TECHNICAL INFORMATION

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FUNCTION

Brett Martin PVC Rainwater systems comprise gutter sections and fittings, with accompanying downpipe sections and fittings to efficiently convey rainwater from the roofs of domestic, commercial and industrial buildings.

Brett Martin Rainwater systems are complemented by the Brett Martin Drain, Sewer, Surface Water, Soil and Waste systems, providing a complete solution for all drainage requirements.

AUTHORITY

Brett Martin Rainwater systems satisfy the requirements of the following:

- The Building Regulations 2002, as amended.
- Building Standards (Scotland) Regulations 1990, as amended.
- Building Regulations (Northern Ireland) 1990, as amended.

EUROPEAN STANDARDS

BS EN ISO 9001:2008

EN 12200-1:2000	Plastics rainwater piping systems for above ground external use - Unplasticized poly (vinyl chloride) (PVC-U)
EN 607:2004	Eaves, gutters and fittings made of PVC-U
EN 1462:2004	Brackets for eaves gutters - requirements and testing
EN 1329-1:2000	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Unplasticized poly (vinyl chloride) (PVC-U)

COMPOSITION

Extruded gutter and downpipe sections and injection moulded fittings are made from PVC compounds complying with the material requirements of EN 12200-1:2000 and EN 607:2004, containing the necessary processing additives, stabilisers and pigments to give products excellent appearance, durability, and performance. Seals in the gutter and downpipe fittings are manufactured from materials complying with EN 681:1996.

THERMAL EXPANSION

PVC has a coefficient of linear expansion of 6×10^{-5}. Consequently a 2m length of gutter or downpipe will expand by 2.4mm for a 20°C temperature rise. This expansion is taken into consideration in the design of Brett Martin Rainwater fittings and must be accommodated when installing.

BIOLOGICAL AND CHEMICAL RESISTANCE

Polluted industrial atmospheres will not effect Brett Martin rainwater systems. PVC is vermin and rot proof and resistant to most commonly occurring chemicals: notable exceptions however are solvents, including those incorporated in most timber preservatives.

TIMBER PRESERVATIVES

Wood preservative, which has been applied to a timber surface, must be allowed to dry thoroughly before any Rainwater fitting is fixed to that surface.

MAINTENANCE

The security of gutter and downpipe brackets should be checked regularly as part of the overall building maintenance programme: check also that no components have become dislodged or loose and that the gutter extrusions have not moved beyond any of the thermal expansion allowance marks in the fittings.

Rainwater gutter systems should be cleaned out on a regular basis, at least annually, more frequently in locations where there are large amounts of wind borne debris, eg. in sandy areas or in close proximity to deciduous trees. The high gloss surface finish retains little dirt. A mild detergent solution is ideal when cleaning dirt from the external surface is necessary.

Brett Martin Rainwater systems are self coloured, painting is not normally required for several years after installation. When painting is carried out, the surfaces of all components should be lightly roughened with sandpaper and cleaned. An oil based gloss paint is the most suitable. Do not use an undercoat.

BUILDING REGULATIONS

Brett Martin Rainwater installations should be designed to comply with the following:

The Building Regulations 2002, Approved Document H, Section H3.
Building Standards (Scotland) Regulations 1990, Technical Standard M2.6-M2.7.
The Building Regulations (Northern Ireland) 1990, Section N7, Technical Booklet N:1990: Section 3.
Comprehensive guidance on the design and installation of rainwater systems is given in BS EN 12056-3: 2000 Roof Drainage Layout and Calculation.

UNDERGROUND DRAINAGE

It is necessary to dispose of the runoff collected by Brett Martin Rainwater systems in an efficiently designed underground drainage system. A Local Authority may permit the runoff to be conveyed in a combined sewer and rainwater system, or in a separate rainwater only system. Complete Brett Martin Drain and Surface Water systems are available for these applications - see Brett Martin Underground Product Guide.

SNOW LOADING

Heavy snow falls can create hazards on steep roof pitches and/or on smooth roof surface finishes when the accumulated snow slips down and off the roof. Additional support brackets (maximum 600mm centres) can cope with some extra snow load. However, the chances of a combination of snow loading on steep and/or smooth roof surfaces, coupled with improved roofspace insulation, necessitate the recommendation for the fitting of snow boards close to eaves to prevent damage to the installation and/or other property or person(s) below. (See Page 33). Also, in some Northern areas of the UK, where heavier snow can be anticipated, snow boards should be considered on less steep roofs. Wherever fixing points are provided in any gutter fittings, these must be utilised during installation.

RAINFALL INTENSITY

Rainfall intensity in the UK varies with location and surrounding topography: a rainfall intensity of 75mm / hour is usually taken as the UK maximum when calculating the discharge requirements for gutter, downpipe and underground drainage systems.

ROOF DRAINAGE REQUIREMENTS

The amount of rainwater collected by a given roof area largely determines the choice of gutter system to be used and the number and positioning of the outlets. It is necessary to calculate the effective area of a roof and to relate this to the draining capabilities of the Brett Martin Rainwater systems.

GUTTER FLOW CAPACITY

The draining capacity of a gutter system is determined by the gutter gradient and the size and positioning of the outlets.

PROSTYLE 106mm PROFILED DOMESTIC SYSTEM

1:600 FALL	OUTLET AT CENTRE	OUTLET AT END
FLOW CAPACITY	5.1 l/sec	2.55 l/sec
MAX ROOF AREA	242m²	121m²

ROUNDSTYLE 112mm CLASSIC DOMESTIC SYSTEM

1:600 FALL	OUTLET AT CENTRE	OUTLET AT END
FLOW CAPACITY	2.43 l/sec	1.3 l/sec
MAX ROOF AREA	116m²	62m²

SQUARESTYLE 114mm MODERN DOMESTIC SYSTEM

1:600 FALL	OUTLET AT CENTRE	OUTLET AT END
FLOW CAPACITY	3.03 l/sec	1.52 l/sec
MAX ROOF AREA	144m²	72m²

DEEPSTYLE 115mm HIGH CAPACITY DOMESTIC SYSTEM

1:600 FALL	OUTLET AT CENTRE	OUTLET AT END
FLOW CAPACITY	4.58 l/sec	2.3 l/sec
MAX ROOF AREA	220m²	110m²

HIGH CAPACITY 160mm INDUSTRIAL SYSTEM

1:600 FALL	OUTLET AT CENTRE	OUTLET AT END
FLOW CAPACITY	6.47 l/sec	3.23 l/sec
MAX ROOF AREA	310m²	155m²

INFLUENCE OF GUTTER ANGLES

When there is a gutter angle closer than 2m to the outlet, reduce the effective roof area that can be drained by 10%. When there is a gutter angle more than 2m from the outlet, reduce the area that can be drained by 5%.

REFERENCES

BS EN ISO 9001:2008: Quality Management Systems Requirements

BS EN12200-1:2000: Plastics rainwater piping systems for above ground external use. Unplasticized poly (vinyl chloride) (PVC-U). Specifications for pipes, fittings and the system

BS EN 607:2004: Eaves gutters and fittings made of PVC-U. Definitions, requirements and testing

BS EN 1462:2004 Brackets for eaves gutters – Requirements and testing

BS EN 1329-1:2000: Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Unplasticized poly(vinyl chloride) (PVC-U). Specifications for pipes, fittings and the system

BS EN 681-1:1996: Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber

The Building Regulations 2002

Building Standards (Scotland) Regulations 1990

Building Regulations (Northern Ireland) 1990