

Technical Bulletin May 2015

Construction Products Regulations, BS EN 14314 and CE Marking

An understanding

Construction Products Regulations

In July 2013, the Construction Products Regulations (CPR) entered the Operational Phase and introduced major changes to the UK construction product market, including requirements for:

- Manufacturers Declaration of Performance (DoP);
- CE Marking.

The CPR repeals and replaces the Construction Products Directive (CPD), moving from a *voluntary Directive* to compulsory *Regulations*. The CPD/CPR was introduced to break down technical barriers to trade for construction products between the member states of the European Economic Area. To facilitate this, a pan European system of Harmonised European Standards (hEN) – sometimes referred to as European Standards or European Norms – were commissioned to set benchmark specifications for individual product types, such as EN 14314 for phenolic foam insulation in Building Services applications.

Declaration of Performance (DoP) and CE Marking

The manufacturer of a construction product placed on the European market and covered by a hEN or European Technical Assessment (ETA) is required by the CPR to draw up a DoP. The aim is to ensure that the manufacturer takes responsibility for the conformity of the product to the hEN or ETA. CE Marking verifies that the *manufacturer has strictly followed all the applicable procedures for drawing up the DoP and that the DoP is accurate and reliable.*

Building Services insulation of the type commonly used in the UK HVAC market are already covered by hENs and so will have to be CE Marked from July 2013.

Harmonised European Standards (hEN) eg EN 14314

The CPD and the publishing of hENs introduced a *common technical language* with standardised methods of testing and declaring a construction products performance.

These harmonised specifications have been developed and published by CEN – the Committee for European Standardisation. For example, within Building Services applications, the harmonised specifications for Phenolic, PIR, Mineral Wool and Flexible Elastomeric Foams all use the same European Standard for determining Declared Thermal Conductivity values (EN ISO 13787) and Fire Classification from reaction to fire tests (EN 13501-1).

However, it should be noted that the test methods used to provide the data for these classification standards can vary from one hEN to another.

In summary, the introduction of hEN's has created a common European approach:

- To the way **Regulatory requirements** are expressed;
- To the **Declaration of Performance (DoP)** by a manufacturer;
- For **clients to verify compliance** and performance claims of manufacturers.

Full details can be found on the European Commission website www.ec.europa.eu

BS EN 14314

Thermal insulation products for building equipment and industrial installations – Factory made phenolic foam (PF) products – Specification.

NOTE 1 The above standard BS EN 14314 is the current and correct British and European Standard to assess phenolic foam pipe and duct insulation. The standard forms part of a suite of harmonised European Standards (hENs) to assess the performance of insulation materials used in the construction industry to facilitate CE Marking and compliance with the Construction Products Regulations.

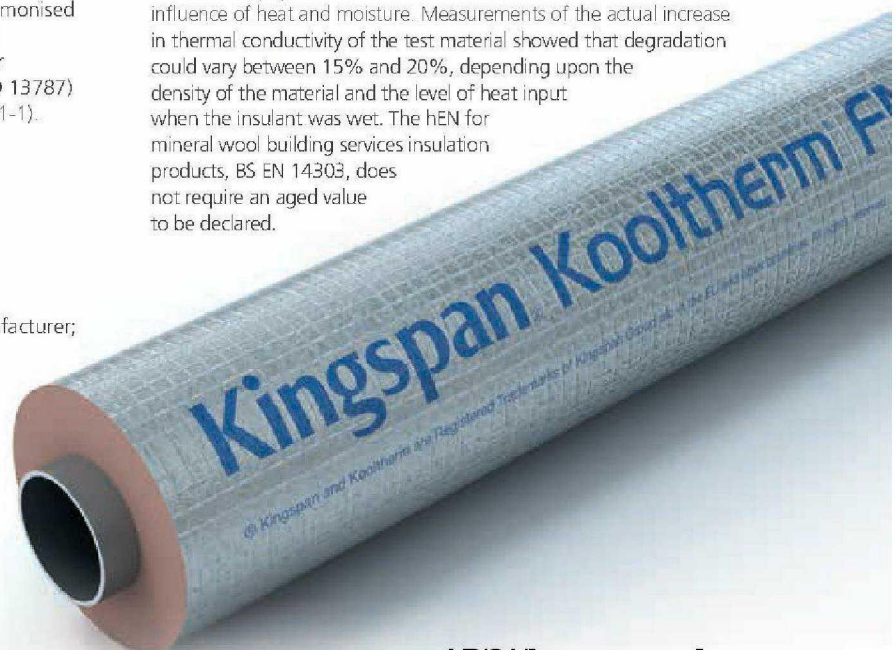
NOTE 2 The harmonised standard BS EN 13166 relates to phenolic foam insulation used in construction and specifically excludes the use of insulation on building equipment and industrial installations and so should not be used to assess phenolic pipe and duct insulation.

Thermal Conductivity

BS EN 14314 has introduced a new method of assessing thermal conductivity into the phenolic foam pipe insulation market. Traditionally, the thermal performance of phenolic foam products has been assessed as an initial measurement of thermal performance being quoted by the manufacturer. The new standard has changed the established methods by introducing:

- A requirement for the declared thermal conductivity value to be based on the aged value;
 - ◆ The measurement shall be in accordance with EN ISO 8497, EN 12667 or EN 12939;
 - ◆ The thermal conductivity shall be determined and verified to EN ISO 13787;
 - ◆ The aged value represents the time-averaged value over 25 years;
 - ◆ The declared shall be in accordance with the requirements of EN 14314.

The thermal conductivity of insulation products can change over time. Research into mineral fibre insulation has shown that where a combination of moisture within the insulant and a heat source are present, permanent long term degradation of the matrix and fibres can occur. Research by Low et al. (ASTM STP 922) into the material degradation of mineral fibre, revealed that significant changes can occur to the physical structure of the material under the combined influence of heat and moisture. Measurements of the actual increase in thermal conductivity of the test material showed that degradation could vary between 15% and 20%, depending upon the density of the material and the level of heat input when the insulant was wet. The hEN for mineral wool building services insulation products, BS EN 14303, does not require an aged value to be declared.



Thermal Conductivity

The declared thermal conductivity value for Kooltherm™ rigid phenolic pipe insulation is 0.025 W/ m·K at 10°C to EN 14314 which is based on the time averaged value over 25 years, plus a safety increment.

When comparing pipe insulation products, it is therefore essential that thermal conductivity values for pipe insulation products should be compared on a like for like basis, and declared in accordance with the correct harmonised European standard, such as EN 14314.

Fire & Smoke Performance

Reaction to Fire

The Euroclass system categorises construction products into one of seven reaction to fire classes ranging from the highest (best) class of A1 to the lowest (worst) class of F, depending upon their performance in application, in defined tests or a defined combination of tests.

The reaction to fire classification for Kooltherm™ FM Pipe Insulation is determined by its performance in the Single Burning Item (SBI) test which measures Total Heat Release (THR), Fire Rate Growth Index (FIGRA) and Lateral Flame Spread (LFS). The highest Reaction to Fire classification available for Phenolic Foam insulation is B, in accordance with EN 14314 and EN 13501-1.

Smoke Production

In addition to the reaction to fire classes A to F, products subjected to the SBI test are also classified into one of three smoke production sub-classes ranging from the highest (best) class of s1 to the lowest (worst) class of s3.

Flaming Droplets / Particles

The final sub-classification for construction products subjected to the SBI test is for flaming droplets / particles which is also divided up into one of three classes ranging from the highest (best) class of d0 to the lowest (worst) class of d2.

Kooltherm™ FM Pipe Insulation easily achieves a B_L-s1, d0 classification

The subscript _L on B_L indicates that the fire test has been carried out on pipe insulation as placed on the market, not a flat indicative sample.

NOTE This is the highest/best Reaction to fire classification available to phenolic foam insulation under BS EN 14314 and represents a market leading performance.

BS 476 Part 6 & 7 and Class 0

Kooltherm™ FM Pipe Insulation achieves results to BS476-6 and BS 476-7 that combined enable a Class 0 classification to the Building Regulations in England & Wales, Northern Ireland and the Republic of Ireland, and a Low Risk classification to the Building Standards in Scotland.

BS 476-6 and BS 476-7 tests are national British Standard tests and are therefore not included in any hEN as a requirement for CE Marking. National classifications do not automatically equate with European classifications, and a European classification to EN 13501-1 cannot be declared unless the product has been tested accordingly.



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