

SOIL, DRAIN & RAINWATER PRODUCT REFERENCE

POCKET GUIDE

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PAM DRAINAGE SOLUTIONS ABOVE GROUND APPLICATIONS



Ensign & EEZI-FIT Kitemark Certified



- European harmonised standard BS EN877: 1999 +A1:2006
- Scope: Cast iron pipes and fittings and their joints and accessories for the evacuation of water from buildings (requirements, test methods and quality assurance).
- Diameter range: 50 to 600mm
- Ensign pipe and fittings are socketless and mechanically jointed using a range of couplings in ductile iron or stainless steel to a level of accidental static pressure of 5 bar depending on diameter. (see page 17)
- EEZI-FIT is a push-fit socketed range of fittings and couplings in 100 and 150mm designed for 0.5 bar gravity sanitary applications. The range utilises standard Ensign socketless pipe
- BS EN 877 has a stringent testing protocol in order to achieve a high level of performance requirements that includes metallurgical, pressure levels and coating adherence.
- Ensign and EEZI-FIT is coated red (see page 11)



Timesaver Kitemark Certified



- Traditional British Standard BS 416 -2: 1990
- Scope: Discharge and ventilating pipes and fittings, sand-cast or spun in cast iron. Specification for socketless systems.
- Diameter range: 50 to 150mm
- Standard is withdrawn but PAM maintain the Kitemark with BSI to ensure quality standards are maintained for Timesaver products being used for refurbishment and for external soil stacks on traditional listed / heritage type buildings.
- Timesaver Soil is coated black (See page 11)

PAM DRAINAGE SOLUTIONS BELOW GROUND APPLICATIONS



Ensign

Kitemark Certified



- European harmonised standard BS EN 877: 1999 +A1:2006
- Scope: Cast iron pipes and fittings and their joints and accessories for the evacuation of water from buildings (requirements, test methods and quality assurance).
- Diameter range 100 to 600mm
- Ensign pipe and fittings are socketless and mechanically jointed using a range of couplings in ductile iron or stainless steel couplings. Ensign includes push-fit couplings in 100 and 150mm diameter for fast pipe laying.
- BS EN877 is a lighter weight cast iron system
- Simplified range of fittings best suited to rodding point drainage design.
- Ensign drain is coated grey (See page 11)

Timesaver

- Traditional British Standard BS437: 2008
- Scope: Specification for cast iron drain pipes, fittings and their joints for socketed and socketless systems. For below ground use
- Diameter range: 100, 150 and 225mm
- Thicker section pipe and fittings giving exceptional crushing strength performance.
- Traditional fittings: Gully and intercepting traps, bellmouth gullies, raising pieces, anti-flooding traps etc
- Timesaver drain is coated black (see page 11)



CAST IRON RAINWATER AND GUTTER SYSTEMS (PRIMER COATED)



Classical

- Manufactured in accordance with BS460:2002+A2:2007
- Title: Cast iron rainwater goods. Specification

Coating

- Internally and externally coated in a black water based primer
- Minimum thickness of 40 microns

Painting (on site, prior to installation)

It is the responsibility of the purchaser /installer to ensure that a quality paint system is applied to the product before installation and any damage sustained during the installation is made good before completion. Saint-Gobain PAM is not a paint specialist and therefore is not responsible for the performance of the paint chosen by the customer.

Note: Consideration must be given to the location of the property prior to selecting the appropriate paint system. Those situated in coastal regions will require a paint system that can perform in an aggressive atmosphere for example – marine grade.

Guidance

When preparing the pipe, gutter and fittings for on-site finishes:

1. Inspect the product
2. Wire brush, and degrease with thinners to become dust free
3. Touch-up the factory applied primer coating (particularly any bare metal sections) with a metal primer.
4. Apply an undercoat (usually 2 coats)
5. Apply a quality top coat to suit the building décor

Always consult the paint manufacturers' recommendations. Some exterior paints may not be suitable for painting over a water based substrate

(See page 6 for further advice)

Installer recommended paint for on-site painting

- Coö-Var Hammercote Smooth
- Bradite Fastrac

CAST IRON RAINWATER AND GUTTER SYSTEMS (FINISHED COATED)



Classical Plus

Coating

- High performing Polymer Powder Alloy (PPA571)
- Black semi-gloss RAL 9005 700 as standard to an average thickness of 200 microns
- Classical products coated in PPA571 have been salt spray tested for up to 1500 hours.
 - This test is an indicator only used in the automotive industry and is particularly aggressive and so difficult to relate to paint life expectancy.
- Classical Plus – PPA571 colour range



- Other colours to a specified RAL can be applied but are Polyester coated NOT PPA571
- PAM will not supply Classical Plus in white or very light colours.

This range is supplied in finished coat for immediate installation. When Installation is complete it is important to inspect and any slight damage to the coating is repaired with the touch-up paint available product code 192549 (primer) and 192550 (topcoat).

Coastal location

- PAM will not supply Classical Plus to properties located within 5 miles of the sea coast. PAM recommends cast iron is painted on site using a high quality paint for coastal regions.
- The expectation of performance will depend on:
 - Colour chosen (White will highlight any imperfection in the coating)
 - A Sufficient paint system has been applied **before** installation
 - Undercoat / Topcoat
 - 3 x layers would be recommended on top of primer coat
 - All damage to paint surface during installation must be adequately made good on completion.

ROOF, FLOOR AND SHOWER DRAINAGE PRODUCTS

VortX

VortX is manufactured in accordance with the following standards.

- Manufactured in accordance with BS EN 1253 – Gullies for buildings - Multi-part document
- Part 1 2015: Gullies for buildings. Trapped floor gullies with a depth water seal of at least 50mm
- Part 2 2015: Gullies for Buildings. Roof drains and floor gullies without trap
- Part 3 2016: Gullies for buildings. Evaluation of conformity
- Part 4 2016: Gullies for buildings. Access covers
- Part 5 2017: Gullies for buildings. Gullies with light liquids closure
- BS EN1982: 2017: Copper and copper alloys. Ingots and castings



Coating and materials:





Cast iron roof gullies

- Grey epoxy coating : Cast iron bodies, spigot adaptors.
- Black polyester : Domical gratings, clamping rings, raising pieces
- Sheradized : Flat gratings
- Stainless steel : Two-way gratings, gravel guard and strainer.

Cast iron floor and shower gullies

- Grey epoxy coating : Cast iron trapped and untrapped bodies, spigot adaptors, raising pieces, clamping and reducing rings.
- Sheradized : Cast iron gratings
- Gratings & Funnels : Nickel Bronze BS EN1982:2017, Stainless steel 304
- Inserts : ABS bottle trap and Airtight bung, Stainless steel filter baskets

STANDARDS & THIRD PARTY ACCREDITATIONS

PRODUCT	STANDARD	CODE OF PRACTICE	THIRD PARTY ACCREDITATION
Ensign Soil /Drain	BS EN 877 ISO 6594	BS EN 12056-2/3 BS EN 1295 BS EN 752-1	 Kitemark
EEZI-FIT	BS EN 877	BS EN 12056-2	 Kitemark
Timesaver Soil	BS 416 Part 2 Couplings BS 6087	BS EN 12056-2/3	 Kitemark
Timesaver Drain	BS 437 Couplings BS 6087	BS EN 1295 EN 752-1	 Kitemark
Classical Rainwater	BS 460	BS EN 12056-3	-
VortX	BS EN 1253		

- **BS EN ISO 9001:2015 (FM 12908)** - Outlines the requirements an organization must maintain in their quality system for Certification
- **BS EN ISO 14001:2004 (Licence EMS83973)** - Manufacturing to Environmental Standards
- **ISO 50001:2018 (Certificate No. ENMS 710926)** - Energy Management Systems
- **BS EN 14366:2004** - Laboratory measurement of noise from waste water systems
- **CEMARS (2016053J)** - Certified Emissions Measurement and Reduction Scheme
- **BES6001: BES600635** - Responsible sourcing of construction materials
- **BS EN 12056 - 2** - Gravity drainage systems inside buildings. Sanitary pipework, layouts and calculation.
- **BS EN 12056 - 3** - Gravity drainage systems inside buildings. Roof drainage, layout and calculation.
- **ISO 6594 2006** - International standard cast iron drainage pipes and fittings - Spigot Series.

PIPE DIMENSIONS

PRODUCTS	MIN ID	MIN OD	MAX OD	SECTION
ENSIGN SOIL				
50	47.5	58	60	3 (+3.25/-0.5)
70	68.25	77	80	3.5 (+2.375/-0.5)
100*	97.5	109	112	3.5 (+3.75/-0.5)
125	121.25	133	137	4 (+3.875/-0.5)
150*	146.25	158	162	4 (+3.875/-0.5)
200	195	208	212	5 (+3.5/-1)
250	243.75	271.5	276.5	5.5 (+10.875/-1)
300	292.5	323.5	328.5	6 (+12/-1)
400	390	426	431	6.3 (+14.2/-1.3)
500	487.5	528.5	534	7 (+16.25/-1.8)
600	585	631	637	7.7 (+18.3/-1.9)
ENSIGN DRAIN				
100	97.5	109	112	3.5 (+3.75/-0.5)
150	146.3	158	162	4 (+3.875/-0.5)
200	195	208	212.5	5 (+3.5/-1)
250	243.8	271.5	276.5	5.5 (+10.875/-1)
300	292.8	323.5	328.5	6 (+12/-1)
400	390	426	431	6.3 (+14.2/-1.3)
500	487	528.5	534	7 (+16.25/-1.8)
600	585	631	637	7.7 (+18.3/-1.9)

* Standard Ensign Soil Pipe is used with EEZI-FIT fittings and couplings

PIPE DIMENSIONS

PRODUCTS	MIN ID	MIN OD	MAX OD	SECTION
TIMESAVER SOIL				
50	48	58	63	5 (+2.5/-0.5)
75	74	85	89	5 (+2.5/-0.5)
100	99	109	114	5 (+2.5/-0.5)
150	150	160	165	5 (+2.5/-0.5)
TIMESAVER DRAIN				
100	99	116	119	8 (+2/-1.3)
150	150	170	173	9 (+2.5/-1.3)
225	225	252	256	12 (+3.5/-1.8)
VORTX				
56				
60	47.5	58	60	3 (+3.25/-0.5)
80	68.25	77	80	3.5 (+2.375/-0.5)
110	97.5	109	112	3.5 (+3.75/-0.5)
CLASSICAL RAINWATER				
65	60	60	67	3
75	73	73	79	3
100	99	99	105	3

COATING SPECIFICATION

PRODUCT	COATING	AVERAGE THICKNESS	COLOUR
ENSIGN SOIL & EEZ-FIT			
Pipes Internal	2 Part Epoxy	130 Microns	Ochre
Pipes External	Acrylic, Anti Corrosive primer	40 Microns	Ensign Red
Fittings	Powder Epoxy Resin	Internal, 150 Microns, External 70 Microns Couplings, 70 Microns	Red
ENSIGN DRAIN			
Pipes Internal	2 Part Epoxy	250 Microns	Ochre
Pipes External	Zinc Rich Base, Acrylic Primer	Zinc 130gr/m ² Primer 40 Microns	Grey
Fittings	Powder Epoxy Resin	INT/EXT 150 Microns	Grey
TIMESAVER SOIL			
Pipes Internal	2 Part Epoxy	130 Microns	Ochre
Pipes External	Acrylic	40 Microns	Black
Fittings	Water Based Primer (IL 3036)	(Min) 40 Microns	Black
TIMESAVER DRAIN			
Pipes Internal	2 Part Epoxy	130 Microns	Ochre
Pipes External	Acrylic	40 Microns	Black
Fittings	Water Based Primer (IL 3036)	(Min) 40 Microns	Black
VORTX: CAST IRON FLOOR, ROOF & SHOWER GULLIES			
Internal Coatings	Powder Epoxy Resin	150 Microns	Grey
External Coatings	Powder Epoxy Resin	150 Microns	Grey
RAINWATER PRIMED			
Pipe/Gutter/Fittings	Water Based Primer (IL 3036)	(Min) 40 microns	Black
RAINWATER PLUS			
Pipe/Gutter/Fittings	PPA 571	200 Microns	Black

PIPE WEIGHT

PRODUCT	WEIGHT OF EMPTY PIPE (KG)	WEIGHT OF PIPE AT HALF CAPACITY (KG)	WEIGHT OF PIPE AT 1/4 CAPACITY (KG)
ENSIGN SOIL & EEZ-FIT			
50	12.5	18.9	14.5
70	17	30.6	21.9
100	25.5	58.1	33.7
125	35.5	72.2	44.7
150	43	96.1	56.3
200	69	259.5	116.6
250	99.8	247.4	136.7
300	129.8	342.25	182.8
400	177.7	555.5	272.15
500	244.9	835.3	392.5
600	321.9	1172.1	534.5
ENSIGN DRAIN			
100	25.5	58.1	33.7
150	43	96.13	56.3
200	69	259.53	116.6
250	99.8	247.4	136.7
300	129.8	342.25	182.8
400	177.7	555.5	272.15
500	244.9	835.3	392.5
600	321.9	1172.1	534.5
TIMESAVER SOIL			
50	19.2	36.9	23.7
75	24.9	59.61	33.6
100	27.9	98.7	45.6
150	47.1	206.4	87
TIMESAVER DRAIN			
100	56.1	126.9	73.8
150	93.3	254.5	135
225	180	530.7	267.6
CLASSICAL RAINWATER			
65	10.1	-	-
75	12.1	-	-
100	15.5	-	-
100x75	30	-	-

INTERCONNECTIONS

PRODUCT	GT 50	GT 75	GT 100	GT 150	TD 100	TD 150	TD 225	ES 50	ES 70	ES 100	ES 150	ED 100	ED 150	ED 200	VX 56	VX 80	VX 100
ENSIGN SOIL																	
50	GT01	-	-	-	-	-	-	EC002	EF028	EF028	EF028	-	-	-	EC002	-	-
70	-	GT12	-	-	-	-	-	EF028	EC002	EF028	EF028	-	-	-	-	EC002	-
100	-	-	GT01	-	TD02	-	-	EF028	EF028	EC002	EF028	-	-	-	-	-	EC002
150	-	-	-	GT01	-	TD02	-	EF028	EF028	EF028	EC002	-	-	-	-	-	EF028
ENSIGN DRAIN																	
100	-	-	GT01	-	TD02	-	-	-	-	-	-	ED001	ED028	ED028	-	-	ED001
150	-	-	-	GT01	-	TD02	-	-	-	-	-	ED028	ED001	ED028	-	-	ED028
200	-	-	-	-	-	-	TD41	-	-	-	-	ED028	ED028	ED001	-	-	ED028
TIMESAVER SOIL																	
50	GT01	GT28	GT28	-	-	-	-	GT01	-	-	-	-	-	-	GT01	-	-
70	GT28	GT01	GT28	-	-	-	-	-	GT12	-	-	-	-	-	-	GT01	-
100	GT28	GT28	GT01	GT28	GT01	-	-	-	-	GT01	-	GT01	-	-	-	-	GT01
150	-	-	GT28	GT01	-	GT01	-	-	-	-	GT01	-	GT01	-	-	-	GT28
TIMESAVER DRAIN																	
100	-	-	TD02	-	TD01	-	-	-	-	TD02	-	TD02	-	-	-	-	TD02
150	-	-	-	TD02	-	TD01	-	-	-	-	TD02	-	TD02	-	-	-	-
225	-	-	-	-	-	-	TD01	-	-	-	-	-	-	-	TD41	-	-
VORTX																	
56	GT01	-	-	-	-	-	-	EC002	-	-	-	-	-	-	-	-	-
80	-	GT01	-	-	-	-	-	-	EC002	-	-	-	-	-	-	-	-
100	-	-	GT01	-	TD02	-	-	-	-	EC002	-	ED001	-	-	-	-	-

CONNECTIONS TO OTHER SYSTEMS

Material	MuPVC	MuPVC PVC	Copper	PVC/ HDPE S/Steel	PVC/ HDPE S/Steel	Clay SuperSleve
OD	36/43mm	56mm	54mm	110mm	160mm	
CI	ENSIGN SOIL					
50mm	EF071R	EF071R EF090	EF071R EF090			
70mm	EF071	EF071 EF133 EF090	EF071 EF133 EF090			
100mm	EF071 / 71T EF077 EF094	EF071 / 71T EF133 EF090-92 EF095 EF096/EF097	EF071 / 71T EF133 EF090-92 EF095 EF096/EF097	EC002NG EC002HP EZ001		ED076
150mm		EF071 EF133 EF095	EF071 EF133 EF095		EC002NG EC002HP EZ001	ED076
CI	EEZI-FIT					
100mm		EZ06R/EZ07R EZ010R EZ090-93 EZ094 EZ095	EZ06R/EZ07R EZ010R EZ090-93 EZ094 EZ095	EZ001		
150mm		EZ06R/EZ07R EZ095	EZ06R/EZ07R EZ095		EZ001	
CI	TIMESAVER SOIL					
50mm		GT106	GT106			
75mm		GT71 GT106	GT71 GT106			
100mm		GT06 Boss GT71 GT106, GT109 GT115, GT132 GT133	GT06 Boss GT71 GT106, GT109 GT115, GT132 GT133	GT01 GT05		
150mm		GT71 GT106, GT109	GT71 GT106, GT109			
CI	ENSIGN DRAIN					
100mm		ED071	ED071	ED001 ED004		ED076
150mm		ED071	ED071		ED001 ED004	ED076
CI	TIMESAVER DRAIN					
100mm		GT71/TD02	GT71/TD02	TD02		TD118
150mm		GT71/TD02	GT71/TD02		TD02	TD118

FLOW RATES (L/S)

DIA	FALLS FOR RW MAIN DRAIN		FALLS FOR FOUL MAIN DRAIN	
ENSIGN SOIL				
50	1 in 50	1.3	1 in 40	1.5
70	1 in 70	3.1	1 in 56	3.6
100	1 in 100	5.9	1 in 80	6.5
125	1 in 125	15	1 in 100	11
150	1 in 150	19	1 in 120	16
200	1 in 200	26	1 in 160	29
250	1 in 250	43	1 in 200	38
300	1 in 300	63	1 in 240	71
400	1 in 400	118	1 in 320	132
500	1 in 500	191	1 in 400	214
600	1 in 600	284	1 in 480	317
ENSIGN DRAIN				
100	1 in 100	5.9	1 in 80	6.5
150	1 in 150	19	1 in 120	16
200	1 in 200	26	1 in 160	29
250	1 in 250	43	1 in 200	48
300	1 in 300	63	1 in 240	71
400	1 in 400	118	1 in 320	132
500	1 in 500	191	1 in 400	214
600	1 in 600	284	1 in 480	317
TIMESAVER SOIL				
50	1 in 50	1.3	1 in 40	1.5
75	1 in 75	3.1	1 in 60	3.5
100	1 in 100	5.9	1 in 80	6.5
150	1 in 150	19	1 in 120	16
TIMESAVER DRAIN				
100	1 in 100	5.9	1 in 80	6.5
150	1 in 150	19	1 in 120	16
225	1 in 225	34	1 in 180	38

FLOW RATES CLASSICAL

Capacity l/s	H/R	BH/R	DH/R	O.G	No.46	Notts O.G
GUTTERS						
3.1	-	-	-	-	150x100	-
1.75	-	-	125x75	-	-	-
1.5	-	-	-	-	-	-
1.42	-	-	-	-	125x100	-
1.4	150	-	-	-	-	-
1.39	-	-	-	-	-	-
1.24	-	-	100x75	-	-	-
1.07	-	-	-	-	-	115
0.97	-	125	-	-	-	-
0.94	125	-	-	-	-	-
0.79	115	115	-	-	-	-
0.71	-	-	-	125	-	-
0.67	-	-	-	-	100x75	-
0.59	-	100	-	115	-	-
0.53	100	-	-	-	-	-
0.41	-	-	-	100	-	-

Pipe Diameter (mm)	Capacity l/s
65	2
75	3
100	7
100x75	4



PRESSURE TESTING

SYSTEM	COUPLING	MATERIAL	TYPE	DIA	ACCIDENTAL STATIC WATER PRESSURE (BAR)	
					UN-RESTRAINED	RESTRAINED
Ensign Soil	EC002	Ductile Iron	Mechanical	50-100mm	1 bar	5 bar
Ensign Soil	EC002	Ductile Iron	Mechanical	125-150mm	0.5 bar	5 bar
Ensign Soil	EC002	Ductile Iron	Mechanical	200-300mm	0.3 bar	3 bar
Ensign Soil	EC002/ EC002GC	Ductile Iron & Grip Collar	Mechanical	100mm	5 bar	5.5 bar
Ensign Soil	EC002/ EC002GC	Ductile Iron & Grip Collar	Mechanical	150-200mm	3 bar	5 bar
Ensign Soil	EC002NG	S/Steel	Mechanical	50-100mm	1 bar	5 bar
Ensign Soil	EC002NG	S/Steel	Mechanical	125-200mm	0.5 bar	5 bar
Ensign Soil	EC002NG	S/Steel	Mechanical	250-300mm	0.3 bar	3 bar
Ensign Soil	EC002NG/ EC002GC	S/Steel & Grip Collar	Mechanical	50-200mm	8 bar	10 bar
Ensign Soil	EC002HP GRIP	Stainless Steel	Mechanical	100- 400mm	10 bar	>10 bar
Ensign EEZI-Fit	EZ001	Cast Iron	Push-Fit	100-150mm	0.1 bar	0.5 bar
Ensign Drain	ED001	Ductile Iron	Mechanical	100mm	1 bar	5 bar
Ensign Drain	ED001	Ductile Iron	Mechanical	150mm	0.5 bar	5 bar
Ensign Drain	ED001	Ductile Iron	Mechanical	200-300mm	0.3 bar	3 bar
Ensign Drain	ED004	Ductile Iron	Push-Fit	100-150mm	0.5 bar	5 bar

- BS 437:2008 'Performance requirements for the joints based on the requirements of BS EN 877' Forward Clause (a).

WATER TEMPERATURE RATINGS

TEMPERATURE CYCLING

- Stated in the BS EN 877:1999+A1:2006 Section 5 Test Methods.
- The pipes have been tested for 24h to the passage of hot water at a temperature of (93+/-2) °C and at a constant flow rate of 30L/Min.
- The pipes are also filled with water at (15+/-5) °C and submitted for 15 minutes at a pressure of 0.5 bar.
- After testing the gaskets showed no deterioration, therefore this would not affect the performance of the system.

MECHANICAL PROPERTIES

PIPE CRUSH STRENGTHS

TYPES OF CASTING AND MATERIAL	MINIMUM TENSILE STRENGTH MPa	MINIMUM RING CRUSH STRENGTH MPa	MAXIMUM BRINELL HARDNESS HB
BS EN 877 - STANDARD REQUIREMENTS			
Pipes - Grey Iron	200	350	260
Fittings & Accessories - Grey Cast Iron	150	-	260
Couplings & Brackets-Ductile Iron	420	-	250
ENSIGN SOIL & DRAIN			
ENSIGN PIPE	300	470	205
TIMESAVER BS437			
TYPES OF CASTING AND MATERIAL	MINIMUM TENSILE STRENGTH MPa	MINIMUM RING CRUSH STRENGTH KN/m	MAXIMUM BRINELL HARDNESS HB
Pipes -Grey Iron	200	150	260
Fittings & Accessories -Grey Cast Iron	150	-	240
Couplings & Brackets-Ductile Iron	420	-	240

BEDDING REQUIREMENTS

BACKFILLING FOR RIGID PIPES

Limits of cover for standard strength rigid pipes in any width of trench (BS EN 752).

PIPE SIZE	BEDDING CLASS	FIELDS & GARDENS		LIGHT TRAFFIC ROADS		HEAVY TRAFFIC ROADS	
		MIN	MAX	MIN	MAX	MIN	MAX
100	D or N	0.4	4.2	0.7	4.1	0.7	3.7
	F	0.3	5.8	0.5	5.8	0.5	5.5
	B	0.3	7.4	0.4	7.4	0.4	7.2
150	D or N	0.6	2.7	1.1	2.5	-	-
	F	0.6	3.9	0.7	3.8	0.7	3.3
	B	0.6	5	0.6	5	0.6	4.6

BACKFILLING SEQUENCE

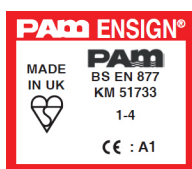
- Trenches should be backfilled in stages.
- At least 150mm of earth free from stones larger than 40mm and lumps of clay over 100mm.
- Vegetable matter should cover the pipe.
- Further 300mm thick layer of selected fill should be tamped down until trench is full.

PRODUCT IDENTIFICATION

ENSIGN SOIL

FITTINGS

- The identification markings for Ensign fittings is a label.
- Other markings identifying Ensign product is the site of manufacture depicted as G or 1-4.
- The date/period of manufacture is also defined on the casting.



DAY



MONTH



YEAR

Date of manufacture = 19th June 2017

PIPE IDENTIFICATION



- Ensign pipes and fittings are labelled during the manufacturing process in accordance to BS EN 877 and is clearly marked up on the pipework.

CE MARKING APPLYING TO CAST IRON WASTE WATER SYSTEMS

- BS EN 877 cast iron products Ensign and EEZI-FIT from Saint-Gobain PAM UK bear the CE marking as required to conform to Construction Products Regulation (CPR).



- CE Marking is NOT required for Timesaver, Classical and VortX ranges

PRODUCT IDENTIFICATION

CLASSICAL

Classical Rainwater products are easily identified by their defined markings.

Markings on pipe/fittings

- Circular pipes have the Classical 'C' rosette cast on the sockets
- The rosette is also found on the loose sockets, shoes & access pipes
- Rectangular pipes have the 'C' rosette cast on the pipe underneath the socket
- It is only found on shoe fittings in the rest of the rectangular range.



Markings on gutter/fittings

- All gutter fittings can be identified with the Classical 'C' badge.



FIRE SAFETY

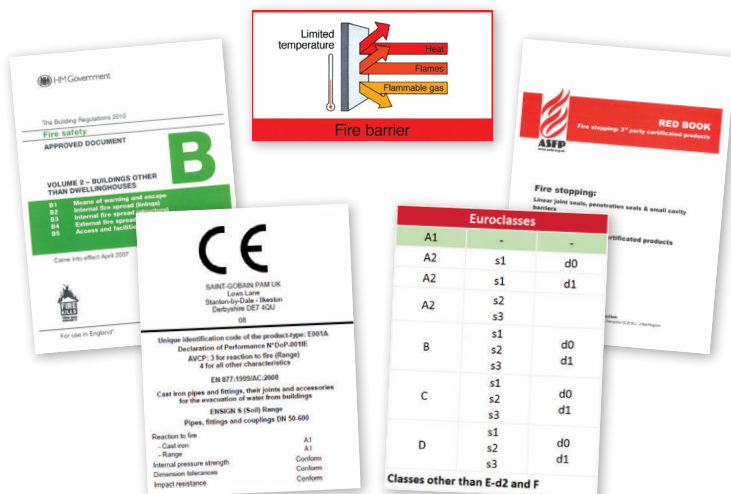
- Reaction to Fire classification (Exova Fire Research – Warrington)

Product	Above Ground	Below Ground
Ensign	A1	A2 s1, d0
EEZI-FIT	A1	n/a
Timesaver	A1	A1

- Cast Iron is non-combustible does not require any fire protection up to 160mm Dim (approved Doc B Section 11 (Table 15).
- It will not emit toxic gases like PVC-U systems, or sooty smog like HDPE (Smoke is the biggest killer in the first 30 minutes of any fire).
- HDPE is not classified under CE marking but would be category E

SUB-CLASS SMOKE PRODUCTION

- S1: Low Smoke production.
- S2: Medium Smoke production.
- S3: High Smoke Production Sub-Class Flaming Droplets.
- D0: No Flaming Droplets.
- D1: Flaming Droplets that persist for less than 10 seconds.
- D2: Flaming Droplets.
- Consult ASFP Red book for approved mortar products.



ACOUSTICS

RELEVANT REGULATIONS

UK Building Regulations Doc 'E' provides guidelines in residential dwelling houses, Flats for separating walls, floor and stairs with a separating function-stipulating an airborne insulation value of 43-48dB.

BS EN 14366:2004

The Standard was introduced to provide manufacturers of all drainage material with a simple test criteria. Results recorded should allow the specifier to make an informed choice. Ensign was the first UK drainage system to be tested to the new European standard. All brackets within the Ensign range meet the requirements of BS 8233.

WASTEWATER SYSTEMS ENSIGN AND EEZI-FIT - 100mm Diameter Wall density 220kg/m ²						
	AIRBORNE SOUND (dB)			STRUCTURE BORNE (dB)		
FLOW RATES l/s	2	4	8	2	4	8
Ensign Pipework Fitted with Two Brackets - EF048	45	48	54	27	32	34
EF048 fitted with Acoustic Dampener EF048AD	45	47	54	5	11	19
Ensign EEZI-Fit System Fitted with Two EF048	45	48	51	23	28	36
EF048 Fitted with Acoustic damper EF048AD	45	48	51	4	9	17

* Tests carried out at the Fraunhofer Institute

INDEPENDENT ACOUSTIC TESTING RESULTS - PIPE OFFSETS

An independent study was carried out by TVVL in Holland comparing various drainage materials; mechanically jointed cast iron EN877 supplied by PAM with various materials including - Geberit DB20 and PVC Pipes.

Pipe Material	L _n [dB(A)]		
	Vertical Offset (A)	Vertical (A)	Horizontal (C)
PVC	64.5	57.5	61
Geberit Silent-20db	62	53	57
PAM Cast Iron - EN 877	54	51	50.5

Tested under the principles of BS EN 14366
- The study focused particularly on stack arrangements that would generate most noise

ie where the pipe system offsets, and changes direction. The study confirmed once again the significant superior acoustic performance cast iron has over the best HPDE can offer (Acoustic HPDE DB20).

PAM have also conducted tests in France under CSTB with similar results.

Table Extracts from TVVL Study

CHEMICAL RESISTANCES

Table Below Shows resistance properties of the lining of Saint-Gobain pipes and fittings for domestic applications in intermittent use.

LIQUID		20°C	<60°C	80°C
Acidic Solutions	pH0			
	pH1 (except organic acids)			
	pH2 (except organic acids)			
	Scale-release agents			
	Cleaning agents			
	Detergents			
	Disinfectants			
	Staining water			
	Oxidants			
	Water Salts (pH7)			
Alkaline Solutions	Drain cleaners			
	Solvents			
	pH12			
	pH13			
	pH14			

Conditions where interior coatings meet chemical resistance requirements of BS EN 877.

Conditions where interior coatings exceed chemical resistance requirements of BS EN 877.

TYPICAL SPARES KITS & TOOLS

DESCRIPTION	RANGE	PRODUCT CODE
SPARES KITS		
Spares Round access door 100mm Red	Ensign Soil / EEZI-FIT	192700
Spares Round access door 100mm Black	Timesaver Soil	192469
50mm Coupling spares kit - 10 gaskets + 20 nuts & bolts	Ensign soil	225181
100mm Coupling spares kit - 10 gaskets + 20 nuts & bolts	Ensign soil	192704
100mm Spare push-fit gaskets x 10no.	EEZI-FIT	208204
Spare rubber grommets for boss connections x 10	EEZI-FIT	208205
Spare inspection door/ gasket / bolts ED012	Ensign Drain	192710
Spare inspection door/ gasket / bolts 100mm TD14	Timesaver Drain	192711
Spare inspection door/ gasket / bolts 100mm TD17	Timesaver Drain	211091
Lubricant for Push-fit assembly (500g tub)	EEZI-FIT / TS Heritage	199037
TOOLS		
EF100 Ratchet spanner	Ensign / Timesaver	191201
EF101 13mm Deep socket	Ensign / Timesaver	191202
EF102 6mm Allen adaptor	Ensign	191753
EF098 13mm Box spanner	Ensign / Timesaver	191200
51mm Hole saw for boss connections	EEZI-FIT	208206
64mm Hole saw for strap-on boss connections	Ensign /Timesaver soil	192326
Hole saw arbour for drill	Ensign /Timesaver soil	192327
1/4" Pilot drill for arbour	Ensign /Timesaver soil	192328
PAINT		
0.4 Litre two-part epoxy touch-up red	Ensign Soil / EEZI-FIT	216317
0.4 Litre two-part epoxy touch-up grey	Ensign Drain	216318
0.5 Litre Extrem 1K touch up paint for pipe cut ends red	Ensign Soil & Drain	226962

Customer Service

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- Enterprising in support of our customers' aims
- Trustworthy by keeping our promises

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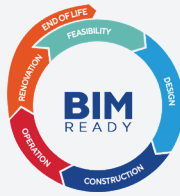
anne.shelton@saint-gobain.com

Delivery timescales

Saint-Gobain PAM UK provide a product availability structure for all its products, by product ranges, to enable contractors and distributors to plan supply more effectively on projects.

Products are categorised as follows and are shown against each product in the price list tables.

Category	Description	Within (working) Days
A	Products manufactured for ex-stock availability. Any out-of-stock situation should be quickly resolved.	5
B	Products manufactured and a stock level will be held based on average demand.	5-15
C	Products generally of lower demand—some stock may be held or made to order.	15-30



PAM UK aims to ease the burden on developers, specifiers and contractors at all stages of construction by providing two levels of BIM libraries which supports parametric pipe system designing in Revit.

1. Generic BIM libraries: BS EN877 and BS 437
 - a. For designing at early stages of project (RIBA stages 1 and 2)
 - b. Data – light models – all under 500kb in size
 - c. No 'manufacturer' data.
 - d. Models can be over written with the full data content without issue.
2. Full data object libraries:
 - a. For later contractor stage (RIBA stage 4)
 - b. Models that are data rich, incorporating COBIE data, and all the necessary data to comply with UK standards
 - c. All families have 'shared' parameters for ease of scheduling fittings
 - d. All symbols added and visible in course/medium view

Available Content Libraries



BIM services

PAM is continually developing its BIM services it provides to the market, including plugin converters

Guidance Videos

- PAM UK have developed some guidance videos and 'how to' FAQ's

Access to BIM Libraries and services:

- www.saint-gobain-gobain.co.uk
- Registration required to keep up to date with new content and revisions

Soil, Drain And Rainwater SALES TEAM

HOW TO FIND WHO YOU NEED TO CONTACT:

Find your postcode area on the map then call your representative by matching the colour to the number and contact.

*For the Greater London
and South East area
please refer to the next
Sales Team sheet for
the following contacts*



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MIDLANDS, SOUTH WEST AND SOUTH WALES

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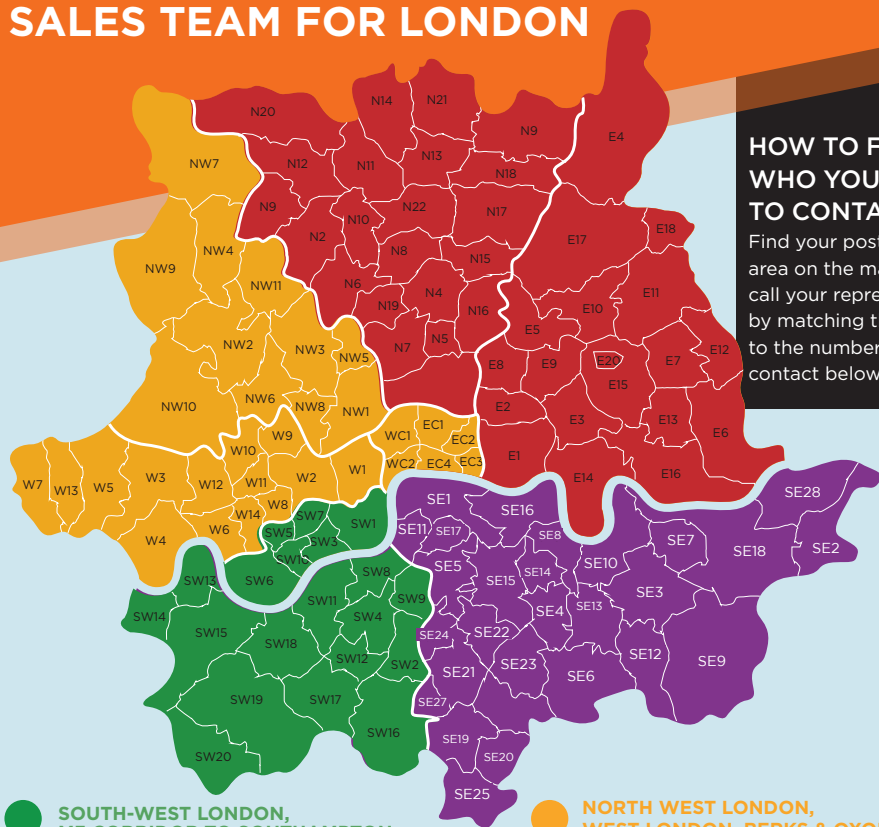
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Classical Rainwater Material Lists And Specials	1 - 2 days
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