

International Carbide Technology Co. Ltd. has conducted testing for International Fireproof Technology Inc. to evaluate the fire-resistant properties of a ½” Plywood Sheathed Wall System coated with 40 mils (WFT) of DC360 Intumescent Paint when exposed to the furnace conditions of ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.

1. SAMPLE AND ASSEMBLY DESCRIPTION

10 ft. by 10 ft. 2x4 wood frame (perimeter only),

2x4 wood studs, fixed 16 in. C-C vertically from mid width extending outwards. Spacing between the vertical framing members and initial studs on either side was 12 in.

4 ft. wide by 8 ft. high by ½ in. thick, SPF plywood wallboard.

Three vertical joints at 1 ft., 5 ft. and 9 ft. (from the left, unexposed view) 1-1/4 in. coarse thread drywall screws, spaced 8 in. on center.

DC360 Intumescent coating applied at 40 mils Wet Film (40 sq ft per gallon) to the fire exposed side of the sample.

2. THE FIRE TEST

The test wall assembly was mounted in the full-scale vertical furnace mounting frame the side with the plywood coated with DC360 intumescent paint was exposed to the fire. Additional concrete block was placed below the wall assembly, and the assembly was attached to the front of the test furnace. The moveable frame containing the test wall assembly was secured to the furnace. The pilot burners were ignited and burned until the temperature inside the furnace reached $20 \pm 2^{\circ}\text{C}$ ($70 \pm 3^{\circ}\text{F}$). All burners were fired, and timing was begun immediately upon achieving maximum high fire.

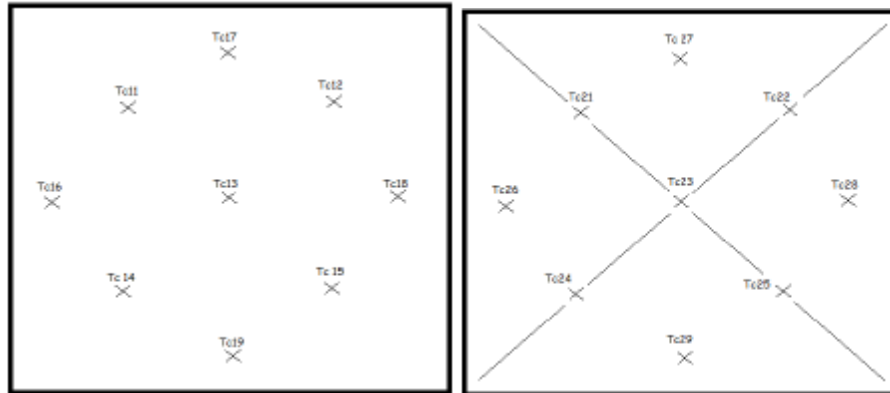
The temperatures inside the furnace are monitored by nine equally spaced thermocouples. These readings were recorded by a Yokogawa data acquisition system recorded every 30 seconds and displayed every 15 seconds.

The wall assembly was subjected to the standard time/temperature curve of ASTM E119. The test was continued for 60 minutes.

The test was terminated after the limiting temperatures were recorded. The average of the nine thermocouples reached the limiting temperature of 162°C at 60.2 minutes, and the maximum temperature of 202 C was reached at 59.9 minutes.

3. THERMOCOUPLE LOCATIONS

Refer to the illustrations below for thermocouple locations on the specimen.



4. EXAMINATION OF RESULTS

No burn through or flaming occurred on the unexposed side of the wall assembly.

The average unexposed thermocouple temperature did not rise above the maximum allowable of 140°C + initial over the 60 minute period.

No single thermocouple on the unexposed side showed a temperature rise exceeding the maximum allowable of 180°C above their initial starting temperature over the 60 minute period.

5. CONCLUSION

The plywood wall assembly with DC360 intumescent paint achieved a 60 minute rating when tested in accordance with the requirements of ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.

This asymmetrical wall assembly was only tested in one direction, therefore; the rating is only applicable when the DC360 intumescent paint are on the exposed side.

PHOTOS



Exposed Face Prior to the Fire Test



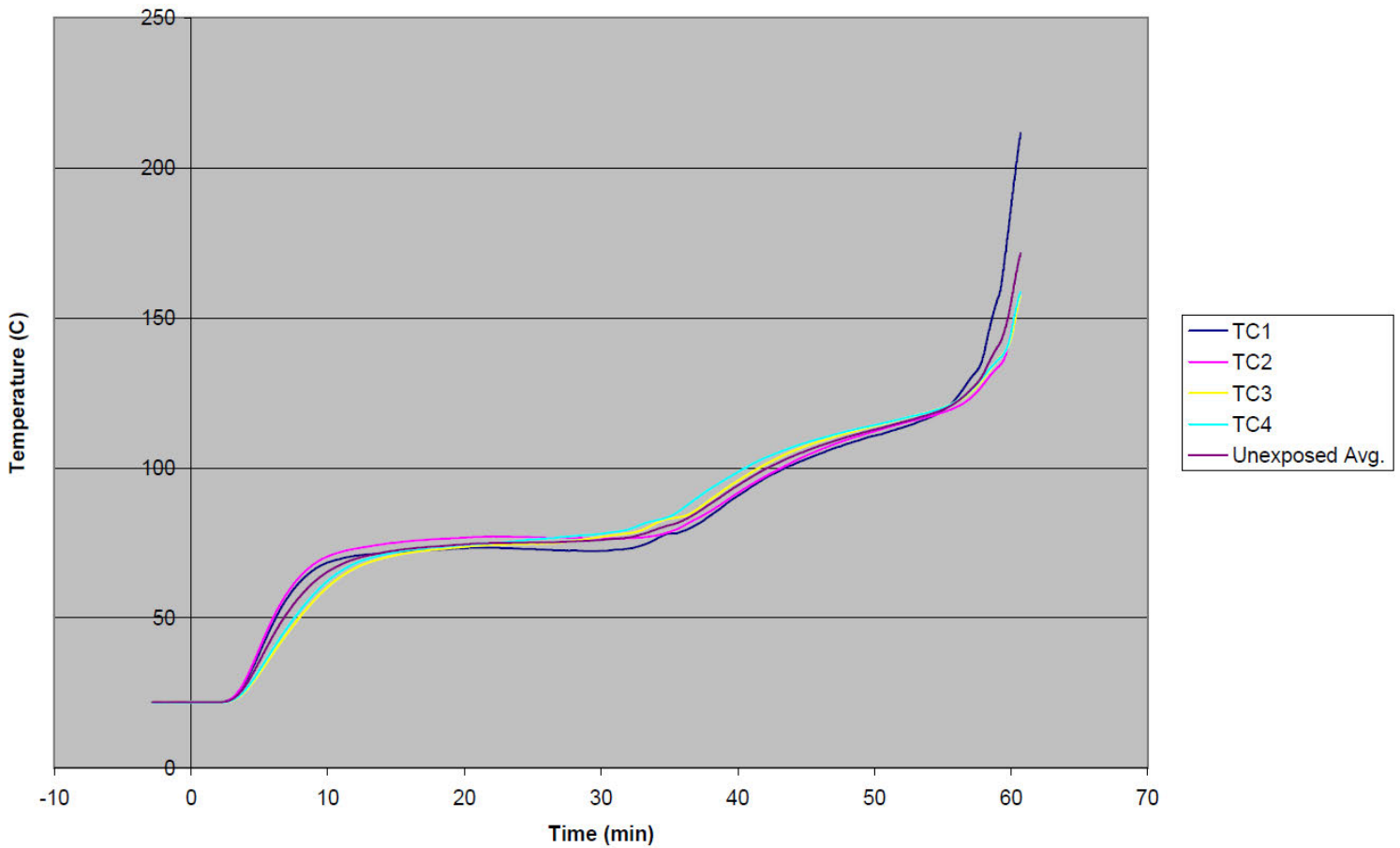
Exposed Face After the Fire Test



International CARbide Technology Co., Ltd.

TEMPERATURE DATA

TEMPERATURE RISE UNEXPOSED FACE



 <p><u>Michael Chen</u> <u>Fire Protection Engineer</u></p>	
--	--