

NEW

**ENSIGN AGILIUM<sup>®</sup>**

**30% LIGHTER**

**20% LESS CO<sub>2</sub>e**

## **ENSIGN AGILIUM<sup>®</sup>**

High performance drainage system

For sales contact Gutter Centre  
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**ENSIGN AGILIUM®**

**LIGHTER PRODUCT,  
LIGHTER IMPACT  
ON THE PLANET**



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\* 30 % is the average pipe weight reduction compared to the standard Ensign range.

\*\* 20 % is the reduction of CO2e in the production stage, compared to the standard range (according to the respective EPDs).

# SUMMARY

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# PAM BUILDING

For 150 years, we have been designing, manufacturing and marketing high-quality drainage systems for sanitary and rainwater drainage in buildings. We work exclusively with cast iron, a noble and durable material, of which we are specialists and market leaders.

## Our mission: the safety and durability of buildings

Our cast iron solutions ensure the comfort, safety and durability of the most demanding residential and commercial buildings. Their exceptional characteristics allow them to contribute to HQE, BREEAM, LEED and other international environmental certifications.

**Our technical team** is available from the conception to the completion of a project.

**Our products, our people and all our teams are here to help you make the world a more beautiful and sustainable home together.**



## Our greatest strength : our teams

We rely on our technical know-how in order to remain the market-leading supplier of cast iron drainage solutions.

This is why PAM Building capitalises on the skills of its teams, and every year, integrates young graduates in apprenticeships or advanced training.

Thanks to our unique commercial approach, we have become a technical solutions provider able to anticipate our customers' expectations.



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## Our promise: to reduce our impact on the environment

Our 2025 vs. 2010 goals:



**-40%**  
energy consumption



**-97%**  
discharges  
of industrial water



**-84%**  
non-recovered waste

Our commitment to reducing CO2 emissions by 2030 :

**-80%** compared to 2017

## At the heart of the circular economy, our DNA: recycling of metal waste

Our products are made of 99% recycled materials (mainly scrap metal), which can be recycled 100% indefinitely.

Cast iron is a simple and sustainable material that allows a smart reuse of materials. Resistant, reliable and durable, cast iron has a bright future ahead of it.

**In 2021, we recycled the equivalent of of 21,000 cars.**



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# 01

## NEW ENSIGN AGILIUM<sup>®</sup>

INCREASED EASE OF INSTALLATION,  
100% COMPATIBLE WITH EXISTING RANGES  
AND STILL AS EFFICIENT AS EVER



**01**

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**NEW  
ENSIGN AGILIUM®**

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# NEW ENSIGN AGILIUM®

**PAM Building launches a new drainage solution that reduces its environmental impact and facilitates the daily work of installers. An innovation that is part of our eco-design approach.**

**30% lighter** - easier to carry and faster to install.

SEE PAGE 18



**Compact fittings** - space saving in constrained areas.

SEE PAGE 19



**20% reduction** in carbon emissions - better for our planet.

SEE PAGE 15



## ENSIGN AGILIUM®: INCREASED EASE OF INSTALLATION, 100% COMPATIBLE WITH EXISTING RANGES AND STILL AS EFFICIENT.



### Fire safety

Ensign Agilium® cast iron is a non-combustible metallic material.

A1 fire rated and fire resistant for up to 2 hours, protecting both people and property.

SEE PAGE 12

**8 PAM Building**



### Durability

Due to their exceptional mechanical properties, cast iron drainage systems prevent the worry of untimely and costly repairs.

SEE PAGE 14



### Acoustic comfort

Noise is bad for your health. Ensign Agilium® cast iron systems easily meet the industry guidelines achieving exceptional performance for high acoustic comfort (luxury hotels, hospitals...)

SEE PAGE 14



### Total Cost of Installation

We are convinced that the total cost of installation of Ensign Agilium® is lower than many plastic systems. The thinner walled pipes are now much quicker to cut, the system requires no costly accessories such as fire collars or expansion joints and far fewer brackets are required. Why not do the comparison and find out for yourself?

SEE PAGE 15

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## THE RESULT OF AN ECO-DESIGN

### Evolution of the EN877 standard

The EN877 standard has evolved and now allows us to reduce the minimum wall thickness.

| DN  | Minimum wall thickness (mm)* |
|-----|------------------------------|
| 100 | 2,0                          |
| 125 | 2,5                          |
| 150 | 2,5                          |
| 200 | 3,0                          |
| 250 | 3,5                          |
| 300 | 4,0                          |

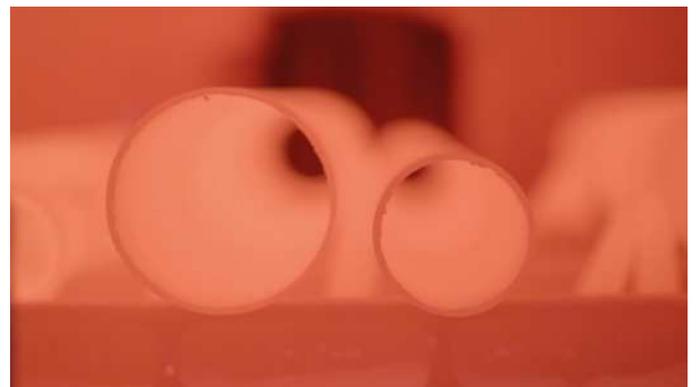
\* Minimum value of wall thickness up to -1 mm,

### The Lavaud process

A unique manufacturing process, optimized for Agilium®.

In the Lavaud process, historically developed by Saint-Gobain, the liquid metal is poured into a bare steel shell and undergoes very rapid cooling.

A graphitisation annealing process, followed by ferritisation, results in pipes with exceptional mechanical properties.



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# 02

## PERFORMANCE

FIRE SAFETY

LONGEVITY

ACOUSTIC COMFORT

ENVIRONMENTAL IMPACT

# 02

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## PERFORMANCE

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**PAM Building 11**

# ENSIGN AGILIUM®

Ensign Agilium® complies with the new standard EN877 and maintains equivalent performance to our current cast iron drainage solutions.

We have conducted numerous tests in accredited laboratories and in our R&D centre, which confirm the excellent performance of Ensign Agilium® cast iron.



## FIRE SAFETY

### Pipes are the arteries of a building.

In the event of a fire, the risk is that these pipes will sustain and spread the fire throughout the building. Choosing PAM Building cast iron systems means ensuring the safety of people and property.

| EUROCLASSES |    |    |
|-------------|----|----|
| A1          | -  | -  |
| A2          | s1 | d0 |
| A2          | s1 | d1 |
| A2          | s2 |    |
|             | s3 |    |
| B           | s1 | d0 |
|             | s2 | d1 |
| C           | s3 |    |
|             | s1 | d0 |
| D           | s2 | d1 |
|             | s3 |    |

#### Criteria Production of SMOKE

s1 : Low production of smoke  
s2 : Medium production of smoke  
s3 : High production of smoke

#### Criteria Molten droplets

d0 : No molten droplets  
d1 : Molten droplets that persist for less than 10 s  
d2 : Molten droplets

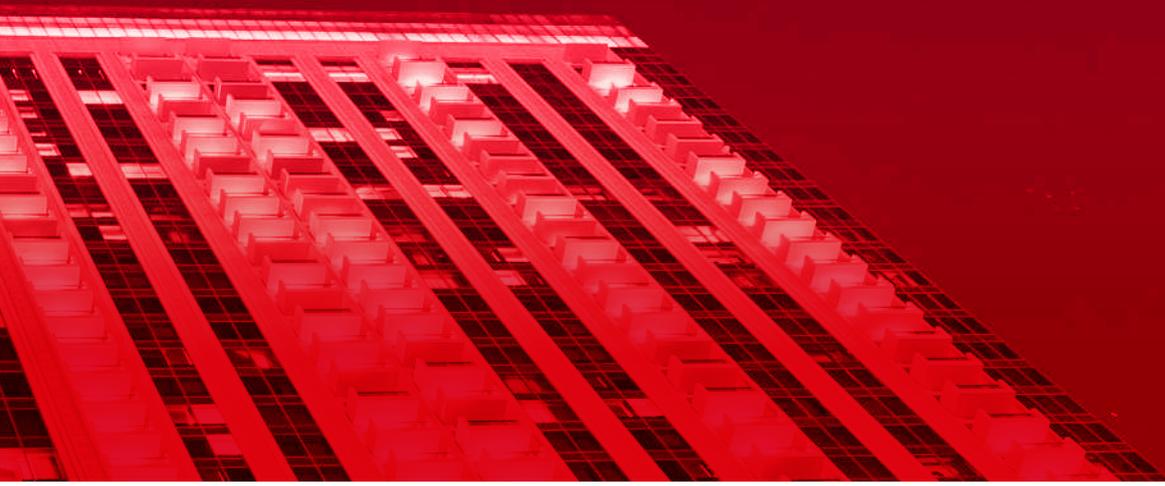
#### Reaction to fire

- Reaction to fire is the ability to ignite and to feed the fire.
- **Ensign Agilium® is A1 fire rated and completely non-combustible. It will not generate smoke or droplets in case of fire.**

The Euroclasses establish a classification of reaction to fire that is harmonised throughout Europe and can be used to compare materials and product performance.

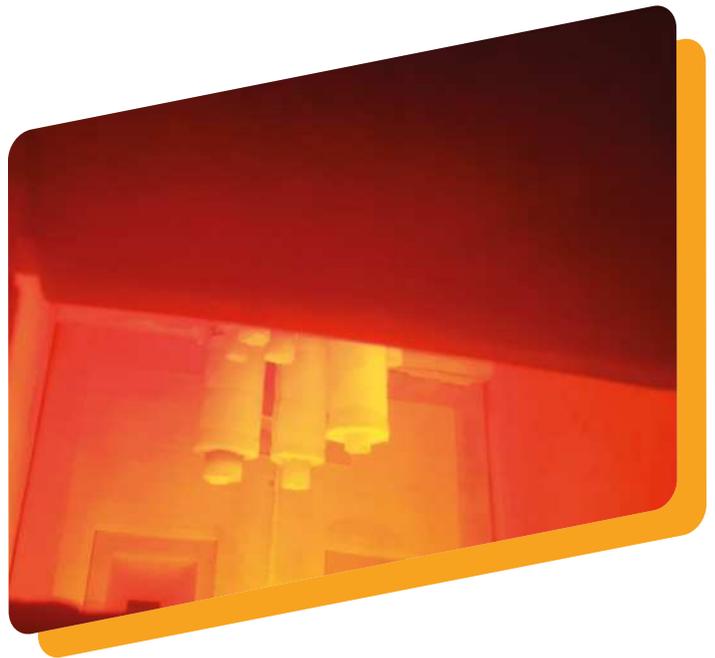
#### Fire resistance

- The fire resistance of a product is its ability to resist fire for a given time and not transmit the fire to an adjacent room.
- Ensign Agilium® cast iron is a non-combustible metallic material with a melting point **higher than than 1000°C.**



### Fire resistance test results

Fire resistance tests have been carried out, by Efectis, on both wall and floor slab penetrations and in most circumstances no additional protection is required to achieve Approved Document B EI ratings. Our technical team will provide project specific advice to achieve any EI ratings throughout the building.



Fire resistance tests carried out by Efectis.



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## PERFORMANCE AND MECHANICAL STRENGTH

### Reduced maintenance costs due to the mechanical properties of cast iron.

**Aging behaviour** : cast iron is characterised by **a long life span of 70 years**, in particular thanks to the stability of its mechanical properties, in comparison with the aging of polymers and their deterioration.

|  |  | Process Agilium® | Other processes<br>(not PAM Building) | Provision of the European standard EN877 |
|--|--|------------------|---------------------------------------|--|
|  | Tensile strength on specimen in MPa (average values)           | 310              | 270                                   | 200 minimum                              |
|  | Crushing strength on ring in MPa (average values, DN 100 pipe) | 515              | 360                                   | 350 minimum                              |
|  | Brinell surface hardness in degrees HB (average values)        | 165              | 245                                   | 260 maximum                              |

Resistance of Ensign Agilium® cast iron to impacts occurring in car parks and basements.



## ACOUSTIC COMFORT FOR OCCUPANTS

Our cast iron systems easily meet the industry guidelines. Agilium® produces airborne noise of 46 dB(A) according to EN 14366, for a discharge rate of 2 l/s.

(Test report P-BA6/2021E, tests performed at the Fraunhofer Institute).



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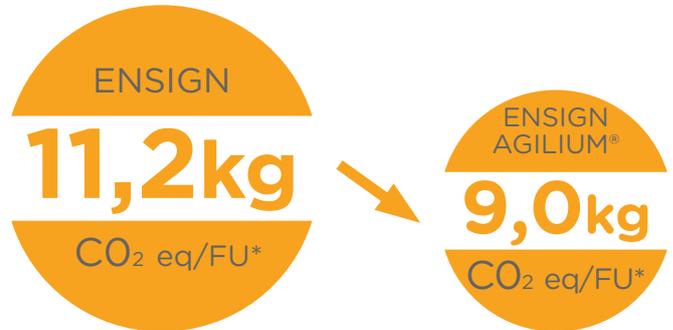
## ENVIRONMENTAL IMPACT

Ensign Agilium® is our first eco-design, in line with our new environmental roadmap.



**20% lower CO2 emissions with Ensign Agilium®, compared to our current ranges**

This performance is validated by comparing our new Ensign Agilium® Environmental Product Declarations (EPDs) with the one previously available on the Environdec database ([www.environdec.com](http://www.environdec.com)).



\*FU = Functional Unit = 1 metre of drainage system

**And still unbeatable in terms of circular economy!**

**99%**  
RECYCLED

**100%**  
RECYCLABLE



Tower Saint-Gobain certified **BREEAM, LEED, HQE and effinergie** using PAM Building drainage solutions. PAM Building.

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# 03

## PRODUCT RANGE

OFFER AND COMPATIBILITY

BIM

DIMENSIONS

COATING

PRODUCT MARKING

ENSIGN AGILIUM® RANGE

# 03

## PRODUCT RANGE

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∞ pam building

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# PRODUCT RANGE

A complete new offer with 29 new references (pipes and fittings) to replace the current range.

## PIPE

**-30%** lighter\*



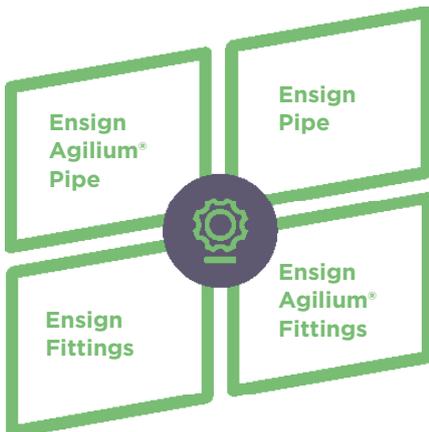
### 6 references

July 2023: DN100 to DN300

- Average reduction of 30% compared to the Ensign range.
- A 3m Ensign Agilium® DN100 pipe weighs just 17 kg, compared to 24 kg for Ensign.
- The outer diameter is maintained.
- Slight increase in inner diameter.

## WIDE RANGE OF PRODUCTS AND COMPATIBILITY

- You can mix Ensign Agilium® pipe with Ensign fittings.
- You can mix Ensign pipe with Ensign Agilium® fittings.
- You can use most standard joints.
- You can keep most of the reservations for Ensign with Ensign Agilium®.



## FITTINGS

**-15%** lighter\*



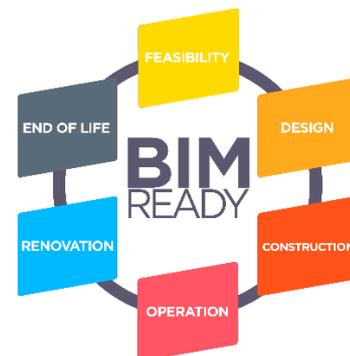
### 23 references

July 2023: 13 references  
September 2023: 8 references  
2024: 2 references

\* Average weight reduction compared to the Ensign range.

## NEW LIBRARY OF BIM OBJECTS

- Revit format.
- Coexistence with the old Ensign library.



## SHORTER FITTINGS REQUIRING LESS SPACE IN THE VOID

- Reduced sealing zone (ZE) at the ends.
- External diameter maintained.
- Weight reduction\* **15% on average.**



In the example above the footprint is reduced by 2.3 cm.  
Contact us for other configurations.

## COATING

### Pipes

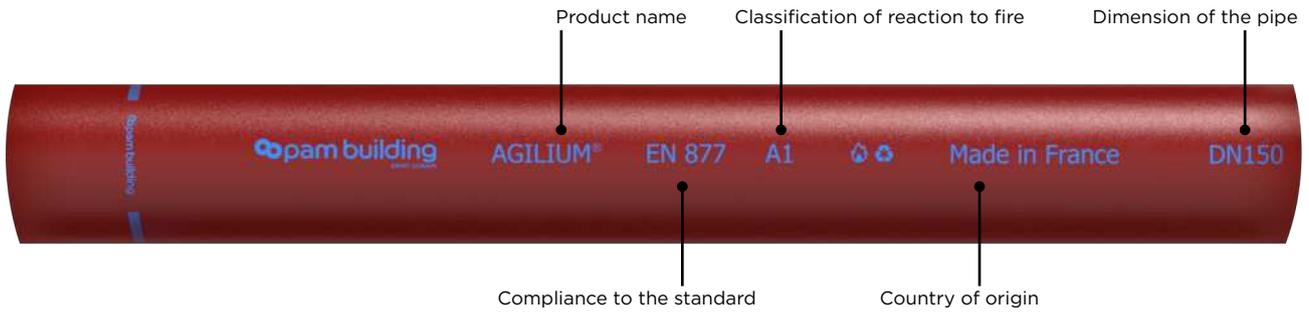
- 1 Exterior coating** red brown acrylic primer with an average dry film thickness of 40 microns.
- 2 Cast iron manufactured according to the Lavaud process.**
- 3 Interior lining** : Two-component epoxy coating, ochre colour, average dry film thickness 130 microns.

### Fittings

Exterior and interior coating in red brown epoxy with an average thickness of 70 microns.



## PRODUCT MARKING - PIPES

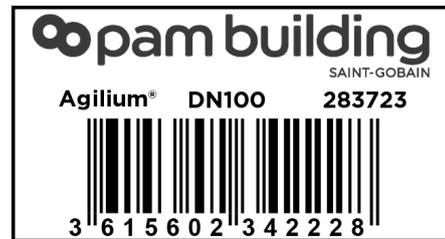


For easy visual differentiation in the warehouse and on the construction site

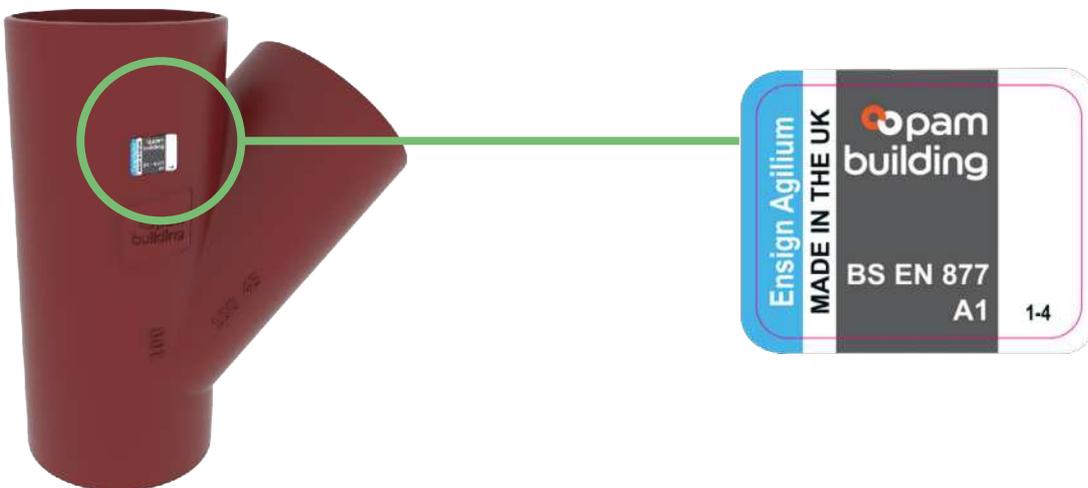
- Blue marking.
- Blue ring at the end of each pipe.



EAN code for simplified inventory management



## PRODUCT MARKING - FITTINGS

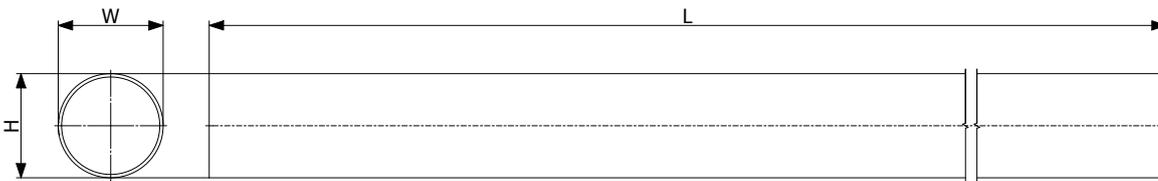


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## ENSIGN AGILIUM® - PIPE

| DN  | L    | H   | W   | Weight | Product Code |
|-----|------|-----|-----|--------|--------------|
| 100 | 3000 | 110 | 110 | 16,8   | 283723       |
| 125 | 3000 | 135 | 135 | 24,8   | 283724       |
| 150 | 3000 | 160 | 160 | 30,5   | 283725       |
| 200 | 3000 | 210 | 210 | 46,3   | 283726       |
| 250 | 3000 | 274 | 274 | 66,4   | 283727       |
| 300 | 3000 | 326 | 326 | 86,7   | 283728       |

July 2023



## ENSIGN AGILIUM® - FITTINGS

### 45° and 88° bends

| Angle | DN  | L   | H   | W   | a   | q   | Weight | Product Code |
|-------|-----|-----|-----|-----|-----|-----|--------|--------------|
| 45°   | 100 | 139 | 149 | 110 | 65  | 72  | 1,15   | 282809       |
|       | 125 | 167 | 175 | 135 | 75  | 80  | 2,4    | 283032       |
|       | 150 | 195 | 201 | 158 | 85  | 88  | 3,01   | 286809       |
|       | 200 | 253 | 254 | 210 | 106 | 106 | 5,4    | 286821       |
| 88°   | 100 | 160 | 160 | 110 | 103 | 52  | 1,79   | 283022       |
|       | 125 | 190 | 192 | 135 | 120 | 57  | 2,84   | 286824       |
|       | 150 | 223 | 224 | 158 | 140 | 65  | 4,33   | 286823       |
|       | 200 | 284 | 287 | 210 | 176 | 77  | 9,6    | 286822       |

July 2023

September 2023



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# ENSIGN AGILIUM® - FITTINGS

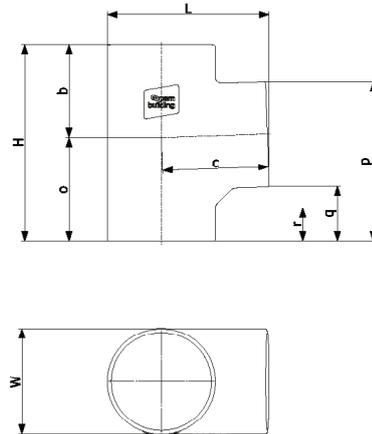
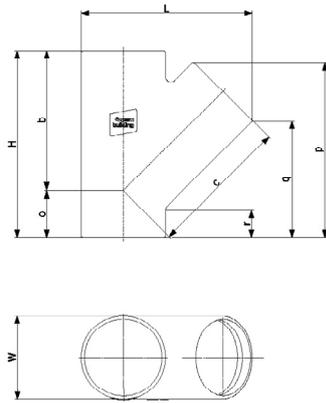
## Single branches to 45° and 88°

| Angle | DN  | dn  | L   | H     | W   | a/b   | c     | o   | p   | q   | r  | Weight | Product Code |
|-------|-----|-----|-----|-------|-----|-------|-------|-----|-----|-----|----|--------|--------------|
| 45°   | 100 | 100 | 223 | 245   | 110 | 185   | 185   | 60  | 229 | 152 | 35 | 3,28   | 282807       |
|       | 125 | 100 | 248 | 255   | 135 | 202   | 202   | 53  | 234 | 157 | 40 | 4,25   | 283033       |
|       |     | 125 | 270 | 291   | 135 | 220   | 220   | 71  | 273 | 178 | 40 | 5,3    | 283034       |
|       | 150 | 100 | 278 | 277   | 158 | 222   | 227   | 55  | 253 | 176 | 55 | 5,72   | 286814       |
|       |     | 125 | 294 | 308   | 158 | 240   | 237   | 68  | 282 | 188 | 50 | 6,71   | 286813       |
|       |     | 150 | 320 | 344   | 158 | 261   | 261   | 83  | 323 | 210 | 45 | 8,2    | 286810       |
|       | 200 | 100 | 327 | 291   | 210 | 256   | 256   | 35  | 257 | 180 | 59 | 7,44   | 286817       |
|       |     | 125 | 346 | 326   | 210 | 275   | 275   | 51  | 292 | 197 | 57 | 8,86   | 286818       |
|       |     | 150 | 389 | 362   | 210 | 294   | 294   | 68  | 332 | 219 | 56 | 10,45  | 286819       |
|       |     | 200 | 409 | 428.5 | 210 | 326.5 | 326.5 | 102 | 406 | 258 | 55 | 13,33  | 286820       |
| 88°   | 100 | 100 | 165 | 206   | 110 | 98    | 108   | 57  | 167 | 108 | 35 | 2,46   | 282810       |
|       | 125 | 125 | 200 | 243   | 135 | 116   | 127   | 64  | 199 | 127 | 40 | 3,98   | 286811       |
|       | 150 | 150 | 232 | 280   | 158 | 132   | 148   | 73  | 233 | 148 | 45 | 5,32   | 286812       |

July 2023

September 2023

2024



## Double branches at 45°

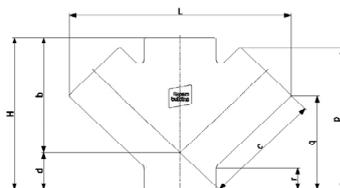
| Angle | DN  | dn  | L   | H   | W   | b   | c   | d  | p   | q   | r  | Weight | Product Code |
|-------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|--------|--------------|
| 45°   | 100 | 100 | 337 | 245 | 110 | 185 | 185 | 60 | 229 | 152 | 35 | 4,14   | 283024       |
|       | 125 | 125 | 421 | 307 | 135 | 232 | 232 | 75 | 285 | 190 | 45 | 7,17   | 286816       |
|       | 150 | 150 | 487 | 356 | 158 | 266 | 266 | 90 | 333 | 221 | 55 | 9,68   | 286815       |

July 2023

2024

### DESCRIPTION

The Ensign soil pipe is manufactured to BS EN 877. Available in 3m lengths the light-weight cast iron pipe is used for all soil, vent and rainwater applications.



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