



## **BS EN12056-3:2000. FIFTEEN YEARS OLD - STILL A NEW STANDARD?**

In September 2000, BSi published the UK version of a pan-European standard for roof drainage systems, completely replacing BS 6367:1983, which from that time forward became obsolete. So more than 15 years later, surely no one would still be confused by the requirements of the BS EN 12056, or still be specifying the old standard?

In the experience of the Metal Gutter Manufacturers Association, the answer is sadly yes; especially in the architectural world where there is still a lack of knowledge of the key changes that BS EN 12056-3:2000 ushered in, and specifically those around the area of rainfall intensity. MGMA consultant member Dr Malcolm Wearing highlights the pitfalls of failing to interpret the standard correctly.

In the United Kingdom, we are unusual in that we apply varying rainfall intensities based on geographical location, and risk to building contents, unlike many areas of Europe where a single blanket rainfall intensity is used for the whole country.

This means that all the information a user needs to determine the correct rainfall intensity for a given project is contained right at the back of the standard in the national annexes. The main area of confusion centres on how to apply building life and safety factors.



*Water damage: In another 15 years will the whole industry have got the hang of BS EN 12056-3:2000?*

When you start to read through BS EN 12056 you get to a fairly simplistic method of calculating safety factor and rainfall intensity. The important thing is to ignore this section completely, as it has no relevance to design in the UK; the key section is where it says unless national regulations prevail - they do.

The designer then has four risk categories to choose from:

- Category 1 - external gutters only - reaches maximum capacity in a 1 year storm
- Category 2 - normal inboard gutters - reaches maximum capacity in a storm 1.5 x the building life
- Category 3 - inboard gutters in important buildings - reaches maximum capacity in a storm 4.5 x the building life
- Category 4 - nuclear power stations and archive buildings - this event should never be exceeded.

These seem fairly straightforward; however there are a number of issues:

What is the building life? In this context the wording is not particularly helpful; it may be better expressed as protection of contents life. A building may have a time to replacement/refurbishment of sheeting and roof lights of only 20 years, but would it be acceptable to flood the building contents once every 20 years? Probably not!

Conversely, a building where the construction materials have a very long expected lifespan, but where the contents of the building have no real value, may have a protection life much shorter than a theoretical building components life.

The only logical approach is to think "How often do I want the building to flood?", and then to use that value. Too short, and the occupiers will be disadvantaged and too long, the system will be uneconomic. For a normal building at Category 2 protection, 60 years is a good starting point.

But surely Category 4 is the best to use, as it will never flood? Well to a certain degree yes, but there has always to be a balance between protection and cost. Category 4 is likely to give figures 2.5 times higher than a rainfall intensity derived from an actual sensible protection life, which on some buildings may make it impossible to drain, on others very difficult and on all more costly.

There is a more serious issue with the use of Category 4 when applied to siphonic drainage as there is a risk the systems will clog up before they ever really function siphonically. Siphonic systems are laid level, and rely on regular flushes of high velocity flow to stay clear. If the systems are designed to Category 4, then it may be 600 years or more between flushes through, by which time they will have clogged up.

The final issue is the Category numbers themselves. In the previous standard BS 6367, there were five categories; so what was Category 2 became Category 1, etc., and what was Category 1 moved to a new standard on paved areas.

The problem with this is that some specifiers have not caught up with this, and so happily specify Category 4 thinking they are asking for a slightly enhanced level of protection, failing to realise that they have now asked for a level of rainfall intensity only usually applied to archive buildings and nuclear power stations.

In another 15 years, will the whole industry have got the hang of BS EN 12056-3:2000? Will someone have told us what we should pick as building lives? Probably not; we will no doubt have a different standard by then, so all the more reason to be fully familiar with this standard sooner rather than later!

Metal guttering systems are designed and manufactured to give many years of reliable service and detailed advice is available at [www.mgma.co.uk](http://www.mgma.co.uk)

*This article has been prepared for MGMA by Dr Malcolm Wearing, consultant member of MGMA and director of CRM Rainwater Drainage Consultancy Limited. This article first appeared in RCI Magazine, June 2016*

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