EVALUATION OF SEALED UNIT FOGGING

We have been asked numerous times during the past year to advise and evaluate the reason why a sealed unit has developed an internal Fog that typically is on a south elevation and gets worse on bright warm sunny days!

The original test standard was undertaken on a standard sized test unit, 12mm cavity at 50^{o}C.

However, EN1279 PT4 Annex C increased the test standard to 60^{o}C in 2020.

Undertaking a Fogging test at 60^{o}C is only a small part of the story.

The test takes a standard sized unit 502 x 352mm with a 12mm cavity and subjects the unit in a standardized hot box to a 60^{o}C temperature for 1 week. The unit is then stood down and viewed in a lightbox after a further 7 days to visually establish whether the unit is clear or has Fogged.

This standard test does not take into consideration the impact of the increase in sealed unit cavity temperature as a result of the following:-

1) Low E glass used on 1 or 2 sides and source of glass.
2) Gas filling and type of gas.
3) The colour of warm edge spacer and integra profile.
4) The g value of the glass used.
5) The framing material PVC, aluminium or wood.
6) The colour of the frame.
7) Glazing of the unit to comply with GGF guidelines with suitable edge clearance.

All these will influence/increase the cavity temperature and the majority of domestic installations in the UK use 20mm Black Warm Edge Spacer and 18 x 16 Integra when requested. This will undoubtedly increase the risk of Fogging in the cavity at higher temperatures. Due to higher VOC (Volatile Organic Compound) loading in the unit cavity.

The myriad of unit construction options are available to all sealed unit manufacturers but has everything within the sealed unit cocktail of components been tested for elevated temperature compatibility. Probably not.

The BF Bundersverband Flachglas Warm Edge Working Party in Germany are the acknowledged benchmark organisation in this area.

They recognise that cavity temperatures can exceed significantly during the summer months the EN1279 standard test temperatures of 60^{o}C.

A new protocol was introduced in 2021 to address this problem to be incorporated in future revisions of EN1279 standard.

This revised standard is necessary to Pass if you require a BF Data Sheet published on their web page and referred to as IFT Guideline VE-17engl/1.

Specifically, the Fogging test temperature has been elevated to 80^{o}C representing realistic service temperature conditions.

The recommendation to get trouble free service life is to ensure that your spacer supplier has tested their product to this revised standard to give you peace of mind that at elevated summer temperatures everything works just fine.

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