PPR CT RP layers, with anti-expansion micro-fibres, antimicrobial protection, resistant to disinfection processes, anti-incrustation protection, ultraviolet UV protection, with reaction to fire classification B-s1, d0, halogen free and 100% recyclable. Among its benefits: very low thermal conductivity, high resistance to corrosion, great flexibility, lightness, great versatility, no toxicity, the smallest environmental impact and the best performance indicator on the market. **Eco-designed for a circular economy and sustainable buildings.**

Certificate for conformity AENOR

B-s1,d0

1

EXTERNAL LAYER MADE OF PPR CT RP, GREY WITH WHITE STRIPS, AND RESISTANT TO UV RADIATION.

The antioxidant additives used in the outer layer minimise the degradation caused by sun exposure.

2

INTERMEDIATE LAYER MADE OF PPR CT RP WITH MICROFIBERS THAT PREVENT EXPANSION.

Ensures high mechanical resistance to pressure and fatigue, with lesser wall thickness, enabling the installation of smaller diameter pipe versus traditional PPR.

3

INTERNAL LAYER MADE OF PPR CT RP, WHITE, WITH DISINFECTANT-RESISTANT, ANTI-INCRUSTATION AND ANTIMICROBIAL ADDITIVE.

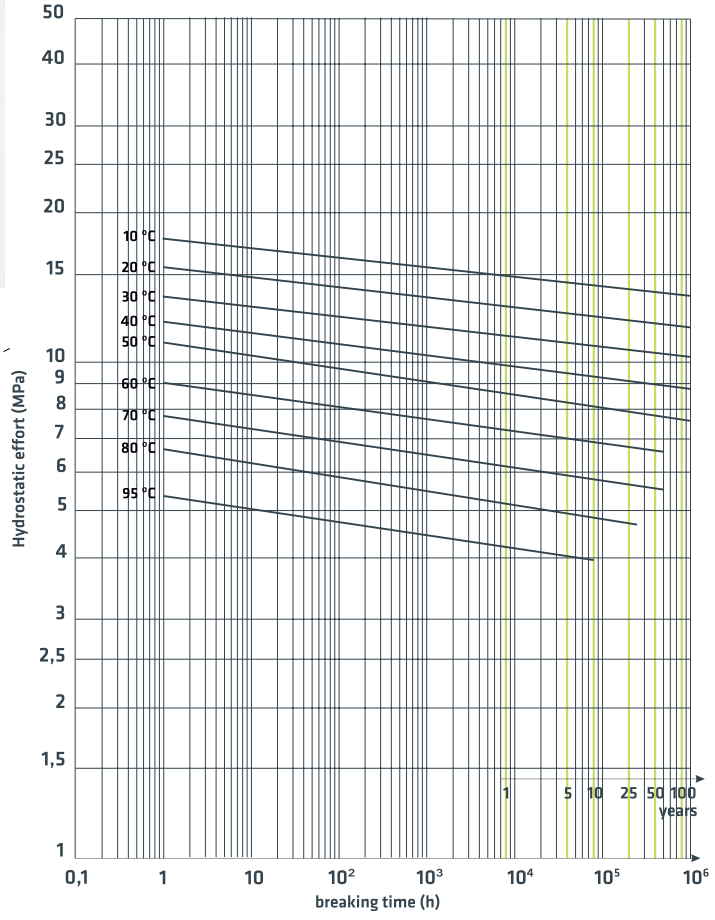
Offers high resistance to disinfection processes, anti-incrustation protection, in addition to a 100% effective protection against Legionella, according to the results of the microbiological study performed by AQM Laboratories.

REACTION TO FIRE CLASSIFICATION

Fire behaviour		Smoke emission			Drops in flames	
B	-	s	1	,	d	0

STANDARDS

- UNE EN ISO 15874
- DIN 8077
- DIN 8078
- RP 01.00: AENOR
- RP 01.78: AENOR
- UNE EN 13501: Reaction to fire B-s1, d0.
- RD 140/2003
- UNE 100030-2007 and RD 865/2003.
- AENOR Certificate of Conformity.



Long-term determination of hydrostatic resistance.

ISO 9080: 2003 - Evaluation of the ABN pipeline // INSTAL CT FASER RD

EPD® Environmental Product Declaration

ABN // INSTAL CT FASER RD

GREEN COLOUR

Application fields

- **Potable water application**
- **Air conditioning systems**
- **Healting systems**
- **Fluids at high and low temperatures for industry**

POLYPROPYLENE PIPE PPR CT FASER XP

Piping system for hydraulic lines at pressure and temperature manufactured in 3 polypropylene PPR CT XP layers, with anti-expansion micro-fibres, antimicrobial protection, resistant to disinfection processes, anti-incrustation protection, ultraviolet UV protection halogen free and 100% recyclable.

Among its benefits: very low thermal conductivity, high resistance to corrosion, great flexibility, lightness, great versatility (only one solution for different uses), no toxicity, the least environmental impact and the best performance indicator on the market.

Certificate for conformity **AENOR**

REGULATION

- UNE EN ISO 15874
- DIN 8077/ DIN 8078
- RP 01.00: AENOR
- RP 01.78: AENOR
- RD 140/2003
- UNE 100030-2007 and RD 865/2003.
- AENOR Certificate of Conformity.

(*) Other dimmensions and series on request.
(**) Socket-welding also available.

Range of products

Code	Diameter (mm)	Thickness (mm)	Series SDR	Length (m)
DVOCTF3202000	20	2.8	3.2/7.4	4,0
DVOCTF3202500	25	3.5	3.2/7.4	4,0
DVOCTF3203200	32	4.4	3.2/7.4	4,0
DVOCTF5004000	40	3.7	5/11	4,0
DVOCTF5005000	50	4.6	5/11	4,0
DVOCTF5006300	63	5.8	5/11	4,0
DVOCTF5007500	75	6.8	5/11	4,0
DVOCTF5009000	90	8.2	5/11	4,0
DVOCTF5011000	110	10.0	5/11	4,0
DVOCTF5012500	125	11.4	5/11	5,8
DVOCTF5016000	160	14.6	5/11	5,8

ABN // INSTAL CT FASER RD FIRE

Allowed uses

SPRINKELS

SPRINKLERS NETWORKS
For protecting light (LH) and ordinary hazard (OH 1, OH 2, OH 3, OH 4)

BIES

FIRE FIGHTING SYSTEMS (FFS)

POLYPROPYLENE PP RCT RP FOR FIRE PROTECTION NETWORKS

System for fire protection network with low risk and medium risk, in 3 polypropylene PPR CT RP layers, with antimicrobial protection, resistant to disinfection processes, anti-incrustation protection, ultraviolet UV protection, with reaction to fire classification B-s1, d0, halogen free and 100% recyclable.

Among its benefits: very low thermal conductivity, high corrosion resistance, great flexibility, lightness, great versatility, no toxicity, the smallest environmental impact and the highest performance indicator in the market.

Certificate for conformity AENOR

B-s1,d0

REGULATION

- UNE EN ISO 15874
- DIN 8077/ DIN 8078
- RP 01.00: AENOR
- RP 01.78: AENOR
- RP 01.84: AENOR
- RD 140/2003
- RD 513/2017
- RD 2267/2004
- UNE 100030-2007 and RD 865/2003.
- AENOR Certificate of Conformity.

Range of products

Code	Diameter (mm)	Thickness (mm)	Series SDR	Length (m)
DOCTFF3202000	20	2.8	3.2/7.4	4,0
DOCTFF3202500	25	3.5	3.2/7.4	4,0
DOCTFF3203200	32	4.4	3.2/7.4	4,0
DOCTFF5004000	40	3.7	5/11	5,8
DOCTFF5005000	50	4.6	5/11	5,8
DOCTFF5006300	63	5.8	5/11	5,8
DOCTFF5007500	75	6,8	5/11	5,8
DOCTFF5009000	90	8,2	5/11	5,8
DOCTFF5011000	110	10,0	5/11	5,8
DOCTFF5012500	125	11,4	5/11	5,8
DOCTFF5016000	160	14,6	5/11	5,8

EPD® Environmental Product Declaration

////// ABN // INSTAL CT FASER RD RECYCLING

Application fields

- Recycled water
- Reclaimed water
- Reclaimed water industry

POLYPROPYLENE PP RCT FASER RP FOR RECYCLED AND RECLAIMED WATER

Piping system for hydraulic pressure lines manufactured in 3 polypropylene PPR CT RP layers, with anti-expansion micro-fibres, antimicrobial protection, resistant to disinfection processes, anti-incrustation protection, ultraviolet UV protection, with reaction to fire classification B-s1, d0, halogen free and 100% recyclable.

Among its benefits: very low thermal conductivity, high resistance to corrosion, great flexibility, lightness, great versatility (only one solution for multiple uses), no toxicity, the least environmental impact and the best performance indicator on the market.

Range of products

Code	Diameter (mm)	Thickness (mm)	Series SDR	Lenght (m)
DOCTFR3202000	20	2.8	3.2/7.4	4,0
DOCTFR3202500	25	3.5	3.2/7.4	4,0
DOCTFR3203200	32	4.4	3.2/7.4	4,0
DOCTFR5004000	40	3.7	5/11	4,0
DOCTFR5005000	50	4.6	5/11	4,0
DOCTFR5006300	63	5.8	5/11	4,0
DOCTFR8007500	75	4.5	8/17	4,0
DOCTFR8009000	90	5.4	8/17	4,0
DOCTFR8011000	110	6.6	8/17	4,0
DOCTFR8012500	125	7.4	8/17	5,8
DOCTFR8016000	160	9.5	8/17	5,8

(*) Other dimmensions and series on request.

Certificate for conformity AENOR

ABN // INSTAL FITTING RD

POLYPROPYLENE PPR CT RP FITTING

Piping system for hydraulic pressure lines manufactured in 3 polypropylene PPR CT RP layers, with antimicrobial protection, resistant to disinfection processes, anti-incrustation protection, ultraviolet UV protection, with reaction to fire classification B-s1, d0, halogen free and 100% recyclable.

Among its benefits: very low thermal conductivity, high resistance to corrosion, great flexibility, lightness, great versatility (only one solution for multiple uses), no toxicity, the least environmental impact and the best performance indicator on the market.

SOCKET
SOCKET WELDING

THREADED

SOCKET
SOCKET WELDING

THREADED

Certificate for conformity
AENOR

EPD® Environmental Product Declaration

ABN // WELDING ELECPIPE

Application fields

- Potable water application
- Healting systems
- Air conditioning systems
- Fire protection networks
- Fluids high and low temperatures for industry

NEW JOINING TECHNOLOGY FOR POLYPROPYLENE PIPES

Joining technology by electro fusion welding manufactured in PP RCT RP polypropylene for pipes ABN//INSTAL CT FASER RD, FIRE and RECYCLING, with a wide range of fittings and 100% recyclable.

Available in grey colour with green connector for CT FASER RD pipes, with red connector for FIRE pipes and with lilac connector for the range RECYCLING.

Among its benefits: cost-beneficial reduction of the installation time up to 75%, no skilled labour required and a wide range of fittings, what makes it an efficient and sustainable solution.

Its technical benefits are the pre-assembly of the installation, simplicity in the union process, easiness and security in all the elements, possibility of union between pipes and fittings of different series/SDR, no reduction in the section of the installation and great versatility (one product for different uses).

Complies with the regulations and tests for the union systems and with the specific regulations for the product.

Eco-designed for a circular economy and sustainable buildings.

(*) Protected by the patent WO/2017/194812 (PCT/ES2017/070303)

ELECPIPE-SOCKET PIPE

ELECPIPE-CONNECTOR

ELECPIPE-DOUBLE-CONNECTOR

ELECPIPE-REDUCER

ELECPIPE-BEND

ELECPIPE-T-PIECE

ELECPIPE-SOCKET

HEX. THREADED

ELECPIPE-REDUCER

ELECPIPE-END CAP

Range: 50-160 mm, 5 and 8 series

***The complet product range available at our Price List.**

EPD® Environmental Product Declaration

General information

04 LCA information

LCA INFORMATION

Secondary data has been obtained from Ecoinvent v.3.4 database, using the software SimaPro 8.5 to carry out the assessment.

Recycling, waste and energy data has been allocated based on the production mass, according with the PPP (polluter Pays principle).

Geographic scope of the LCA includes Europe, and the reference time is 2017.

SCOPE OF THE LCA

The aim of this LCA is to provide clear and reliable information for customers (B2B) regarding the environmental impact linked to the production of two families of piping systems; ABN//EVAC ENERGY PLUS and ABN//INSTAL CT FASER RD.

The declared unit (DU)

in both cases is

1 kg of piping system,

including both, pipe and fittings.

- **FASER family scenario was based on a 75 mm diameter pipe**
- **ENERGY family study was based on a 110 mm diameter.**

Selection of these two piping sizes was made according to the most common market scenarios.

Due to the scope of the LCA (cradle-to-gate), reference service life is not applicable in the study. However, the minimum guaranteed service life of both families is 50 years. Depending on the application, these products can be part of a building or installation without needing any kind of main

DATA QUALITY

Data used in LCA calculation has been obtained from the production center of ABN Pipe Systems located in Medina del Campo (Spain) during the period of 2017 and 2018.

According with the contracts signed with different energy suppliers, electricity consumed by ABN is produced by renewable energies. In order to reflect this, the electric mix used in the production stage (A3) corresponds to the Spanish renewable energy mix for 2018

(5.62 g CO_{2e}/kWh).

100% GREEN ENERGY DURING 2017 AND 2018

SYSTEM DIAGRAM

A1. Raw materials supply

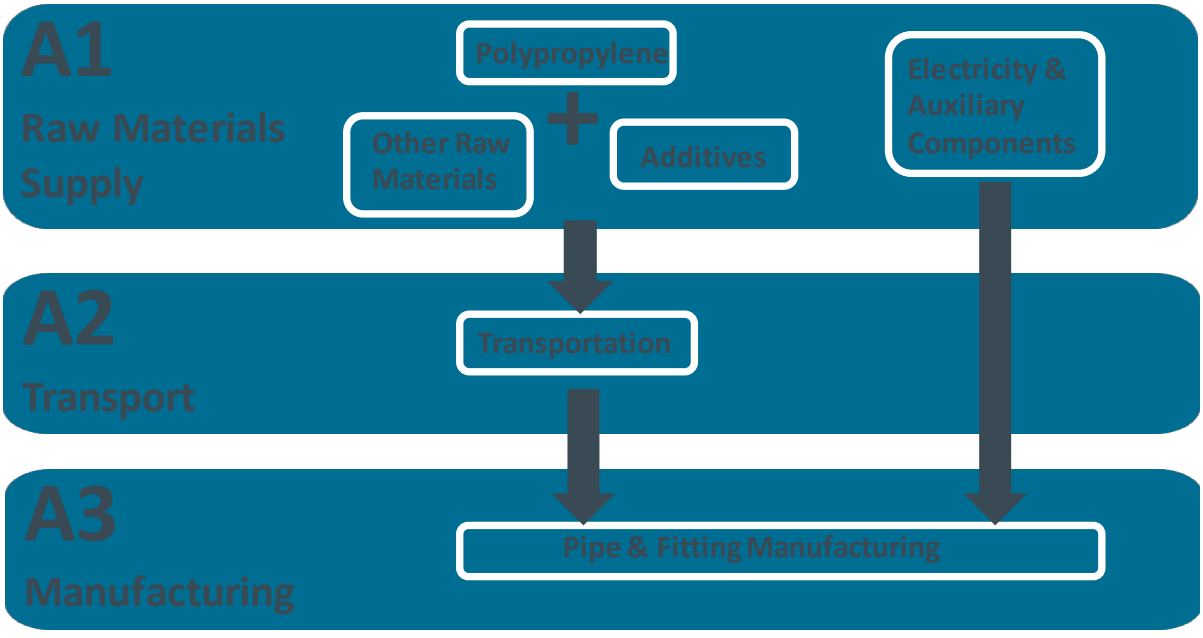
This first module includes the extraction and production of all raw matters required for the manufacturing process, as well as the energy consumption involved on those stages upstream the manufacturing process. Specifically, it includes the production of the different types of polypropylene granulate, main raw matter used in the production of the pipes, as well as other main raw matters such as compounds with own formulation: fiberglass, fire retardant, soundproof, resistant to disinfection and other additives used in small quantities.

A2. Transport

Transport of raw materials to ABN's production site has been modelled under this module, taking into account the location of the suppliers and average transportation units from Ecoinvent database. Transportation for all raw materials takes place by road and by boat.

A3. Manufacturing

This module includes the manufacturing of the two families of piping systems. It includes all stages of pipe manufacturing; compound production, pipe extrusion, injection of fittings, socketed if necessary, cutting and palletizing / packaging for further shipping to customers. Electricity and auxiliary materials involved in the manufacturing stage are also included under this module.



LCA INFORMATION

SYSTEM BOUNDARIES

Boundary for the LCA has been set in a cradle-to-gate approach, thus therefore only Modules A1-A3 (mandatory) has been addressed.

The objective of this EPD is address the environmental footprint of manufacturing both ABN//EVAC ENERGY PLUS and ABN//INSTAL CT FASER RD family pipes. These pipes are intended for a wide number of applications, leading to a great variability of cases for both Construction and end of life stages, which are outside the outreach of ABN Pipes.

Our piping system do not require any maintenance or replacement during its service life (over 50 years).

Due to this, all stages downstream the manufacturing process has been excluded from the lifecycle, and thus, according to the PCR instructions, only A1-A3 modules have been addressed.

According to PCR and General Programme Instructions, recycling of non-compliant products have been omitted, as this material is grinded and re-used in the same process.

Product stage			Const. process stage		Use stage							End of Life Stage				Resource recovery stage
Raw materials	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

(*) MND: Module non declared.

CONTENT DECLARATION

Following tables shows the declared composition for ABN//EVAC ENERGY PLUS and ABN//INSTAL CT FASER RD families. In both cases, different types of polypropylene is are the main raw matter used on its manufacture. No hazardous substances or listed under ECHA's SVHC list (Substances of Very High Concern) are included in the formulation of any of the products.

Packaging

Due to their length and market, pipes are packaged using wood and plastic strips. Both materials have been taken into account in the life cycle inventory of the manufacturing module (A3). No additional packaging is used on the product.

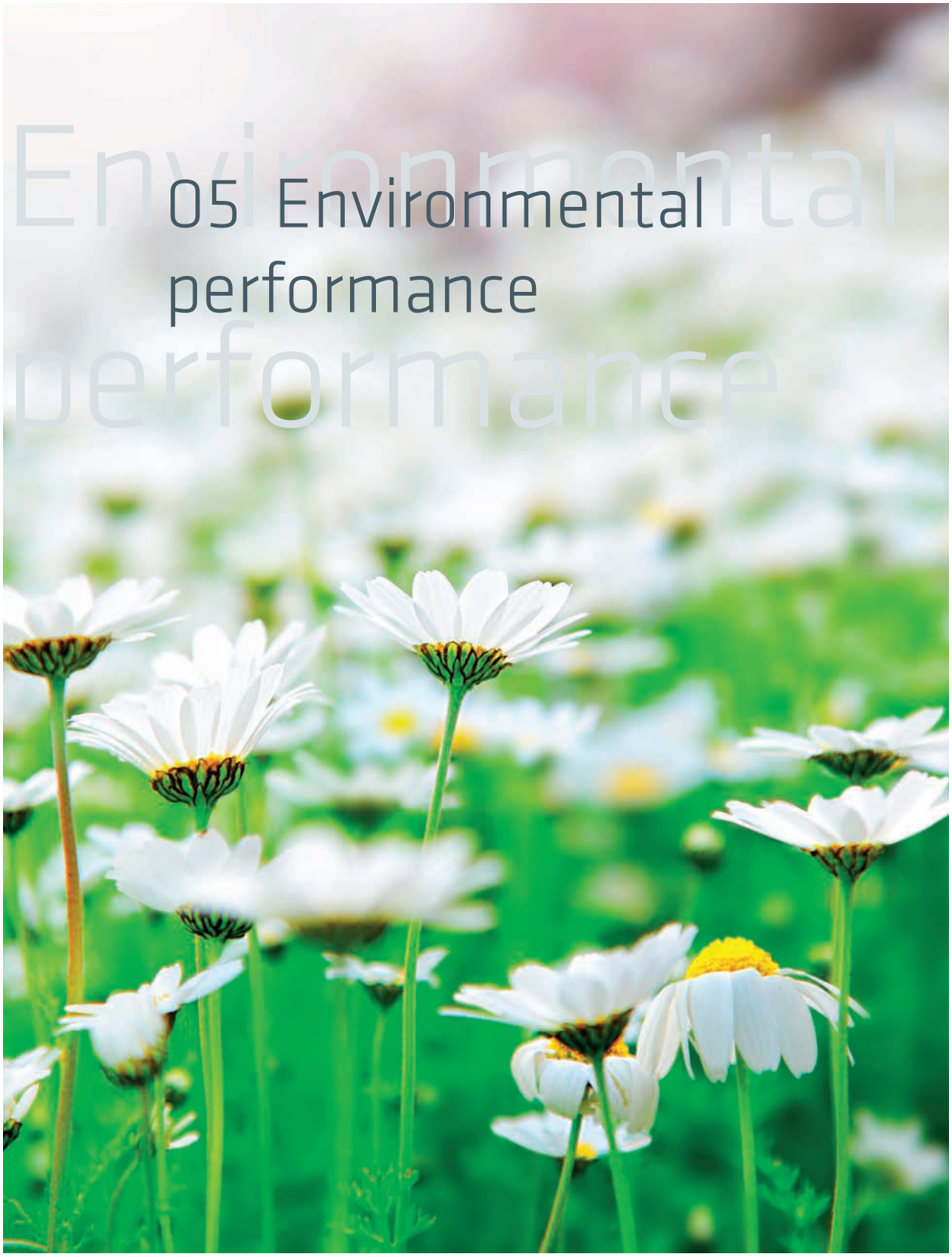
Recycled material

In the case of both ABN//EVAC ENERGY PLUS and ABN//INSTAL CT FASER RD systems, no external recycled material is used as raw material. As mentioned before, non-compliant product is grinded and fully recycled within the same production process, but according with EPD procedures, this process is not included in the LCA assessment.

However, all wastes generated are properly managed and recycled in by waste managers. This is properly reflected in the waste routes included under at the A3 module.

ENERGY Family ABN// EVAC ENERGY PLUS (pipes and fittings)	
Materials / chemical substances	Environmental / hazardous properties
Polypropylene	Non hazardous
Flame retardant halogen-free and sound-proof compound	Non hazardous
Other components (Compound UV, stabilizers, lubricants, colour masterbatches, etc.)	Non hazardous

FASER Family ABN//INSTAL CT FASER RD (grey and green pipes), ABN//INSTAL CT FASER RD FIRE, ABN//INSTAL CT FASER RD RECYCLING, ABN//INSTAL FITTING RD, ABN//WELDING ELECPIPE	
Materials / chemical substances	Environmental / hazardous properties
Polypropylene	Non hazardous
Glass fibre	Non hazardous
Other components (Compounds: UV, antimicrobial, resistant to disinfection; fire resistance; colour masterbatches; etc.)	Non hazardous
Brass alloy (in some fittings)	Non hazardous



05 Environmental performance

The environmental performance of both, ABN// INSTAL CT FASER RD and ABN// EVAC ENERGY PLUS families, will be disaggregated by each one of the three modules addressed and the 8 impact categories.

GLOBAL WARMING POTENTIAL (GWP)

Climate Change is defined as the change in global temperature caused by the release of gases with greenhouse effect, such carbon dioxide (CO2) and other gases such methane (CH4), nitrogen dioxide (NO2) and chlorofluorocarbons (CFCs). This category quantifies how the process contributes to the release of greenhouse gases, based in the model developed by the UN's Intergovernmental Panel on Climate Change (IPCC).

DEPLETION POTENTIAL OF THE STRATOSPHERIC OZONE LAYER (ODP)

This category quantify the effect of the process over the ozone layer. Damage to the ozone layer reduces its ability to prevent ultraviolet (UV) light entering the earth's atmosphere, increasing the amount of carcinogenic UVB light reaching the earth's surface.

ACIDIFICATION POTENTIAL (AP)

This category quantifies the impact of the release of oxides of nitrogen and sulphur in the atmosphere, soil and water, where the acidity of the medium can be modified, affecting the flora and fauna that inhabit it, as well as affecting human health and construction materials.

EUTROPHICATION POTENTIAL (EP)

Eutrophication is defined as the enrichment of ecosystems (water, soil, etc.) as result of the presence of nutrients, mainly nitrogen and phosphorous. In the aquatic environment, the high concentration of these nutrients leads to greater production of plankton, algae and aquatic plants, and the deterioration of water quality.

ENVIRONMENTAL PERFORMANCE

FORMATION POTENTIAL OF TROPOSPHERIC OZONE (POCP)

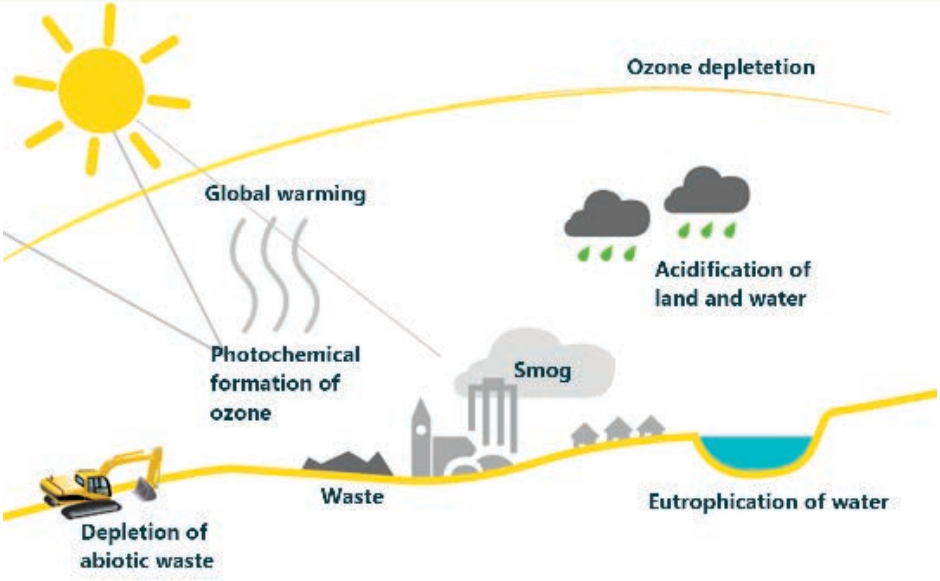
Photochemical ozone formation takes place in the atmosphere by the degradation of volatile organic compounds (VOC) in presence of light and nitrogen oxides (NOx). This phenomenon can be local (photochemical smog) or regional (tropospheric ozone) and is harmful to both plants and humans, causing irritation, respiratory problems and damage to the respiratory system.

ABIOTIC DEPLETION POTENTIAL (ELEMENTS AND FOSSIL RESOURCES)

It evaluates the impact of the activity on different non-renewable natural resources, such as ores containing metals, petroleum, mineral raw materials. A resource is considered non-renewable when its cycle exceeds 500 years.

WATER SCARCITY POTENTIAL

It evaluates the impact of the process over the water resources.



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ENVIRONMENTAL PERFORMANCE. **ENERGY FAMILY**

Next tables shows the environmental impact of the ENERGY piping system, broken down in the three modules (raw matters, transport and production). For all categories analyzed, results shows that raw matter production is the main contributor to the environmental impact of ENERGY piping system, followed by pipe production and transportation.

(For all data shown the Declared Unit: 1 kg of piping system)

PARAMETER	UNIT	A1	A2	A3	TOTAL (A1-A3)
Global warming potential (GWP)	kg CO_2 eq.	2,06	0,37	0,31	**2,74**
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	5,70E-08	6,92E-08	2,79E-08	**1,54E-07**
Acidification potential (AP)	kg SO_2 eq.	7,79E-03	1,45E-03	1,59E-03	**1,08E-02**
Eutrophication potential (EP)	kg PO_4^{3-} eq.	8,37E-04	1,59E-04	2,55E-04	**1,25E-03**
Formation potential of tropospheric ozone (POCP)	kg C_2H_4 eq.	4,92E-04	7,30E-05	2,07E-04	**7,71E-04**
Abiotic depletion potential – Elements	kg Sb eq.	4,47E-06	1,06E-06	1,07E-06	**6,60E-06**
Abiotic depletion potential – Fossil resources	MJ, net calorific value	62,21	5,93	6,10	**74,23**
Water scarcity potential	m^3 eq.	0,84	0,02	0,16	**1,02**

ENVIRONMENTAL PERFORMANCE. **ENERGY FAMILY**

Similar results can be observed regarding the use of resources, with a greater contribution of raw matter production on non-renewable energy consumption.

PARAMETER		UNIT	A1	A2	A3	TOTAL (A1-A3)
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1,46	0,07	8,10	9,63
	Used as raw materials	MJ, net calorific value	0	0	0	0,02
	TOTAL	MJ, net calorific value	1,46	0,07	8,10	9,63
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	70,49	6,10	6,71	83,30
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	70,49	6,10	6,71	83,30
Secondary material		kg	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0
Net use of fresh water		m^3	2,08E-02	1,16E-03	4,43E-03	2,64E-02

Regarding waste production at the process, most of the wastes generated in the process are catalogued as non-hazardous wastes.

PARAMETER	A1	A2	A3	TOTAL (A1-A3)
Hazardous waste disposed (kg)	7,22E-06	3,25E-06	8,99E-06	**1,95E-05**
Non-hazardous waste disposed (kg)	8,00E-02	2,54E-01	6,43E-02	**3,99E-01**
Radioactive waste disposed (kg)	1,85E-05	3,99E-05	1,56E-05	**7,40E-05**

(For all data shown the Declared Unit: 1 kg of piping system)

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ENVIRONMENTAL PERFORMANCE. **FASER FAMILY**

Due to the common characteristics for both pipe families, similar results can be observed regarding the environmental performance. For FASER family, also raw matters and pipe production are the key contributing processes for the environmental impact of FASER family.

(For all data shown the Declared Unit: 1 kg of piping system)

PARAMETER	UNIT	A1	A2	A3	TOTAL (A1-A3)
Global warming potential (GWP)	kg CO_2 eq.	2,22	0,38	0,31	2,91
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	3,14E-08	6,92E-08	2,79E-08	1,29E-07
Acidification potential (AP)	kg SO_2 eq.	2,58E-02	9,44E-04	1,59E-03	2,83E-02
Eutrophication potential (EP)	kg PO_4^{3-} eq.	6,84E-03	1,18E-04	2,55E-04	7,21E-03
Formation potential of tropospheric ozone (POCP)	kg C_2H_4 eq.	1,28E-03	5,94E-05	2,07E-04	1,54E-03
Abiotic depletion potential – Elements	kg Sb eq.	2,70E-04	1,14E-06	1,07E-06	2,73E-04
Abiotic depletion potential – Fossil resources	MJ, net calorific value	66,15	6,00	6,10	78,25
Water scarcity potential	m^3 eq.	0,72	0,04	0,16	0,91

ENVIRONMENTAL PERFORMANCE. **FASER FAMILY**

Regarding energy consumption, raw matter production is the most energy intensive stage for non-renewable primary energy, while pipe production is the main consumer of primary energy from renewable sources.

PARAMETER		UNIT	A1	A2	A3	TOTAL (A1-A3)
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1,46	0,07	8,10	9,63
	Used as raw materials	MJ, net calorific value	0	0	0	0,02
	TOTAL	MJ, net calorific value	1,46	0,07	8,10	9,63
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	70,49	6,10	6,71	83,30
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	70,49	6,10	6,71	83,30
Secondary material		kg	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0
Net use of fresh water		m^3	2,08E-02	1,16E-03	4,43E-03	2,64E-02

As observed in Energy family, most of the wastes generated during the process are catalogued as non-hazardous wastes.

PARAMETER	A1	A2	A3	TOTAL (A1-A3)
Hazardous waste disposed (kg)	8,23E-05	3,44E-06	8,99E-06	9,48E-05
Non-hazardous waste disposed (kg)	1,35E-01	2,73E-01	6,43E-02	4,73E-01
Radioactive waste disposed (kg)	1,68E-05	3,93E-05	1,56E-05	7,17E-05

(For all data shown the Declared Unit: 1 kg of piping system)

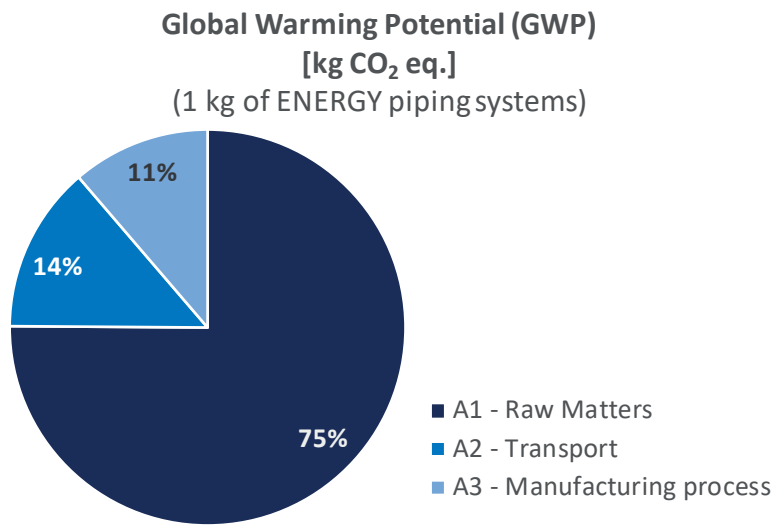
06 Interpretation of LCA results

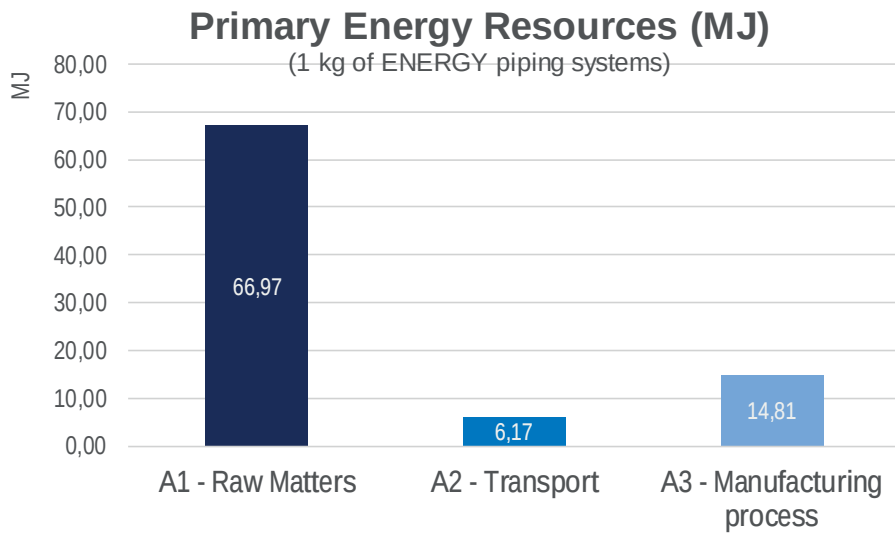
INTERPRETATION OF LCA RESULTS. **ENERGY FAMILY**

The manufacturing process in ABN only represents 11% of the contribution of the Global Warming Potential (GWP) parameter.

In the Energy systems the main environmental impact is the raw matters production, and more specifically the polypropylene production. Results shows a slightly lower impact for the ENERGY scenario, this can be explained by the differences on its composition. However, it must be taken into account than applications and technical properties for both families are different, and thus, comparison between them holds no further interest. Next figures shows the impact over global warming potential and primary energy consumption in the different stages of production. It can be clearly seen that the extraction of raw materials (**A1**) is the dominant impact.

A similar result is obtained if we analyse the use of energy sources.



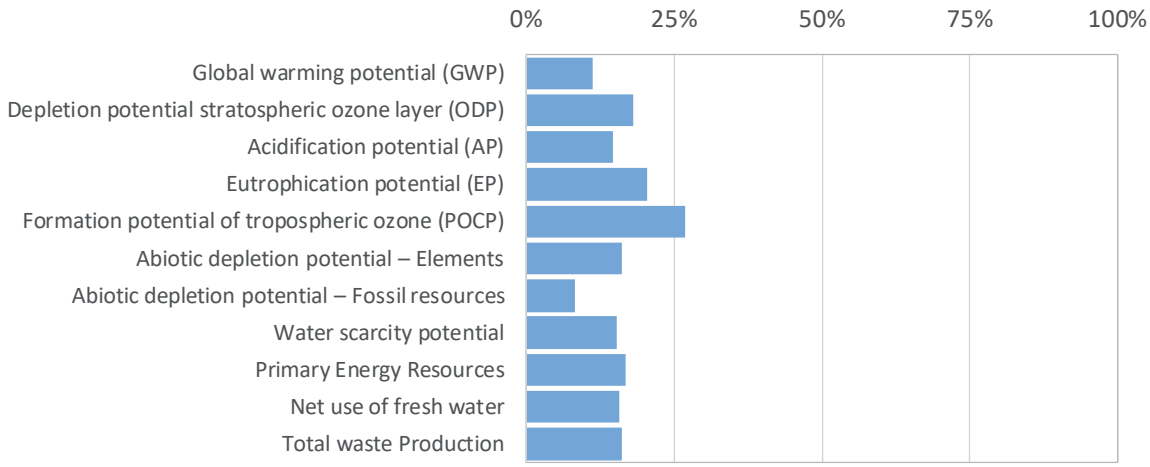


INTERPRETATION OF LCA RESULTS. **ENERGY FAMILY**

The ABN production process has a minimal impact on the stages analysed.

In this way, all the parameters obtained for the life cycle analysis (LCA) can be evaluated, as you can see in the following graph that the stage of producing pipe (**A3**) and fittings is the one with the lowest weight in all parameters analyzed: the eight parameters of environmental impact, water use and total waste production.

Evaluation of stage A3 (Manufacturing process) over the total stage of production (A1 + A2 + A3) for environmental performance, use of water and waste production
(1 kg of ENERGY piping systems)

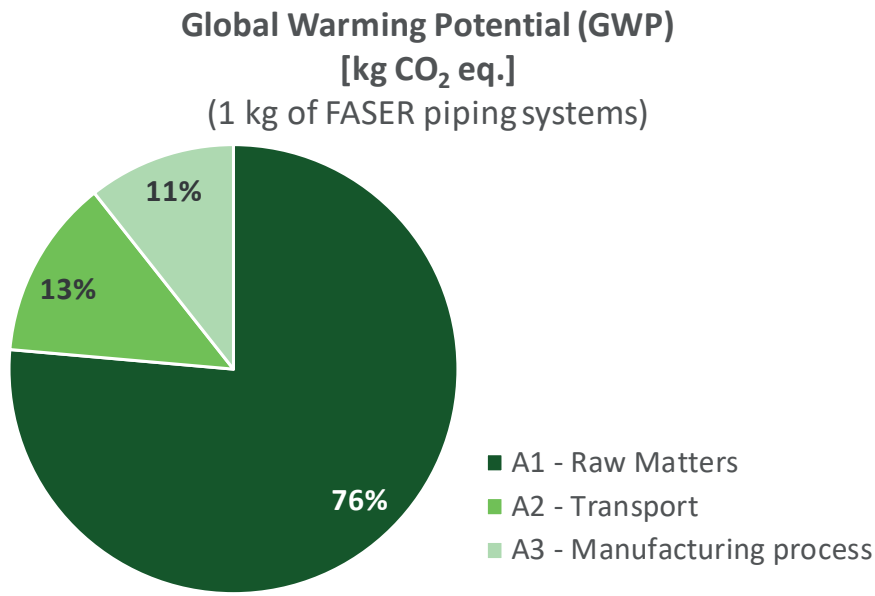


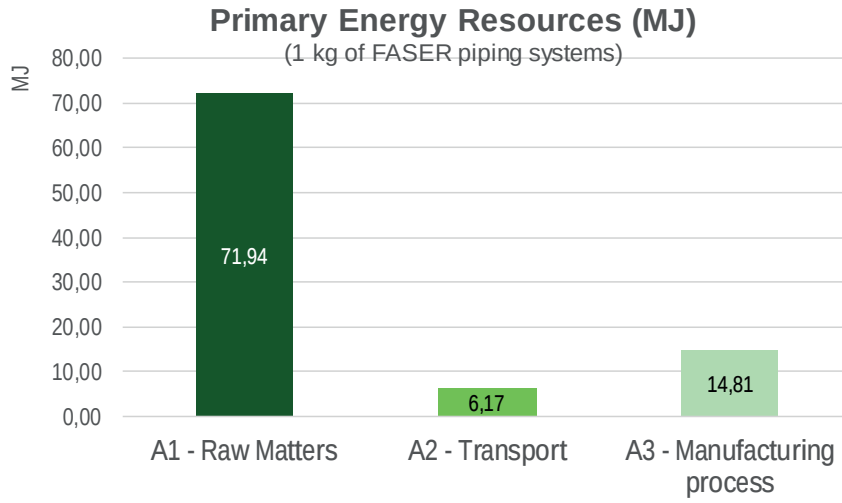
INTERPRETATION OF LCA RESULTS. **FASER FAMILY**

Our production process only represents 11% of the contribution of the Global Warming Potential (GWP)

The majority of the environmental impact for Faser Family lies in the raw matters production (**A1**), and more specifically in the polypropylene production, as it is the main component.

Next figures shows the impact over global warming potential (**GWP**) and primary energy consumption in the different stages of production. It can be clearly seen that the part referring to the extraction of raw materials is the dominant in the results obtained.



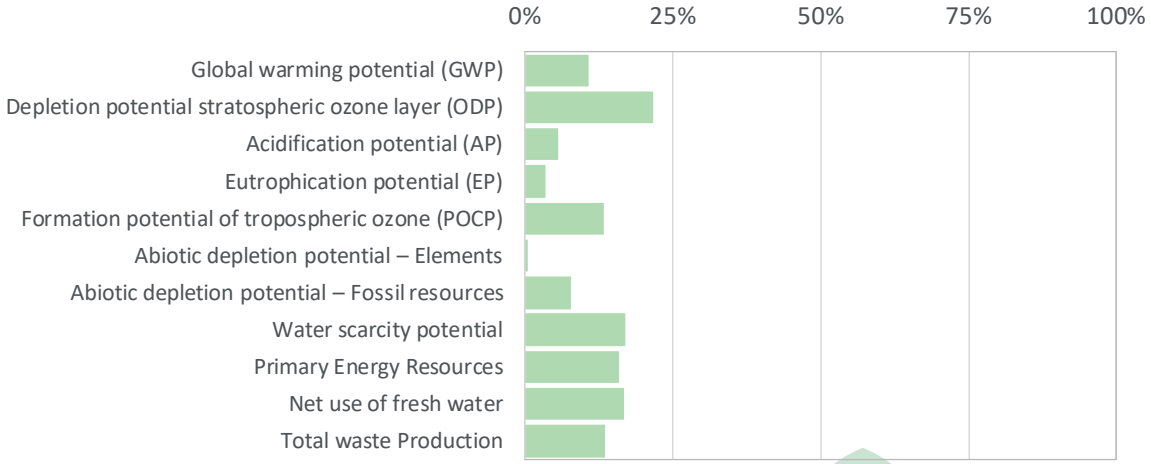


INTERPRETATION OF LCA RESULTS. **FASER FAMILY**

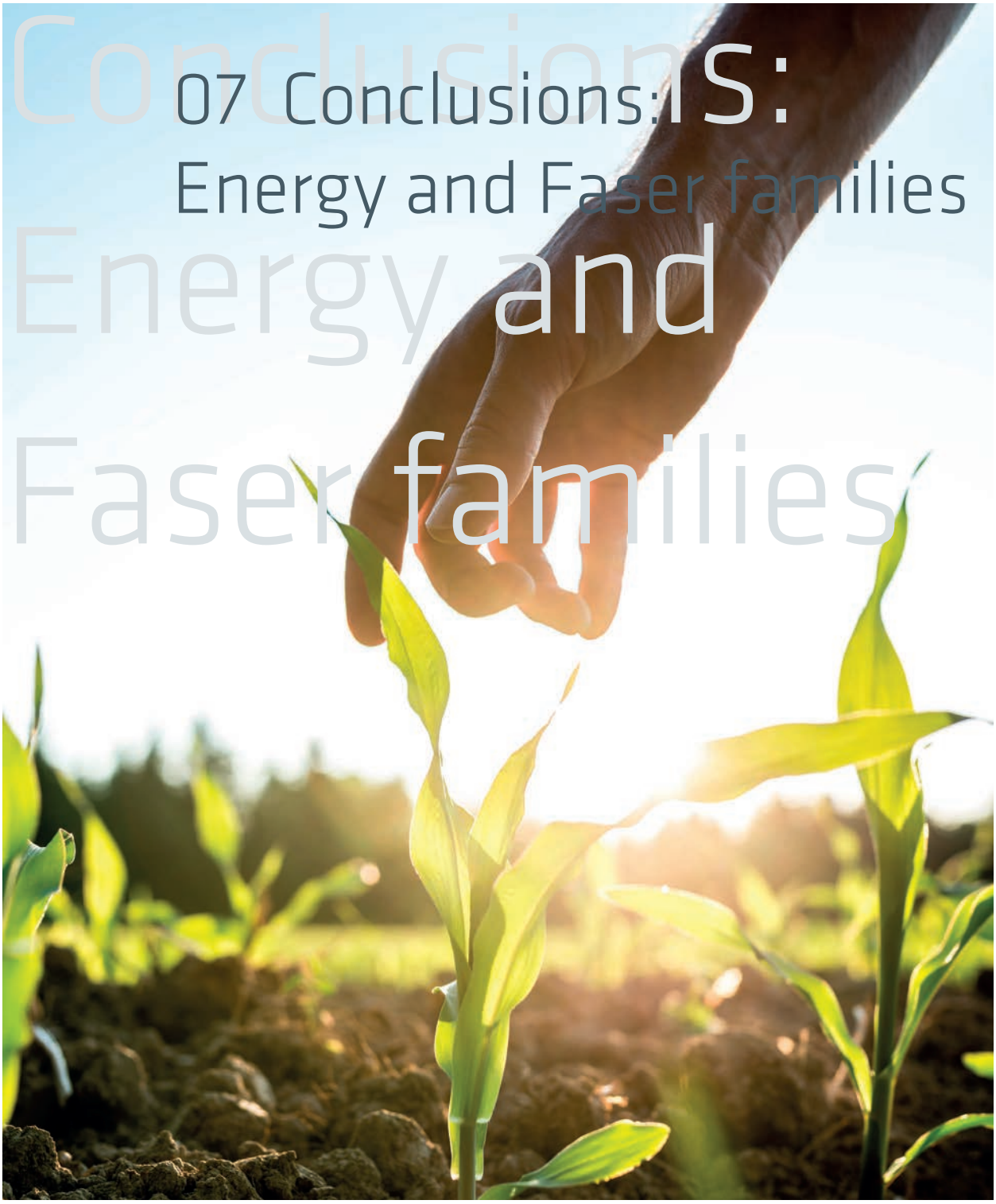
The manufacturing process represents less than 25% in all parameters analysed. The determining factor is the production of materials.

In this way, all the parameters obtained from the life cycle analysis (LCA) can be evaluated, as you can see in the following graph, the stage of producing pipe and fittings (**A3**) is the one with the lowest weight in all parameters analyzed: the eight parameters of environmental impact, water use and total waste production.

Evaluation of stage A3 (Manufacturing process) over the total stage of production (A1 + A2 + A3) for environmental performance, use of water and waste production
(1 kg of FASER piping systems)



07 Conclusions: Energy and Faser families



CONCLUSIONS: ENERGY AND FASER FAMILIES

It is therefore an environmental duty for ABN to evaluate and analyse our environmental contribution and therefore reduce it.

Through this EDP, ABN has analysed the environmental impact of its two main families of channelling systems:

ABN // EVAC ENERGY PLUS
ABN // INSTAL CT FASER RD

41%

33%

26%

The analysis of the product life cycle and their environmental impact is not a trivial matter, since it is estimated that more than 41% of the energy consumed in the European Union corresponds to the construction sector, a sector to which our products are destined. The other main sectors being road traffic (33%) and industry (26%) .

It is therefore an environmental duty for ABN to evaluate and analyse our environmental contribution and therefore reduce it.

Evaluate

Transparency

Communicate

WHAT DO WE OFFER TO OUR CUSTOMERS WITH THIS EDP?

- Clear and verified independently information for our clients.
- Truthful and useful information, based on a very exhaustive environmental assessment methodology, which offers analysis and results based on calculations and treatment of standardized data set by the regulations.
- Information available in different public databases.
- Relevant information for our own process of continuous improvement in all stages: procurement, design, manufacturing, marketing, etc.

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CONCLUSIONS: ENERGY AND FASER FAMILIES

Performing the EPD of our two main families of pipes and fittings has allowed us to understand their environmental impact and therefore minimize it in the coming years.

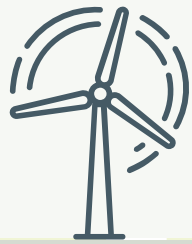
Seeing that the own stage of production in the plant of ABN Pipe Systems (**A3**) in Medina del Campo (Valladolid, SPAIN) is the one with the environmental impact on the total of the analyzed parameters (production of raw materials from the origin, transport to the plant of production and final production), it can be concluded that **the special production conditions of our plant has borne fruit in the form of a lower environmental impact.**

"This EPD reflects our permanent commitment to the environment"

CONCLUSIONS: ENERGY AND FASER FAMILIES

RESPONSIBLE USE OF POWER FROM RENEWABLE SOURCES

Our energy use corresponds only to 100% renewable sources. Additionally, measures and guidelines for reducing power consumption are established.



RESPONSIBLE USE OF COOLING WATER

The refrigeration circuits are closed, allowing the continuous use of the resource.

There are guidelines applied for the reduction of the m3 consumed.

USE OF THE LATEST GENERATION OF RAW MATERIALS AND COMPOUND FORMULATIONS

Use of the latest generation of raw materials and own compound formulations that optimize the weight of the material used for the required pressure and temperature conditions in use.

APPLICATION OF THE PRINCIPLES OF THE CIRCULAR ECONOMY

Application in all our manufacturing technologies as concerns the thinking principles of the circular economy (knowledge of energy sources and sources of waste production, design stages, use of materials, manufacturing, market, up-cycling, re-thinking etc.)

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07 REFERENCES

GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 3.0.

01. PCR Construction Products and Construction Services (2012:01), version 2.3

02. UNE EN 15804+A1: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

03. UNE EN ISO 14040: Environmental Management-Life Cycle Assessment-Principles and framework.

04. UNE EN ISO 14044: Environmental Management-Life Cycle Assessment-Requirements and guidelines.

05. UNE EN ISO 14025: Environmental labels and declarations-Type III Environmental Declarations Principles and procedures

07.01 Differences versus previous versions

The C2c label was removed in the revision on April 26th, 2019.

08 CONTACT INFORMATION

EPD OWNER	ABN Pipe Systems Estrada Baños de Arteixo, 28 Parque Empresarial Agrela 15008 A Coruña (SPAIN) T. +34 902 202 532 www.abnpipesystems.com **Contact person: Rosa A. Campo Arnaiz** **racampo@grupoabn.com** **T. +34 983 020 510**
LCA AUTHOR	Centro Tecnológico de Investigación Multisectorial **Parque Empresarial de Alvedro, calle H, 20** **15180 Culleredo, A Coruña, SPAIN.** **www.cetim.es** **Contact person: Julio Fierro Fernández** **jfierro@cetim.es** **T. +34 881 105 624 (Ext. 2)**
LCA COMMISIONER	Rubén Carnerero Acosta Independent Verifier r.carnerero@ik-ingenieria.com T. +34 94 418 17 46
PROGRAMME OPPERATOR	EPD® Environmental Product Declaration EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com

09 PROGRAMME-RELATED INFORMATION AND VERIFICATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with UNE EN 15804.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD Registration number:	S-P-00811
ECO EPD Registration number:	ECO EPD 00000834
Published:	2019-03-25
Valid until:	2024-03-03
Product Category Rules:	PCR 2012:01 Construction products and construction services. Version 2.3
Product group classification:	UN CPC 3632 Tubes, pipes and hoses, and fittings therefore, of plastics
Reference year for data:	2018

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

PCR review was conducted by: The Technical Committee of the International EPD® System.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Third party verifier: Rubén Carnerero Acosta (Independent verifier)
Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:
☒ Yes ☐ No

MIX
Paper from responsible sources
FSC® C125125

EPD®

abn

HEAD OFFICES

Estrada Baños de Arteixo, 28
Parque Empresarial Agrela
15008 A Coruña (Spain)
T. +34 902 202 532

PRODUCTION SITE

Parque Empresarial Medina On
Autovía A6, km 152
47400 Medina del Campo (Spain)
T. +34 983 020 510

www.abnpipesystems.com
info@grupoabn.com

PACTO POR UNA ECONOMÍA CIRCULAR

GOBIERNO DE ESPAÑA · MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

Miembro de:

AseTUB Grupo Sectorial Tuberías Plásticas de ANAIP

PYME INNOVADORA

AENOR ER Empresa Registrada UNE-EN ISO 9001 ER-1088/2008

AENOR Gestión Ambiental UNE-EN ISO 14001 GA-2016/0229

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