EQUIPMENT SPECIFICATION

NON-COMBUSTIBILITY TEST APPARATUS - ISO 1182

PRINCIPLE OF THE TEST

The ISO 1182 non-combustibility test specifies a procedure for determining whether or not a material will contribute directly to fire development. Whilst those materials which produce little or no reaction in the test may be assumed to make no direct contribution in terms of adding additional fuel to a fire, they may indirectly have an influence on the rate of fire development by virtue of their thermal properties.

Specimens of the material under investigation are inserted into a vertical cylindrical furnace set at a temperature of 750°C and recordings of certain phenomena are made to detect the extent of any combustion. Materials which show little or no reaction in the furnace, as indicated by the observed phenomena, are generally termed "non-combustible". However, because there is no international agreement on the significance of the respective phenomena and on the allowable levels of reaction that can be allowed during the test. ISO 1182 does not give any performance criteria for designation of the material. Some guidance on the use of the test results for regulatory purposes is given in an Appendix to the Standard, but it has been left for individual standards organisations and/or regulatory bodies to define the appropriate performance criteria.

Full instructions on the method of conducting the test are given in ISO 1182.

THE TEST APPARATUS

The test apparatus has been designed to satisfy the constructional requirements for the test apparatus given in ISO 1182. The apparatus is manufactured in accordance with the requirements of the working drawings and other technical details of the apparatus which are held by the ISO/TC92 Secretariat.

The apparatus consists of a specially grooved and wound electrically heated cylindrical vertical furnace tube contained within an insulated surround and mounted on a stand. The air flow rising through the tube is stabilised at inlet by a stabiliser cone and a draught shield is provided around the top of the tube. The stand on which the assembly is mounted is provided with a screen on all four sides. No asbestos based items are used in the manufacture of the equipment.

Specimens of the material for test are inserted into the furnace in a wire framed holder mounted from a stainless-steel tube. Accurate positioning and easy insertion of the specimen into the furnace is facilitated by a pivoted insertion device and guide rods.

Power input to the apparatus from the control module is via a connection box fixed to the side of the apparatus and provided with a length of power cable. Electrical input to the apparatus must be via a control system providing a regulated power supply. At the operating temperature of 750°C the apparatus will draw an electrical current of approximately 7 - 10 amps at an input voltage of approximately 100 volts. The apparatus must be earthed.

THE CONTROL MODULE

The precision regulated energy supply required to enable the test apparatus to operate at the correct operating temperature within the specified tolerances is provided by a specially designed control console.

The control module consists of a robust bench mounted console and a floor mounted step down transformer assembly. The console includes an automatic voltage regulated thyristor, PID power controller with automatic locking feature, a remote handset, digital information display and relevant manual switches and indicator lamps etc. All items are mounted within. Appropriate connection for mains supply input and the regulated power output are provided on the rear of the apparatus.

NON-COMBUSTIBILITY TEST APPARATUS (Continued)

Computer interface, full control and data acquisition software compliment the system.

The European supply voltage requirements to the console are nominally 230 V, 50 cycles and the maximum total power rating of the console is 3 kVA. The US supply voltage requirements to the console are nominally 110V, 60 cycles. When supplying the non-combustibility test apparatus at its operating temperature of 750°C the nominal power consumption is 1 kVA.

The console has been specially designed to assist the test operator in conducting the test with as little effort as is practically possible.

DATA ACQUISITION AND SOFTWARE

The data acquisition module records temperature, time, test event, general test data and can automatically download this information, to produce automatic reports as specified in the Standard into MSExcel® or MSWord® using DDE(Dynamic Data Exchange).
This module comes complete with all the necessary hardware and software to achieve this.

ACCESSORY PACK

A convenient standard accessory pack is available which contains consumable items which are required for use with the test apparatus and also spares of those items which, due to the nature of the test, may require occasional replacement.

The following items are included.

a) Five thermocouples complete with compensating cables, for connection of the thermocouples to the temperature recording system.
b) One spare specially grooved and wound electrically heated cylindrical vertical furnace tube, ready for installation into the apparatus.
c) Magnesium oxide for use when replacing the furnace tube.
d) One spare specimen basket.

The contents of the accessory pack can be varied to meet the requirements of individual customers.