

**TEST REPORT**

**Test Type** : Temperature measurement of exothermic reaction

**Product Description** : EXOWELD #25R and #115R

**Test setup :**

A set of graphite mold with cover which has two of 4.5 mm diameter drilled hole for placing thermocouples have been provided by the applicant. (Fig. 1)

Type "C" (Tungsten-5% Rhenium vs. Tungsten 2% Rhenium) thermocouples is used and were shielded with 4 mm diameter ceramic sleeve.

Thermocouples were calibrated against a type K thermocouple from 50° C to 350° C. (Fig.2)

The thermocouples were inserted into top and bottom of the graphite mold and the mold closed and clamped with the handle clamp. The thin metal disk was placed in the mold and the welding powder dumped onto the disk, covering the top thermocouple.

The ignition powder was tapped out of the cartridge bottom and mostly pushed through the hole in the mold top cover and closed the hinged mold cover.

The thermocouples were connected to a KEITHLEY model 2701 Ethernet Multimeter / Data Acquisition System.

The data rate for each of two thermocouples was 0.0001 seconds/sample and time interval was 0.2 seconds and the time limit for data acquisition was approximately 2 minutes.

The data acquisition program was initiated and the provided flint ignitor used to start the reaction.

**Results of measurement ;**

Load Size	Top Section Max	Bottom Section Max	Remarks
25 grams	1918.7 °C	2031.3 °C	Fig.3
115 grams	2085.1 °C	1711.5 °C	Fig.4

**Tested by :**

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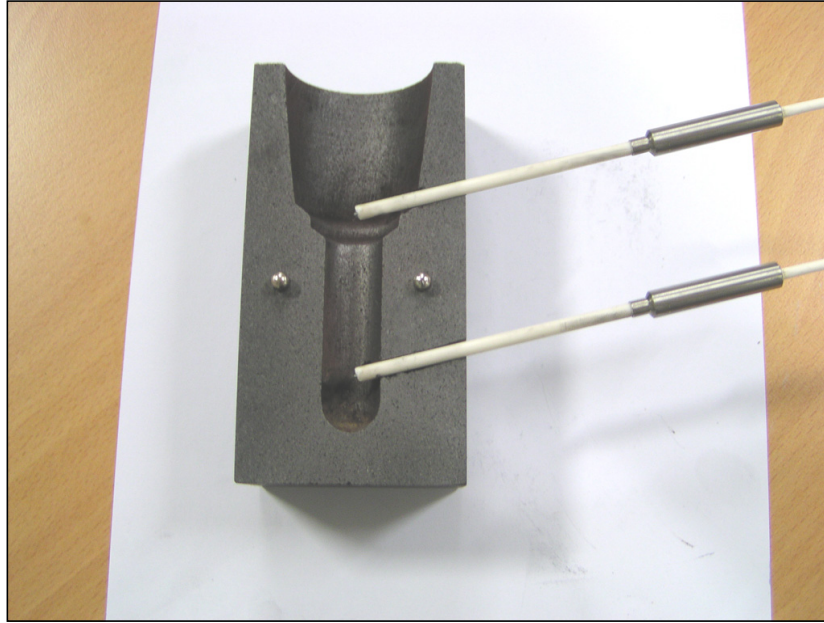


Fig 1. Image of graphite mold showing thermocouple placement.

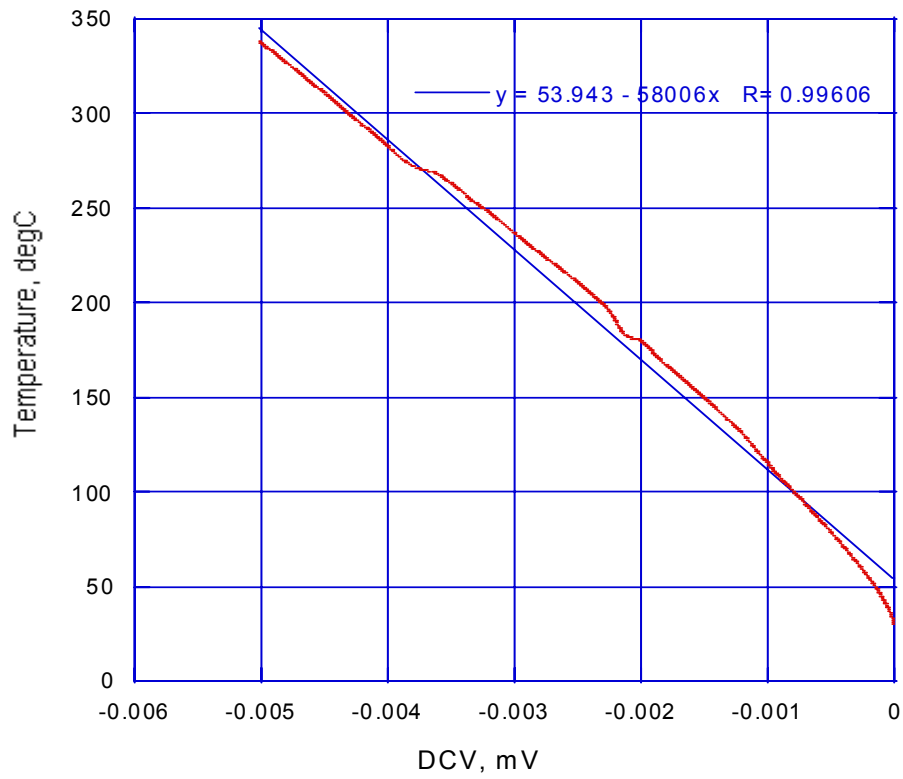
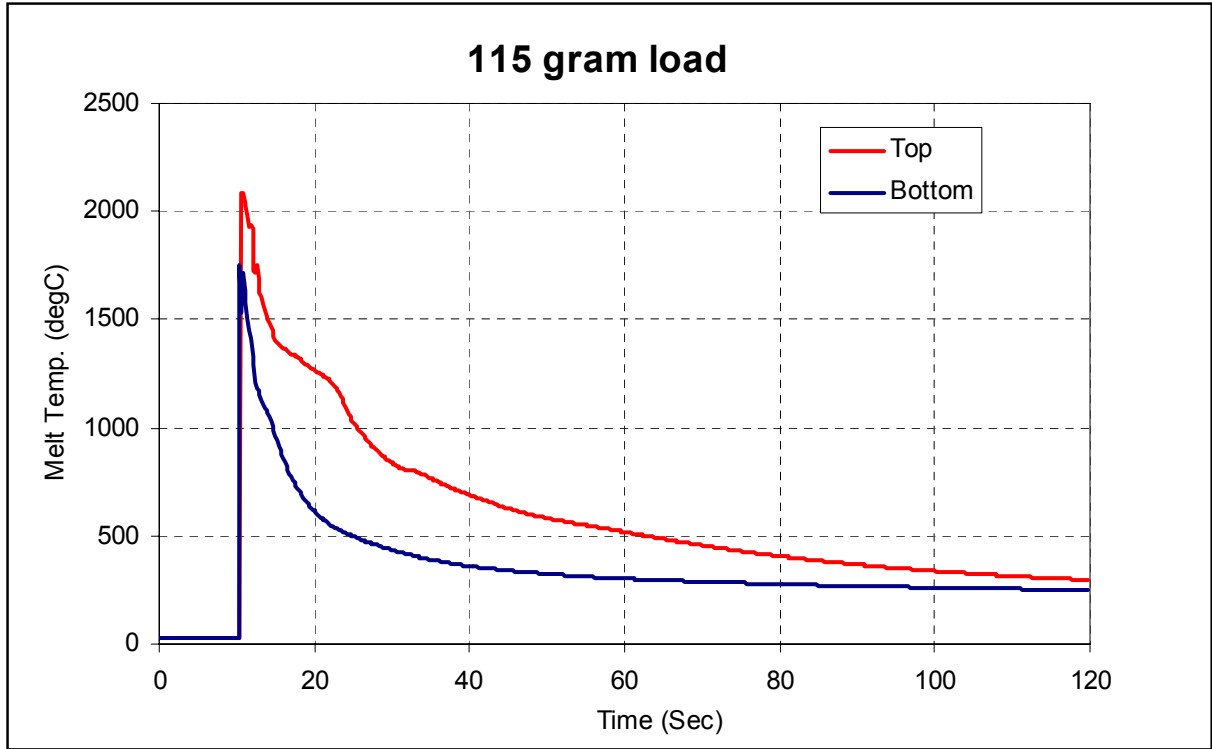
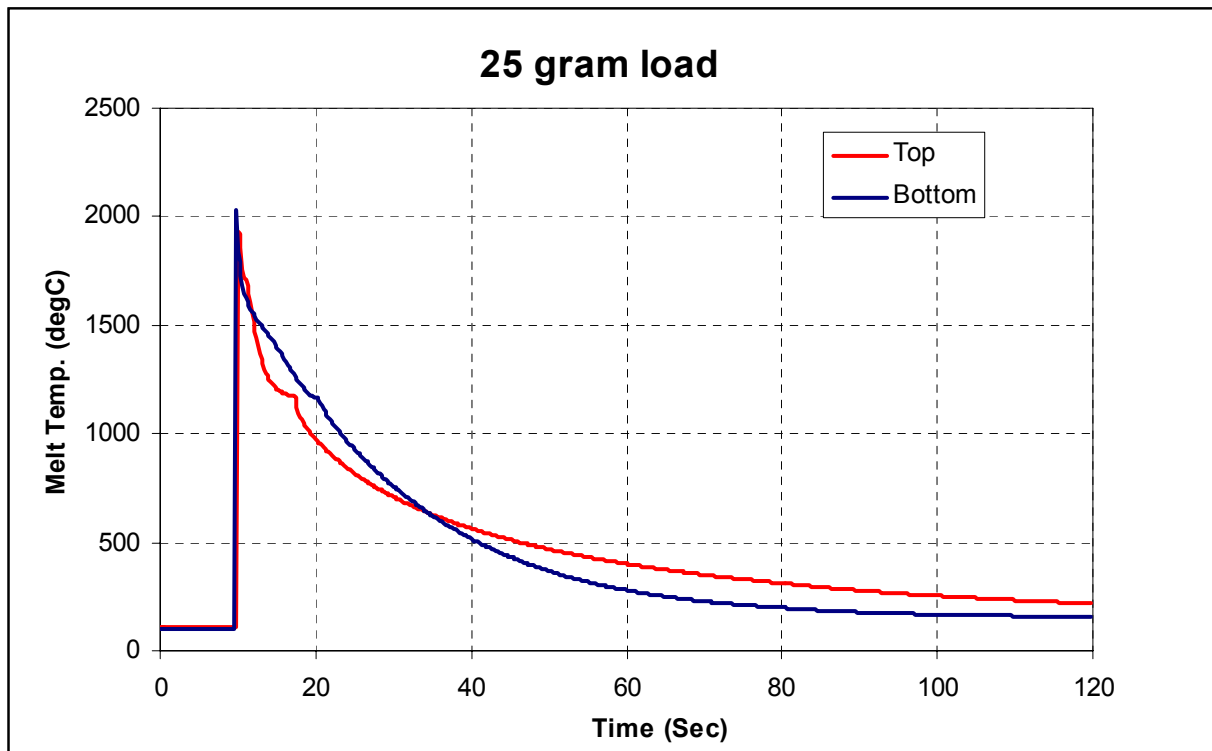


Fig 2. Thermocouples calibration against type K thermocouple



- Top section Max. Temp : 2085.1 °C  
 - Bottom section Max. Temp : 1711.5 °C

**Figure 3. Temperature response for 115-gram load.**



- Top section Max. Temp : 1918.7 °C  
 - Bottom section Max. Temp : 2031.3 °C

**Figure 4. Temperature response for 25-gram load.**