fitt bluforce

A technology worth spreading

Polymer alloy pipes

FITT.COM

fitt bluforce

Polymer alloy pipes

FITT, a leading global group established in Italy in 1969 - and today a benefit company - is a pioneer in the production and development of solutions for the transfer of fluids for domestic, professional and industrial applications.

Ingenious for life

The mission of the FITT group is to improve the performance of its customers by providing pipes, hoses and systems for the transport of liquid, gaseous and solid substances, with products at the forefront of technology, design and sustainability.

Ongoing progress

FITT, currently led by Alessandro Mezzalira, was founded in 1969 by his father Rinaldo. With headquarters in Sandrigo, in the province of Vicenza, FITT – an international reference point in its industry – currently has 14 production sites, 5 commercial branches and 15 logistic centres in Europe and worldwide.

FITT SOLUTIONS

Gardening Solutions

Industrial Solutions

Marine Solutions

Food & Beverage Solutions

Innovative and pioneering technology

FITT strongly believes in Open Innovation and works with an international network of partners, universities and research bodies, taking advantage of external organisations for the validation of its own quality tests and protocols, defining the impact of its products.

Multiplant production and logistics

Flexible logistics, automated and customised, capable of meeting the requests of the various sales channels served by our organisation: from large customers to the single individual purchasing on line.
The network of logistics centers of FITT, strategically located throughout Europe, allows to deliver in 48/72 h in the main European markets.

FITT Solutions

FITT develops state of the art solutions for the handling of fluids, ensuring reliability, safety, performance and ease of use applicable to 9 dedicated and specialised business units.


Building Solutions


Pool & SPA Solutions


Ventilation Solution


Agricolture Solutions


Infrastructure Solutions

«the task that we are called to fulfil must contribute to make this world a better place, for us and for future generations»

Alessandro Mezzalira
CEO

THE RESPONSIBLE FLOW: FITT'S SUSTAINABILITY STRATEGY FOR 2030

The FITT journey

In FITT's vision, being a responsible company means transforming its business model to achieve an ideal balance, with the objective of **creating economic value and having a positive impact on the planet and on people's lives.**

FITT is a "**Società Benefit**", and in addition to the object of making a profit, it has added in its statute the public and official commitment of a positive impact on society and the biosphere, operating in a sustainable and transparent manner.

Corporate responsibility

FITT is committed to producing state-of-theart products, providing its customers with the best technologies in the field of fluid handling.

Investing in innovation, scientifically measuring the impact of its offering and adopting a supply chain approach that aims at minimising negative effects throughout the product life cycle, enables FITT to create an increasingly sustainable business model.

THE 7 OBJECTIVES SELECTED BY FITT

Environment:

FITT is engaged on two parallel fronts: the management of energy, water and waste, and the development of innovative products.

In the area of processes, the most important objective is **decarbonisation**, with the aim of setting **CO2e reduction** targets (scopes 1-2-3), to be reached by the FITT GROUP by 2025. With this in mind, in 2023 FITT has started measuring its **Carbon Footprint** in accordance with the ISO 14064 GHG inventory. As far as sustainable development is concerned, the aim is to make sure that by 2025 10% of our turnover is from innovative products with lower impact, producing 10% less Co2eq than their traditional equivalents.

Social:

FITT is engaged again on two complementary fronts, one internal and one external.

The first includes the **creation of wellbeing, inclusion and security for the FITT People**. The second concentrates on support of social and environmental initiatives, both local and international, mainly in the fields of health, women, youth and people with special needs, creating partnerships with the stakeholders.

Governance:

Act as a responsible company by rewriting a new business model that creates shared value, thus contributing to bring about a positive impact in the life of people and the environment.

fitt bluforce certified product

The revolutionary polymer alloy pipe for conveying fluids under pressure: ductility and resistance to crack propagation guarantee extreme reliability over time.

The experience acquired in recent decades has shown that premium-quality materials are essential when building major infrastructures such as water supply networks, irrigation networks and sewerage networks under pressure.

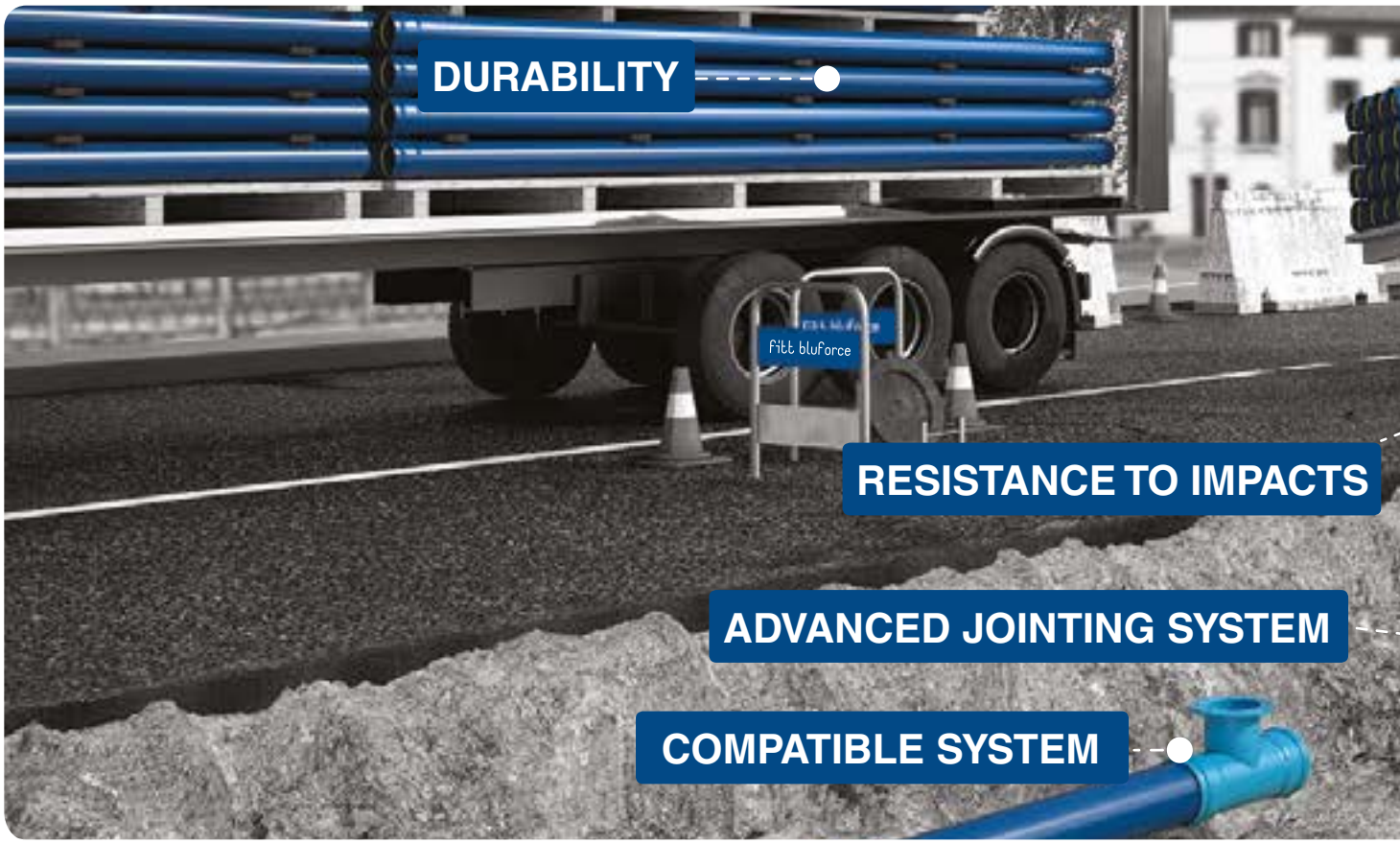
The overall expenditure for these types of projects depends on the initial costs, but above all on the management and maintenance costs throughout the entire service life of the infrastructure, which should be as durable as possible and trouble-free.

To satisfy these needs, FITT has developed **FITT Bluforce**. Thanks to the innovative **PVC-A (PVC-HI)*** technology, **FITT Bluforce** offers maximum resistance and thus considerably reduces the need for maintenance on the completed work, meaning that the infrastructure can be used in fully safe conditions.

FITT Bluforce conforms to the **IIP 1.1/19 Technical Specification**, "Modified polyvinyl chloride (PVC-A) pipes for water supply piping systems", (Italian) **Ministerial Decree no. 174 of 6 April 2004** (Water for human consumption) and the **UNI EN 1622** standard, "Water analysis – determination of the threshold odour number (TON) and the threshold flavour number (TFN)".

FITT Bluforce features enhanced performance thanks to the **Power Lock**, the socket-based pipe jointing system with the seal mechanically hot-inserted in advance, which transforms the pipe into a complete system ensuring easy assembly, perfect operation and optimal tightness over time.

FITT Bluforce is offered in the RAL 5010 blue version.



A

A
K75
KIP-104537

B

B
FITT Bluforce is Made in Italy.

C

C
Technical Specification IIP (MOD 1.1/19)

The regulatory path of **FITT Bluforce** started with the technical specification issued in 1995 by North West Water named: “CPE/PVCU Alloy pressure pipes, integral joints, and post-formed bends for cold potable water and for sewerage, drainage and industrial applications”.

The second step was the issuing by the British Standard Institution, in 1999, of the **BS PAS 27** standard: “Unplasticized polyvinyl chloride alloy (PVC-A) pipes and bends for water under pressure”. This standard prescribes the characteristics of the new generation of polymer alloy pipes combining high mechanical resistance and high ductility.

Lastly, in 2015 the Istituto Italiano dei Plastici (IIP), on FITT’s indication, issued the **IIP 1.1/19 technical specification** which transposes the contents of (Italian) **Ministerial Decree no. 174/2004** (Water for human consumption) and of the above-mentioned BS PAS 27/1999 standard

Finally, in 2020 FITT Bluforce obtains certification **Kiwa Quality** thanks to which, based on type tests and on the periodic inspections conducted by **Kiwa**, is deemed compliant with the requirements of the Technical **Document Ki-0410 Rev.11, Attachment K75 Rev.02** and therefore marked **KQ**. Kiwa certification was issued in agreement to the Kiwa Cement Italia Regulations for Certification of product.

(*) At a regulatory level, it is defined as a polymeric alloy of Poly Vinyl Chloride with high impact strength PVC-HI (such as PVC-M, PVC-A, PVC-CPE). PVC-HI (PVC-M, PVC-A, PVC-CPE) is a thermoplastic material that contains PVC resin with the addition of an impact modifier (PVC-High Impact). Depending on the type of impact modifier, the acronym HI can be replaced with various designations (PVC-A, Acrylic or PVC-A Alloy (polymer alloy); PVC-CPE, Chlorinated Polyethylene; PVC-M, Modified).

the fitt bluforce epd® - environmental product declaration

EPD®

FITT Bluforce is the first PVC-A (PVC-HI) product range to achieve EPD® marking in Europe. This is the environmental product declaration that provides certified data on the life cycle of products, following the ISO 14025 and EN 15804:2012 + A2:2019 international standards.

The FITT Bluforce range provides utilities and freelance professionals with a wide range of solutions for infrastructural networks, now also completed with certified information on product environmental footprint.

FITT Bluforce and FITT Bluforce RJ meet the requirements for green procurement of Public Administrations (Green Public Procurement) and the Minimum Environmental Criteria for the road and building construction and maintenance sectors.

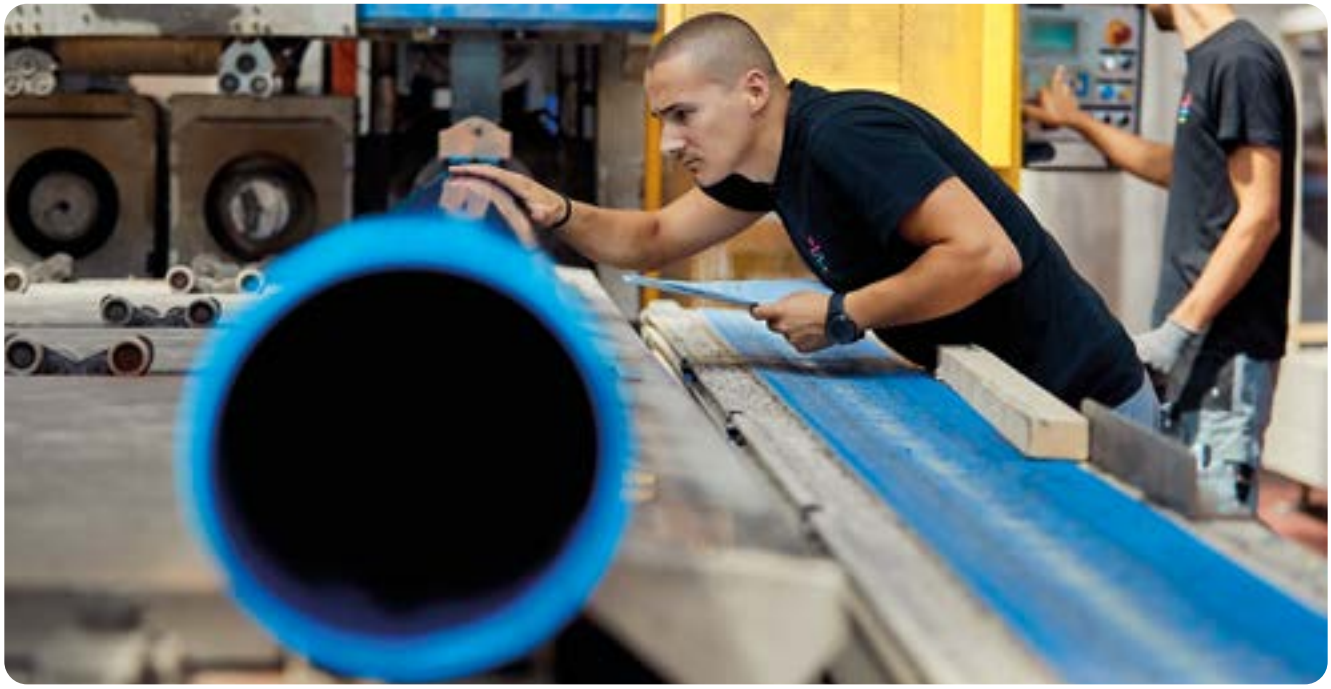
EPD®, WHAT IS IT?

The EPD® is a voluntary certification program that started in Sweden, and soon took on an international position as part of the EU environmental policy.

The EPD® follows the requirements of the **UNI EN ISO 14025:2010** standard (Environmental declarations and labels – Type III environmental declarations) and is a tool for providing objective, comparable and reliable information on the environmental performance of products and services.

On one side, this declaration allows manufacturers to demonstrate their commitment to environmental issues, by analysing and describing their products in terms of their environmental impacts, while on the other side giving customers, designers and contractors the possibility of obtaining detailed information regarding the environmental characteristics of the product itself.

This means that the EPD® of the Bluforce range can provide relevant, checked and comparable information on the environmental impact of the **PVC-A (PVC-HI)*** drinking water distribution network system conceived by FITT.



SGS
Italia S.p.a.

EPD®

A B

A
Third verifier
in accordance with:
ISO 14025:2006.

B
ISO 14025 - EN 15804:2012 + A2:2019
Reg. nr. S-P-01946
N° rif. ECO EPD®: 00001162
environdec.com

THE ADVANTAGES OF THE EPD® CERTIFICATION

Is international
The Bluforce and Bluforce RJ EPD® is a certified Environmental Product Declaration (EPD®) that lists environmental data on the life cycle of Bluforce products, in accordance with international standard ISO 14025.

Is reliable
The Bluforce and Bluforce RJ EPD® is based on the scientific principles of the Life Cycle Assessment (LCA), and is awarded following an independent assessment.

Is transparent
The Bluforce range environmental product declaration data are calculated and presented following the standard calculation rules contemplated for the product category of construction materials.

HOW IS THE ENVIRONMENTAL PERFORMANCE OF THE FITT BLUFORCE RANGE CALCULATED?

The environmental performance of the Bluforce range indicated in the EPD® is based on the **Life Cycle Assessment (LCA)**, in accordance with the **ISO 14040 standard**, the methodological foundation that ensures the objectivity of the information supplied, taking into account the specific calculation parameters for the product category (PCR) of construction materials following the **UNI EN 15804:2012 + A2:2019** European Standard.

The new study adopts the “cradle to grave” approach and quantifies the impacts from the extraction of raw materials to the end of life of the finished product and its disposal. In the EPD®, the results are split into the following stages:

A1: production of raw materials and energy carriers;

A2: transport of raw materials;

A3: manufacturing process at the FITT plant.

A4: transport of the pipe to the installation site;

A5: pipe installation;

C1: removal of the pipe from the installation site;

C2: transport of materials to the disposal and / or recovery center;

C3: waste treatment processes;

C4: waste disposal.

The environmental information obtained through the LCA was transferred in the environmental product declaration, which after having being assessed by **SGS Italia**, an independent credited body, is now available at Environdec.com, the portal of the International **EPD® System**, the Program Operator selected by FITT that manages the processes for the writing of the Product Category rules, with a presence in over 45 countries all over the world (to date the environdec.com portal lists more than 1100 EPD®s).

the fitt bluforce epd® - environmental product declaration

ENVIRONMENTAL PERFORMANCE AND USE OF RESOURCES

The Bluforce range EPD® contains an analysis of a set of impact categories, therefore offering a wide view of the potential environmental impacts, from climate changes to impacts associated with the use of water.

- **Depletion of abiotic resources-elements (kg Sb equiv.):**
  measures impacts associated with the consumption of minerals, metals, and similar materials;
- **Depletion of abiotic resources-fossil fuels (MJ):**
  is a measure of the consumption of non-renewable energy sources;
- **Acidification (mol H+ equiv.):**
  deals with acidifying substances that have a wide range of impacts on soil, underground water, surface water, organisms, ecosystems and materials (buildings);
- **Ozone depletion (kg CFC 11 equiv.):**
  relates to the depletion of the stratospheric ozone, which can have harmful effects of human health, animal health, earth and water ecosystems, biochemical cycles and materials;
- **Global Warming (kg CO_2 equiv.):**
  climate change can have harmful effects on the health of ecosystems, human health and material wellbeing. Climate change is linked with the emission of greenhouse gases in the air;
- **Eutrophication aquatic freshwater (kg PO43- equiv.), Eutrophication aquatic marine (kg N equiv.), Eutrophication terrestrial (mol N equiv.):**
  includes all the impacts resulting from excessive levels of macro-nutrients in the air, caused by the emission of nutritional substances in the air, water and soil;
- **Photochemical ozone formation (kg NMVOC eq.):**
  photo-oxidant formation is the formation of reactive substances that are harmful for human health and ecosystems. This issue is also referred to as “summer smog”;
- **Water use (m^3 world eq. deprived):**
  a measure of the consumption of the resource;
- **Utilisation of resources:**
  the FITT Bluforce range EPD certifies that the use and the quantity of secondary materials and energy carriers used for the production of FITT Bluforce and FITT Bluforce RJ equals zero;
- **Particulate Matter emissions (disease incidence):**
  measures the potential health effects due to the emission of particulate matter (PM 2.5);
- **Ionizing radiation, human health (kgBq U235 eq):**
  represents the potential impact of ionizing radiation on the population, in relation to Uranium 235;
- **Ecotoxicity (freshwater) (Comparative Toxic Unit for ecosystems – CTUe):**
  estimate of the possible effects on the species present in the ecosystem in a given time interval;
- **Human toxicity, cancer and non cancer (CTUh):**
  the indicator measures the estimated increase in mortality on the population per unit of mass of chemical substance emitted;
- **Land use (Pt.):**
  evaluates the impact related to land use.

SCAN the QR Code and discover the Bluforce EPD®!

Visit the **ENVIRONDEC.COM** portal, the **Global International EPD® System** that collects environmental based claims on **ISO 14025** and **EN 15804:2012+A2:2019**

the revolutionary polymer alloy

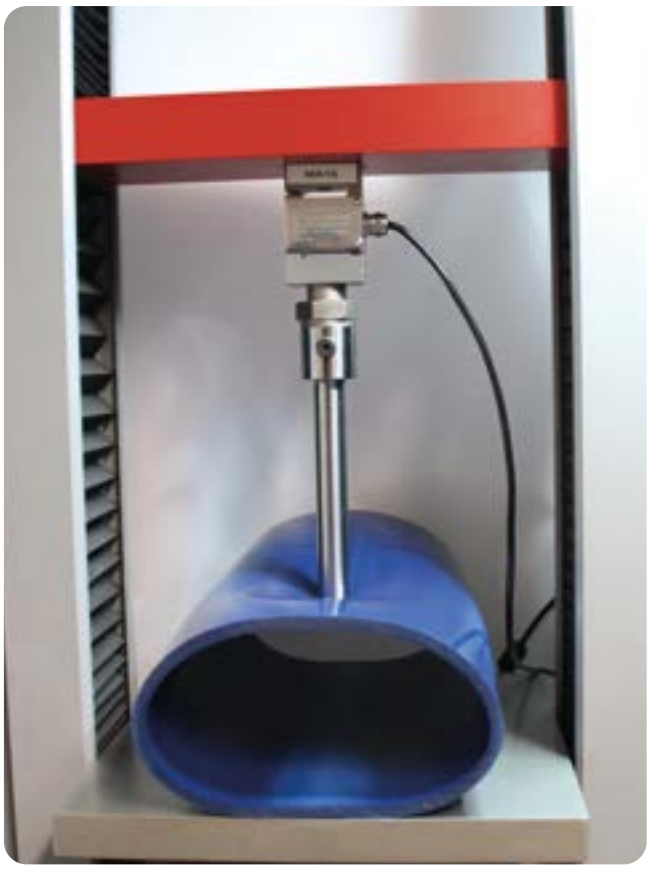
The technology used to manufacture **FITT Bluforce** is based on the **PVC-A (PVC-HI)** polymer alloy, where "A" refers to "alloy", made up of two main compounds: the traditional PVC-U and chlorinated polyethylene (CPE).

PVC-A (PVC-HI) combines the resistance of PVC-U and the ductility of polyethylene, yielding a product capable of offering extremely high resistance to crack propagation – the major cause of fracture during the operation of pressurised pipelines.

During the course of the 1990s, the need to refurbish grey cast iron, PVC-U and HDPE (high-density polyethylene) pipelines stimulated the search for ways of reducing management costs of pressurised pipelines, to drastically reduce the number of repair activities due to fractures on the completed work.
In the United Kingdom, North West Water – Britain's largest water company – and the Pipeline Development Ltd. Laboratory strove to identify a material capable of:

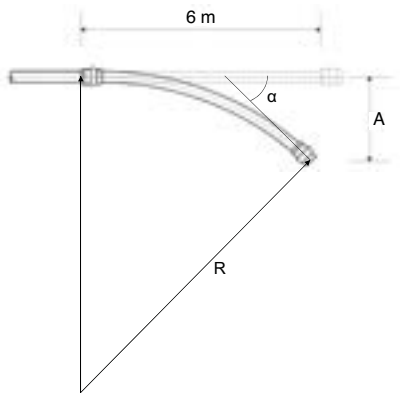
- preventing corrosion
- eliminating fractures over time
- withstanding water hammer.

Research had shown how the materials used up to then exhibited different behaviours, but were nonetheless
prone to fractures and failed to achieve satisfactory performances over time. The breakthrough came by combining the high mechanical resistance exhibited by PVC-U during simulations of the real operating conditions with chlorinated polyethylene (CPE).



the revolutionary polymer alloy

MAXIMUM PERMISSIBLE CURVATURE



FITT BLUFORCE

DN [mm]	A [m]	L [m]	α [°]	R [m]
90	1,30	6	18,6	9,2
110	1,10	6	15,8	10,9
125	0,95	6	13,6	12,6
140	0,85	6	12,2	14,1
160	0,75	6	10,7	16,0
200	0,60	6	8,6	20,0
225	0,50	6	7,2	24,0
250	0,45	6	6,4	26,7
280	0,40	6	5,7	30,0
315	0,37	6	5,3	32,4
355	0,32	6	4,6	37,5
400	0,28	6	4,0	42,9
500	0,22	6	2,9	60,0

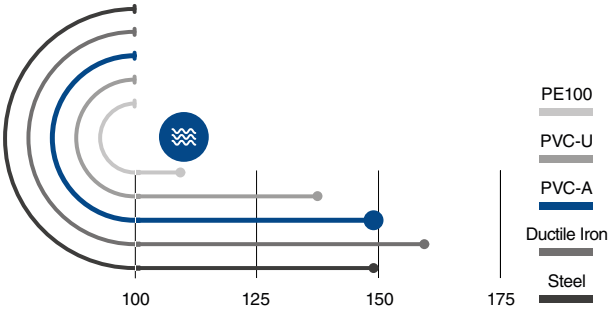
This new alloy, termed **PVC-A (PVC-HI)***, was used by FITT to manufacture **FITT Bluforce**, which is currently able
to guarantee:

- extreme ductility and thus the absence of brittle fracture
- considerable resistance to impacts and point loads even at low temperatures
- high resistance to crack propagation
- excellent tolerance to chemical aggression
- invulnerability to stray currents
- lower weight – with diameter being equal – compared to conventional resin and metal pipes
- advantageous hydraulic section compared to pipes made of other thermoplastic materials.

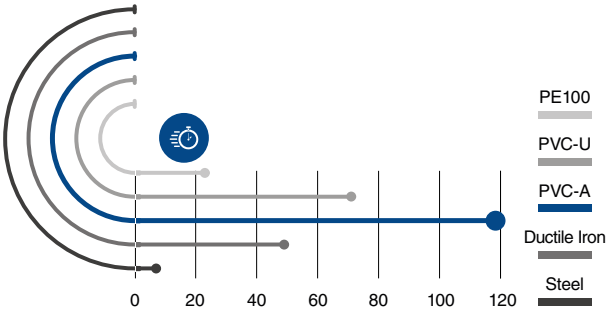
FITT Bluforce is made with virgin polymers and exclusively incorporates organic-based stabilisers (OBS), which makes it lead-free.
With **FITT Bluforce** it is possible to create large-radius bends by exploiting the flexibility of polymer alloy

(*) At a regulatory level, it is defined as a polymeric alloy of Poly Vinyl Chloride with high impact strength PVC-HI (such as PVC-M, PVC-A, PVC-CPE). PVC-HI (PVC-M, PVC-A, PVC-CPE) is a thermoplastic material that contains PVC resin with the addition of an impact modifier (PVC-High Impact). Depending on the type of impact modifier, the acronym HI can be replaced with various designations (PVC-A, Acrylic or PVC-A Alloy (polymer alloy); PVC-CPE, Chlorinated Polyethylene; PVC-M, Modified).

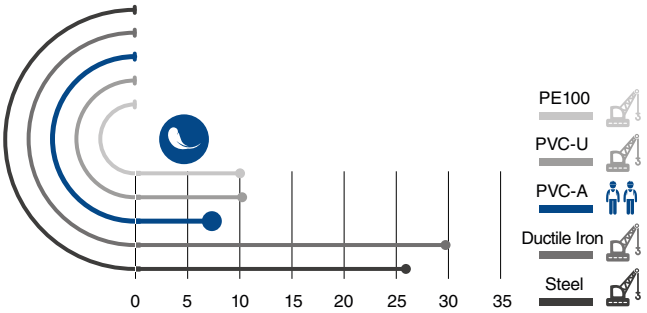
ENHANCED FLOW RATE (liter/second)



HIGH LAYING SPEED (kg/metre)



LOWER WEIGHT (metres/hour)



All data is calculated for DN200 pipes (PE100, PVC-U and PVC-A: PN16).
The flow rate is calculated using a straight section measuring 1,000 metres with 12 bar internal pressure.
The laying speed is calculated without considering the trench excavation and backfilling phases.
The handling indications refer to 6-metre pipes and comply with the parameters of (Italian) Legislative Decree no. 81/200.

c-ring test the ductility test for pvc-a

FITT Bluforce is subjected to the **C-Ring Test**, a specific destructive test conducted in the laboratory that allows for assessing toughness (Kc value), namely the resistance to the crack's growth over time. The test, prescribed in the BS PAS 27/1999 standard and thus in the **IIP 1.1/19 Technical Specification**, reveals the high ductility of the material, which withstands brittle fractures.

It is decidedly daring to assume that a pipe on-site and one in the laboratory are in the same condition. In actual fact, poor handling of the pipes or non-optimal laying can lead to imperfections (cracks) which, if they reach considerable dimensions, can jeopardise the stability of the pipe under pressure. This phenomenon is normally not detected through standard laboratory tests, which are conducted on perfectly intact samples.

To thoroughly analyse how the crack propagates and assess its potential impact on the pipe's fracture mechanism (ductile or brittle), the **PVC-A (PVC-HI)*** developers have devised the **C-RING TEST**, conducted on pipe portions cut in advance to adequately simulate the presence of the crack on-site (FIG. 2 and FIG. 3).

(*) At a regulatory level, it is defined as a polymeric alloy of Poly Vinyl Chloride with high impact strength PVC-HI (such as PVC-M, PVC-A, PVC-CPE). PVC-HI (PVC-M, PVC-A, PVC-CPE) is a thermoplastic material that contains PVC resin with the addition of an impact modifier (PVC-High Impact). Depending on the type of impact modifier, the acronym HI can be replaced with various designations (PVC-A, Acrylic or PVC-A Alloy (polymer alloy); PVC-CPE, Chlorinated Polyethylene; PVC-M, Modified).

The C-RING TEST highlights the always ductile behaviour of **FITT Bluforce**, confirming the product's reliability over time and the lower maintenance requirements of the completed work.

Its high resistance to crack propagation enables the material to reach the yield phase before the crack degenerates, causing the pipe's brittle fracture. The **FITT Bluforce** sample on which a fracture was triggered contains a white-coloured zone which signals that the expected yield phase has occurred (FIG. 4).

The results of the **C-RING TEST** perfectly match the results of the pressure test conducted on a sample cracked beforehand.

TEST EXECUTION

Rings are cut from a sample, a part of which is then removed to create a "C". An acute-angle cut is made on the opposite wall (with depth roughly 25% of the wall's thickness) then the sample is subjected to bending stress, by applying variable weights on the lower lip of the "C" (FIG. 1). For each weight there will be enough time to reach breaking point. Every fracture that appears is checked to ascertain whether it is ductile (with the white zone forming near the swollen part) or brittle. The times and corresponding tensile strengths can be plotted on a graph to predict the tensile strength at 50 or 100 years.

FIG. 1

FIG. 2

FIG. 3

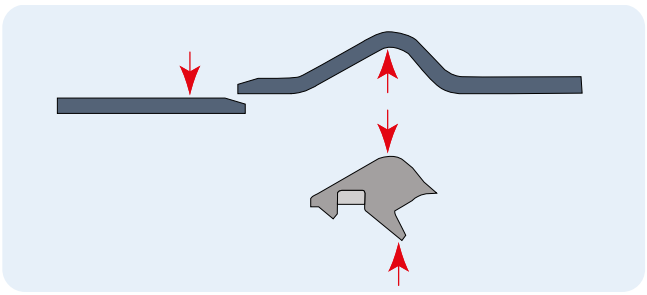
FIG. 4

power lock®: reliability and durability over time

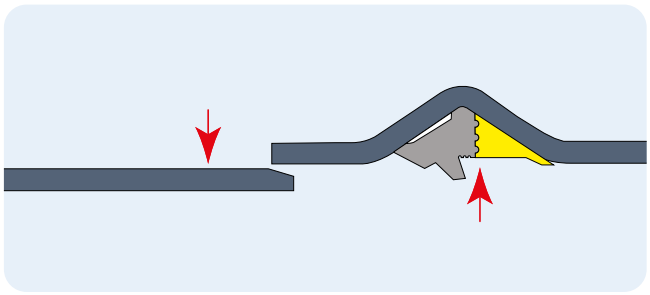
FITT Bluforce implements the socket-based jointing system with the seal mechanically hot-inserted in advance during the socket forming phase.
The Power Lock® seal consists of an EPDM elastomer sealing element conforming to the UNI EN 681 standard, comoulded with a fibre-reinforced polypropylene stiffening ring.

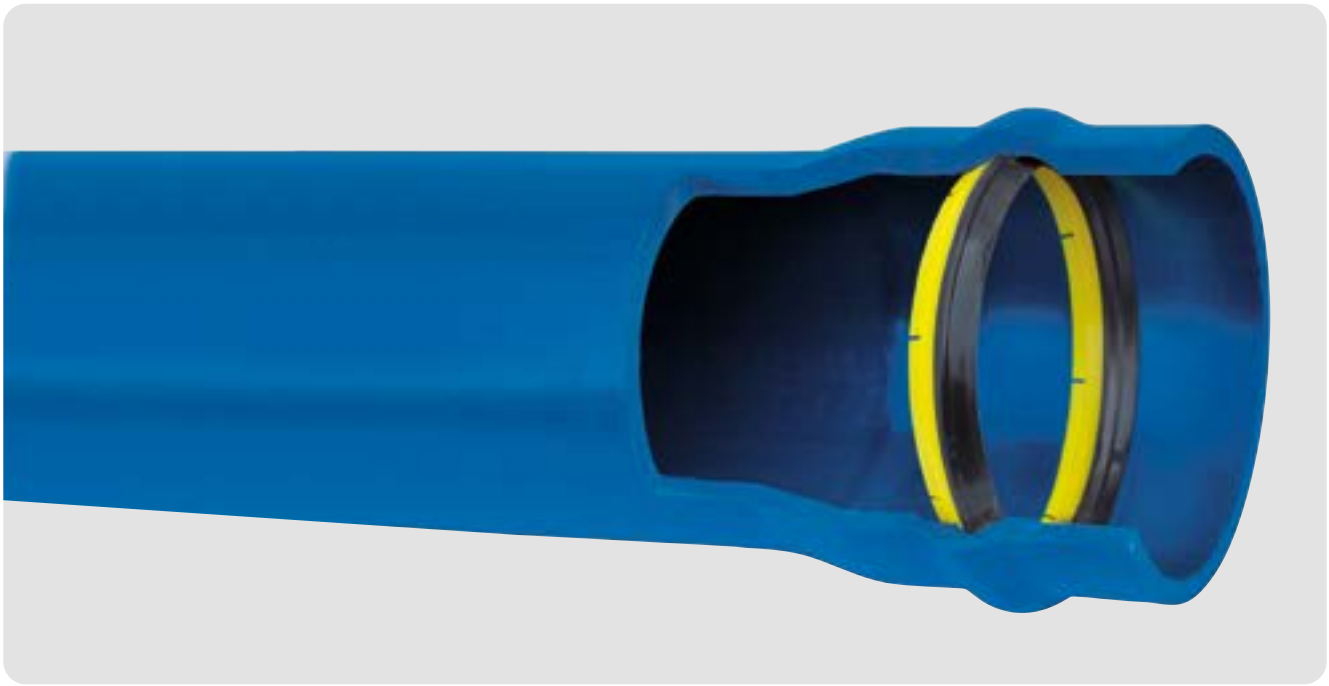
This jointing system guarantees a high degree of seal stability, resulting in easy assembly, perfect functionality and optimal hydraulic tightness of the pipes over time. The full socketing process entails the formation of the socket on the chuck and on the seal, thus fully eliminating any irregularities commonly found on standard products. In actual fact, the existing clearances between the seal and its housing are eliminated, guaranteeing a stable ring.

The 4 clearances on a ring with traditional jointing system.



The 2 clearances on a ring with the Power Lock® jointing system.





DESIGNERS

- high seal performance
- time-saving for inspections and tests
- guaranteed hydraulic tightness in case of both positive and negative pressure
- enhanced reliability of the joint's tightness
- 3° angular deflection on the joint (high misalignments)
- internal dimensions of the socket not susceptible to variations.

FITTERS

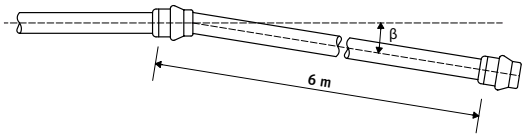
- the pipe arrives at the laying site together with the seal, preventing potential loss or damage of the seal itself
- no shifting of the seal
- easy, quick and safe assembly
- considerable reduction in the assembly force, which becomes
- significant as the diameter increases, resulting in a lower
- amount of force applied (in the range of a few hundred Newtons)
- less manpower required for installation
- manual assembly without any need for machinery
- shorter laying times.

PLANT MANAGERS

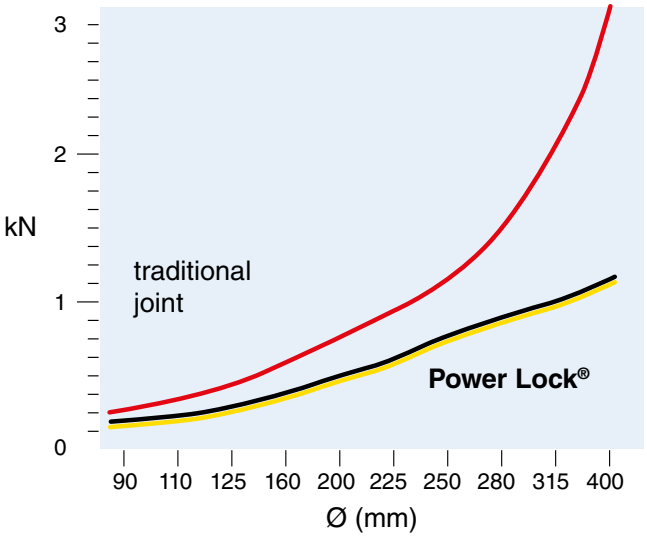
- guaranteed hydraulic tightness regardless of the joint's deflection
- the pipe and seal work as a single unit
- no risk of incorrect laying of the pipeline
- guarantee of optimal operation of the system for both the installer and the plant managers.

With **FITT Bluforce** it is possible to create large-radius bends by exploiting the tightness of the Power Lock® jointing system, which is effective even with angular deflections of up to 3°.

Figure 1

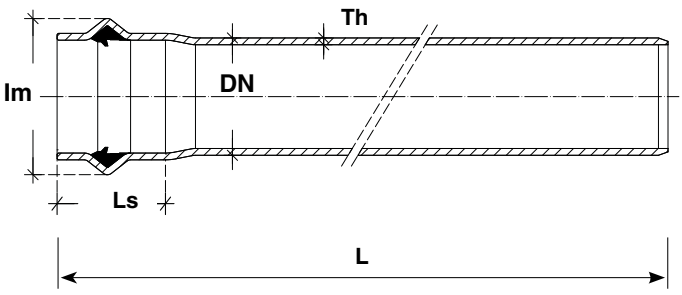


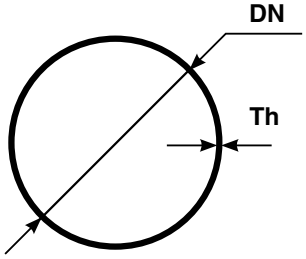
The low assembly force translates into enhanced laying speed and safety.



fitt bluforce product range pipes and wide radius restraint joint bends

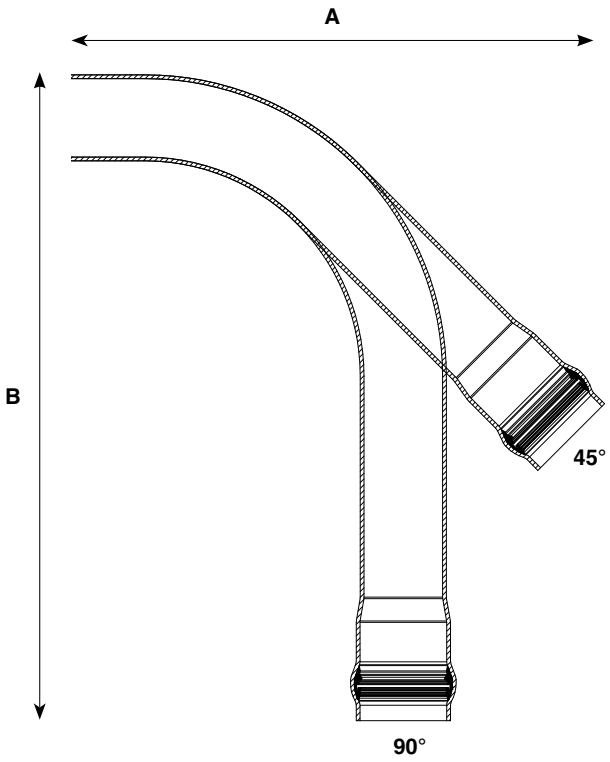
PIPES (with Power Lock®)





DN = outside diameter
L = length of bar
Ls = length of socket
Th = thickness
Im = maximum dimension

WIDE RADIUS RESTRAINT JOINT BENDS (with Bulldog®)



PIPES

	PN 10			PN 16			PN 20				
DN [mm]	Price* [€/m]	Weight* [kg/m]	Th [mm]	Price* [€/m]	Weight* [kg/m]	Th [mm]	Price* [€/m]	Weight* [kg/m]	Th [mm]	Ls [mm]	Im [mm]
90	-	-	-	16,60	1,62	4,0	20,70	1,94	4,9	150	120
110	13,50	1,59	3,1	20,20	2,42	4,9	25,20	2,91	6,0	150	145
125	17,50	2,02	3,5	26,20	3,09	5,5	32,70	3,75	6,8	160	165
140	22,00	2,51	3,9	33,00	3,90	6,2	41,20	4,70	7,6	160	180
160	28,80	3,31	4,5	43,00	5,00	7,0	53,70	6,13	8,7	180	205
200	44,60	5,12	5,6	66,90	7,84	8,8	83,60	9,57	10,9	190	260
225	56,10	6,48	6,3	84,10	9,90	9,9	105,10	12,00	12,2	200	270
250	69,60	7,94	7,0	104,40	12,21	11,0	130,50	14,92	13,6	210	320
280	92,20	9,91	7,8	138,30	15,31	12,3	172,80	18,68	15,2	210	330
315	111,10	12,56	8,8	166,60	19,28	13,8	208,20	23,63	17,1	220	390
355	156,80	15,90	9,9	235,20	24,55	15,6	294,00	29,88	19,2	220	440
400	188,10	20,30	11,2	282,10	31,02	17,5	352,60	37,97	21,7	230	490
500	296,00	31,37	13,9	444,00	48,34	21,9	-	-	-	240	610
630	544,00	50,00	17,5	816,00	76,60	27,6	-	-	-	330	780

(*) Total length of the bar L = 6m

WIDE RADIUS RESTRAINT JOINT BENDS

NEW

PN 16

Dn [mm]	Price [€/m]	Weight [kg/m]	Th [mm]	45° [mm]	90° [mm]	Ls [mm]	Im [mm]
90	87,38	1,70	4,00	(A) 280 x (B) 900	(A) 380x (B) 900	165	124
110	121,86	2,53	4,90	(A) 350 x (B) 850	(A) 450 x (B) 1.000	170	148
160	188,60	5,20	7,00	(A) 330 x (B) 1.050	(A) 530 x (B) 1.200	200	210
200	314,74	8,15	8,80	(A) 720 x (B) 1.500	(A) 750 x (B) 2.000	230	260
225	419,38	10,38	9,90	**	**	245	285
250	544,29	12,74	11,00	**	**	260	320
315	929,45	20,10	13,80	**	**	300	398
400	-	32,34	17,50	**	**	330	500

(**) Available on request

All the pipes are supplied with protective plugs for the sockets to guarantee the integrity of the seal and facilitate laying operations.
The pipes are available in 6-metre bars.
FITT Bluforce is perfectly compatible with all PVC pipe couplings available on the market (cast iron, steel, PVC-U).

specification item

Supply, transport and laying of **PVC-A (PVC-HI)*** polymer alloy piping conforming to the IIP 1.1/19 technical specification that fully transposes the BS PAS 27/1999 standard, (Italian) Ministerial Decree no. 174/2004 (former circular letter of the Minster of Health no. 102 of 02/12/1978) and the UNI EN 1622 standard – "Water analysis – determination of the threshold odour number (TON) and the threshold flavour number (TFN)", manufactured by ISO 9001-certified companies without any addition of regenerated material and free of leadbased stabilisers.

Socket jointing system with "Power Lock®" - type seal, hot-assembled in advance and immovable. The seal is made up of an elastomer element conforming to the UNI EN 681-1 standard, co-moulded with a fibre-reinforced polypropylene element that ensures perfect stability in the seal housing.

The jointing system must be capable of withstanding a negative pressure of –0.8 bar even in conditions of stress, such as: 5° diameter deformation and 2° angular deformation. These performances must be proven by test reports, in accordance with the UNI EN 13844 standard, issued by a certified laboratory.

Moreover, the pipes must be manufactured by companies operating under a Quality Management System conforming to the UNI EN ISO 9001 standard, issued in accordance with the UNI CEI EN 45012 standard by third bodies or companies recognised and accredited by Accredia. The entire supply must be accompanied by a product certification conforming to the IIP 1.1/19 technical specification and according to BS PAS 27/1999 standard issued in accordance with the UNI CEI EN 45011 standard by third bodies or companies recognised and accredited by Accredia. Also it is mandatory to have environmental statement of product in accordance with ISO 14025 Type III, with specific calculation rules for the category of produced according to UNI EN 15804:2012 + A2:2019.

The pipes, supplied in 6-metre elements including the socket and equipped with protective end caps, will be RAL 5010-coloured and must contain the following information printed on one of the crowns: manufacturer's name or trademark, nominal diameter and thickness, IIP 1.1/19 (alternatively BS PAS 27/1999 and date of issue), date with the production shift, and nominal pressure.

SCAN the QR Code!
BIM READY

BIM files of all **FITT Bluforce** products are available.
Scan the QR Code to discover the catalogue of **BIM objects**!

(*) At a regulatory level, it is defined as a polymeric alloy of Poly Vinyl Chloride with high impact strength PVC-HI (such as PVC-M, PVC-A, PVC-CPE). PVC-HI (PVC-M, PVC-A, PVC-CPE) is a thermoplastic material that contains PVC resin with the addition of an impact modifier (PVC-High Impact). Depending on the type of impact modifier, the acronym HI can be replaced with various designations (PVC-A, Acrylic or PVC-A Alloy (polymer alloy); PVC-CPE, Chlorinated Polyethylene; PVC-M, Modified).

all the advantages of fitt bluforce

RESISTANCE TO IMPACTS

Thanks to its always ductile behaviour, **FITT Bluforce** guarantees high resistance to impacts even at low temperatures, facilitating site operations.

ANTI-CORROSION

FITT Bluforce withstands electrochemical corrosion and is inert to chlorine dioxide used to make the mains water drinkable.

DURABILITY

The polymer alloy (PVC-A)(PVC-HI)* technology makes the **FITT Bluforce** pipe for water supply networks and water pipelines highly resistant to crack propagation. This characteristic guarantees a longer service life of the piping and reduced maintenance.

ADVANCED JOINTING SYSTEM

FITT Bluforce adopts the socket-based Power Lock® jointing system with integrated and immovable seal, which ensures rapid assembly of the piping and hydraulic tightness both during the testing phase and over time.

IMPERMEABILITY TO POLLUTANTS

FITT Bluforce is impermeable to the pollutants contained in the soil, protecting the conveyed water against potential contamination.

LOWER MANAGEMENT COSTS FOR THE PRINCIPAL

FITT Bluforce reduces both the time required to build new pipelines and the costs associated with their maintenance.

RESPECTS THE ENVIRONMENT

Thanks to its reduced thickness, **FITT Bluforce** can be manufactured with lower amounts of raw materials and energy required for their transformation. PVC-A (PVC-HI)* is 100% recyclable.

EASIER LAYING FOR THE COMPANY

FITT Bluforce guarantees faster, easier and safer pipe laying and drastically reduces potential errors during assembly, guaranteeing positive test results always.

COMPATIBLE SYSTEM

FITT Bluforce can be inserted in new and existing systems thanks to its compatibility with cast iron, steel, PVC-U and HDPE couplings.

insurance certificate

FITT guarantees its products with a specific insurance cover for all damage that may be caused to third parties.

FITT Bluforce product is covered by a specific policy with the following conditions:

- **MAXIMUM LIABILITY: EURO 15,000.000**
- **VALIDITY: WORLDWIDE**
- **VALIDITY OF THE COVER FROM THE DATE OF SALE**

The cover for damages also applies the following, insofar as they occur or are presumed to occur: repair, meaning the modification or rectification of the defective product and the installation of the product free of any defects; replacement, i.e. the removal of the defective product and the installation of a corresponding product free of defects.

certified company quality

FITT implements a business management policy aimed at ensuring the highest quality in terms of technology, products and services, in full respect of the environment in which it operates.

The certification of the quality system obtained by the company confirms its compliance with the requirements of the **UNI EN ISO 9001:2015** standard for the following categories:

1) Design, manufacture, storage and distribution of:

- Hoses and systems in plastic material, also suitable for food use, for Garden, Industrial and Building applications, obtained by extrusion and moulding.
- Extruded plastic film.
- Virgin and regenerated PVC granules, obtained through mixing and granulation.

2) Marketing of hoses and systems.

bluforce.fitt.com

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FITT INFRASTRUCTURE SOLUTIONS
This is the business area of the FITT Group that produces and develops complete piping, hose and fitting solutions for the pressure and gravity flow of fluids intended for the integrated water service management utilities, such as drinking water and sewerage networks.

For more information:

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