

## Fire Rated Field Conditions (Trade Damage)

### Introduction:

In March of 2015 the Wall & Ceiling Conference (WCC) contracted with Intertek laboratories to determine how “typical” field conditions impact a 1-hour fire rated gypsum board assembly. The assembly was built and tested per ASTM E-119, *Standard Methods for Fire Test of Building Materials*, and included a nominal 1-1/2” x 1/2” chip (trade damage) in gypsum board and covered with joint compound. The intent of this test was to determine how the rating of an approved 1-hour wall assembly might be impacted by this condition.

### Test Sample:

#### Framing Members

3-5/8” deep, 25EQ (25 GA “equivalent”) steel studs spaced 24” o.c. The top and bottom track were also 25 EQ.

#### Interior and Exterior Cladding

One layer of 4’ x 10’ x 5/8” ASTM C1396 equivalent type X gypsum board oriented vertically secured using 1-1/4” self-drilling drywall screws spaced 8” o.c. around the perimeter and 12” o.c. in the field. Exposed seams were covered with joint tape, and the tape and fasteners received 2 layers of joint compound.

The 1-1/2” x 1/2” chip (trade damage) was applied to both the exposed and unexposed surfaces to accommodate a symmetrical test result.

### Testing and Evaluation Methods:

The 1-1/2” x 1/2” chip (trade damage) was instrumented by a 24 GA, Type K, fiberglass jacketed thermocouple. The output of the thermocouple and furnace probes was monitored by a 100-channel Yokogawa, Inc., Darwin Data Acquisition Unit. The computer was programmed to scan and record data every 30 seconds. The ambient temperature at the time of the test was 56° F and the humidity was 81% R.H.

#### Analysis

Location	Max Temp Reached (°F)	Max Allowed (°F)
1-1/2” x 1/2” chip (trade damage)	305	381

The individual temperature rise criteria as listed in the table above were based on the ASTM E119 requirements of 325°F above the initial temperature. 56°F at the start of the test for a maximum allowable temperature rise of 381°F.

### Conclusion:

If trade damage occurs, the area is to be treated with joint compound to a minimum of a level 2 gypsum board finish as tested. There was no evidence of reduced fire resistance due to the addition of 1-1/2” x 1/2” chip (trade damage) within the tested assembly. For a full copy of the test report, please visit [www.wccinfo.org](http://www.wccinfo.org), click on the library tab and select the fire test. For further details and or clarification please do not hesitate to contact WCC.