

TECHNICAL BULLETIN

Self-cleaning performance of Pilkington **Activ™**

SUMMARY

A new European Standard has been introduced to evaluate the self-cleaning performance of coated glass. Pilkington **Activ™** has been independently tested to the new standard and successfully meets the pass criteria. This Standard should allow specifiers to differentiate between glass with a classified self-cleaning performance, such as Pilkington **Activ™**, and those without. It also provides a basis for householders to insist on installers only supplying self-cleaning glass that successfully passes the test.

New standard

Pilkington **Activ™** achieves the highest classification of Class A when tested in accordance with EN 1096-2: *Glass in building – Coated glass – Part 2: Requirements and test methods for class A, B and S coatings*. The tests in this standard are intended to evaluate the resistance of a coating to attack by simulated natural weathering conditions as well as to abrasion. For Class A, this attack is considered to be representative of that which may be expected on the external face of the glass.

However, this standard does not consider the self-cleaning performance of coated glass which utilises hydrophilic or photocatalytic properties to enhance the cleanliness of the glass.

A new European Standard has been developed to address this gap in the standardisation framework. Issued by CEN in January 2016, EN 1096-5: *Glass in building – Coated glass – Part 5: Test method and classification for the self-cleaning performances of coated glass surfaces* allows manufacturers to verify their claims against an agreed, formal European-wide standard.

Test method

The standard defines a test method to establish the self-cleaning performance of coatings on glass which utilise sun, rain or a combination of sun and rain to enhance the cleanliness of the glass.

Samples are subjected to alternating cycles of spraying with model dirt solution (simulating artificial soiling) followed by UV irradiation and then spraying with water (simulating artificial weathering). Once samples are cleaned and pre-activated, they are subsequently soiled, dried, irradiated and sprayed with water, while the haze level is measured at each step. This cycle is then repeated. Haze is measured after the first initial cleaning step and completion of the second cycle determines the delta Haze value.

Pass criteria

In accordance with EN 1096-5, a glass can be classified as self-cleaning, provided the resulting mean global change of haze, ΔH_{Global} , does not exceed 1% and global standard deviation, s_{global} , does not exceed 0.25.

Test samples

Samples of Pilkington **Activ™** Clear were submitted for testing by Fraunhofer Institute for Surface Engineering and Thin Films (IST), an independent Notified Body in Germany. Samples of uncoated

clear float glass were also tested at the same time for reference. The tests were performed by Fraunhofer IST in February 2017.

Results

A summary of EN 1096-5 test results are provided in Table 1, comparing the self-cleaning performance of Pilkington **Activ™** Clear with a reference sample of uncoated float glass. The results show that Pilkington **Activ™** satisfies the criteria for both mean global change of haze and global standard deviation.

Table 1. Summary of EN 1096-5 test results

Samples	Mean global change of haze, ΔH_{Global} (%)	Global standard deviation, s_{global}	Pass/Fail
Pilkington Activ™ Clear	0.42	0.19	Pass
Uncoated float glass (for reference)	2.38	0.42	Fail

Conclusion

The report issued by Fraunhofer IST concludes that Pilkington **Activ™** can be classified as self-cleaning in accordance with EN 1096-5.