METAL GUTTER MANUFACTURERS ASSOCIATION

MGMA Information Data Leaflet

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FOCUS ON INDUSTRIAL GUTTERING

History

Gutters as such were first used in the Industrial Revolution with the advent of cast iron and, eventually, formed steel. The first official British Standard specification for pressed steel gutters was published in 1946.

This specification still stands today but is not adhered to because new technology has meant that thinner materials have the same properties as the original heavier ones that are specified in the Standard.

The requirement for industrial gutters has grown to meet the demands of legislation and the building of industrial estates, business parks and recreation centres.

WHAT IS AVAILABLE?

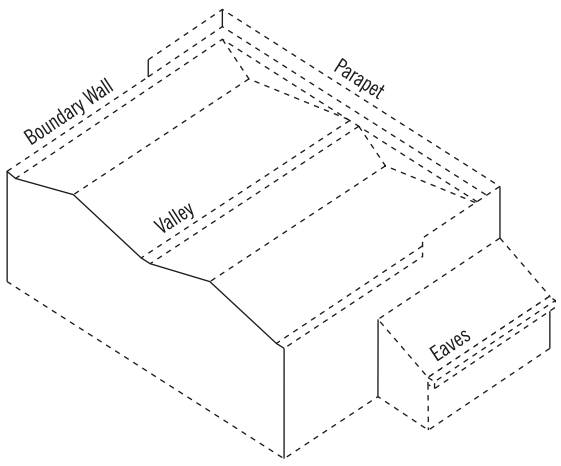
Internal gutters

These have to be fitted at an early stage of construction that is, immediately after the main frame and before any roof cladding.

The gutters can be either single skin or factory insulated. Single skin is either site insulated or used on projected eaves or on a canopy.

Eaves gutters

Eaves gutters are usually outside the building envelope and can often be erected during the latter stages of construction.



Materials used for internal gutters

The thickness and type of material will depend on the application.

Galvanised mild steel

This is the most common material used for industrial guttering, G600 to BS 10142:2000 quality is recommended.

The following gauges are commonly used - 1.6, 2.0 and 3.0mm.

Galvanised after manufacture

Mild steel substrate to BS 1449 Part 1.1 (1991) and hot dipped zinc coated to BS EN ISO 1461:1999.

This is often used so that cut edges that occur during fabrication are also protected.

Note: Due to the heat involved in the galvanising process distortion can occur.

The following gauges are commonly used - 3.0, 4.0 and 6.0mm.

Aluminium

Supplied to the following specification: Alloy 1050 A H14 to BS EN 485/1/2/4, 515, 573

The following gauges are commonly used - 1.6, 2.0 and 3.0mm.

This material is used because of aluminium's properties. It is lightweight, very strong and very durable due to an oxide layer that forms after a period of weathering. Expansion and contraction must be considered early in design.

Stainless steel

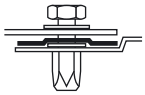
Supplied to the following specification: Grade 1.4301 to BS EN 10088-2 1995

The following gauges are commonly used - 1.6, 2.0 and 3.0mm.

This material is used because of stainless steel's properties of strength and durability. Not common due to cost.

Joints/fixing details

Joggle joints are generally used for internal gutters with 50mm wide butyl mastic with hexagonal/circular captivated nuts to suit stainless steel M10 hexagonal head bolts and washers.



Installation

The bolts should be tightened from the centre of the sole outwards with mastic within the threads of the bolts.

Coatings

All steel gutters in GBM or GAM are available with a factory applied paint finish – TCN 440. This is an organic epoxy coating that is used to increase durability and lifespan for up to 25 years.

Membrane lining

PVC and EPDM membrane linings are now more commonly used and preferred by certain contractors due to the heat welded joint and the aesthetic and durability properties of membrane finishes. These products can attract a lifespan between 10-15 years.

FACTORY INSULATED

This product variant has become the most popular type of industrial gutter in the above applications. It comprises the above materials as the weathering finish with a factory applied insulation and a white liner tray finish. The liner tray gives the gutter the attractive appearance inside the building when it is complete.

Thermal performance

As a result of the new thermal performance requirements in Approved Document L2:2002, the junctions between a gutter and roof/wall cladding must be considered carefully by the building designer to establish if there is risk of condensation in the particular environment (f-factor) and to ensure the linear transmittance through thermal bridges (psi-value) is acceptable for the building. (For further information refer to Approved Document L2, MCRMA Technical Paper No 14 and BRE IP 17/01).

The psi-value for a particular gutter design depends on the gutter size and shape, thickness of insulation and the amount of thermal bridging. This value can only be established by computer modelling. This modelling will also determine the f-factor.

Humidity Class	Building Type	Minimum f-Factor
1	Storage areas	0.30
2	Shops and offices	0.50
3	Dwellings with low occupancy	0.65
4	Dwellings with high occupancy, sports halls, kitchens, canteens, buildings heated with unflued gas heaters	0.80
5	Special buildings, eg swimming pools, laundries and breweries	0.90

Internal humidity classes from BS 5250:2002

Example

A standard insulated gutter (300mm sole by 150mm deep) which comprises 45mm thick LPCB approved insulation within a built up roofing system, has a typical psi-value of 2.08 and an f-factor of 0.63.

This gutter is suitable in humidity class 1 and 2.

The psi-value of this gutter indicates a significant thermal bridge. The architect has to check if this linear measure of thermal transmittance is compliant with the alpha-value of the building when all the other plane areas and details are considered.

Please note

The BRE has advised that gutter depths do not necessarily have to be reduced as a result of the new thermal performance requirements in the Approved Document. The use of a gutter with a lower thermal transmittance will cause snow and ice to melt preferentially to the roof to avoid sudden floods and will improve gutter depth to satisfy BS EN 12056:3 2000.

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