D.U.L Laboratories Ltd Test Report:

1.5M^3 Furnace Test on two Hoody fireproof acoustic covers in accordance with BS EN 1363-1:2020 and BS EN 1634-2:2020 Fire Resistance Tests, General Requirements.

Test Performed By:

D.U.L Laboratories Ltd.
DUL House, Barfrestone
Kent
CT15 7JG

Sponsor:

Hoody, Speaker Hoods Ltd.
2 Lakeview Stables Lower St.
Clere Kemsing
Sevenoaks
TN15 6NL

Test Report No: DUL-00091

Test Date: 05th of December 2023

Report Issued:

07/12/2023

Contents

Introduction/Summary

On 5th of December 2023, a fire resistance test took place on the roof of the 1.5 metre furnace, on behest of Hoody Speakers Hoods Ltd by D.U.L Laboratories Ltd. The criteria for this test were the integrity of the product, and so it was maintained until the customer deemed the integrity to be sufficient.

The fire resistance test was carried out in accordance with **BS EN 1363-1 2020: General requirements and BS EN 1364-2:2020 Fire resistance for tests for non-loadbearing elements**. The furnace pressure was set at 6 Pa and maintained within 0.1% for duration of the test.

The test was run for **107 minutes** and was stopped at the request of the sponsor, when the plasterboard cracked, and flames started penetrating through.

Results of this report relate only to the items tested and the specimen as received. Report may only be reproduced in full – Extract and abridgements of reports shall not be published – without with a written agreement with DUL Laboratories Ltd.

Component Tables:

Test Specimen Component List:

Item & Amount	Material	Size	Supplier
Hoody 1	Glass fabric	265mm x 160mm	Supplied by Sponsor
Hoody 2	Glass fabric	335mm x180mm	Supplied by Sponsor
C165 speaker	ABS plastic	265mm diameter	Supplied by the sponsor
C180 speaker	ABS plastic	335 mm diameter	Supplied by the sponsor

Wall Component List:

Item & Amount	Material	Size	Supplier
Timber joists	Wood	95x45	Intumescent System
2x fireline plasterboard	Gypsum	12.5 mm	Intumescent System
Acrylic mastic	N/A	N/A	Intumescent System
1 x O1	Paint	1 coat	Intumescent System
2 x EP CP	Paint	2 coats	Intumescent System

Test Frame and Supporting Construction

Construction of the specimen was built from 95mm x 45mm timber joists painted with one coat of O1. Two 12.5 mm fireline plasterboard panels, coated on the exposed side with two layers of EP CP, were attached at the bottom of the frame, and two holes were cut in the middle to accommodate the Hoodies.

Specimen

Specimen Installation

Two test specimens were placed in the cut-outs with diameters: Hoody 1 - 265 mm and Hoody 2 - 335mm, to do this the hoody was installed through the exposed face with the fitting clips sitting on the inner edge of the plasterboard. One of the supplied pins was used to secure the hoody to the plasterboard. An inverted hammer was used to ensure that the hoody was fully opened. The cable entry was done by making a small hole in the hood material under the flap on the side, in the event of a fire the flap expands and seals the area. A speaker was then placed in each of the cut outs, C165 in hoody 1 and C180 in hoody 2. The speakers were then screwed into place, using brackets. Once secured in place, the magnetic cover was placed over the rim of the speaker.

The Specimen Installation was carried out to: **BS EN 1363-1:2020**: Fire resistance tests, **Part 1: General requirements** under supervision of D.U.L Laboratories Ltd, in line with industry's standard.

Pre-conditioning and Environmental Conditions

None of the specimens required conditioning and were fitted onto the ceiling as supplied. Installation and immediate storage took place in following conditions:

Ambient temperature at start of the test	16ºC
Relative Humidity	50% +/- 10%

Specimen Selection and Verification

DUL Laboratories staff was not involved in specimen selection used for this test. Staff took no active role in selection of the specimen for testing, but verification of the product's construction took place. As such the product was given a go ahead with the test.

Test Preparation

Furnace Setup

Furnace used was 1.5M x 1.5M x 1.5M Cube Test Furnace stated to conform with Fire Testing requirements of BS 476 (20-23) EN1363-1, EN1364-1, EN1634-1, UL 263, Low temp Hydro-carbon curve without plate t/c, ASTM E119, UL 10b, ISO 3008, ISO3009 and ISO 834 Standards relating to fire resistance testing of elements of construction.

Furnace was set up to utilise 3 x bottom burners in horizontal configuration as per customer's request.

Pressure was maintained at 6 Pa as requested by the sponsor and in adherence with **BS EN 1363-1 2020: General requirements**.

Standards

During the fire test the lab adhered to the following: **BS EN 1363-1:2020**: **Fire resistance tests**, **Part 1: General requirements.**

Deviations & Justifications

1. Furnace was set up to utilise 3 x bottom burners in horizontal configuration.

Lab conditions at time of test:

Ambient temperature	16ºC
Relative Humidity	50% +/- 10%

Summary of Test Result:

The test was run for Product Development: Time of reaching criterion in accordance with the sponsors criteria, measured from start of the test: **107 minutes**, with the test having been **discontinued at the request of the sponsor, when the plasterboard cracked, and flames started penetrating through.**

Integrity (literally falls apart):	**Maintained up to end of test**
Gap Gauge (when gauge goes through):	**N/A**
Cotton Pad (when cotton goes dark):	**N/A**
Insulation (when thermocouple rises by 180C):	**The product was not tested to meet insulation criteria**
Test terminated:	**107 Min**

Limitations and Uncertainty

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge, or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

Revision History

None at time of writing.

List of Thermocouples

Thermocouple Nr.	Position
12	C180 speaker
13	C180 Hoody top
14	C180 Hoody side
15	C165 speaker
16	C165 Hoody Top
17	C165 Hoody side
18	Timber joist
19	Plasterboard

Observations

Time		All observations are from the unexposed face unless otherwise stated.
mins	**secs**	
00	00	Test start
01	36	Exposed face: Magnetic cover on C180 (Hoody 2) dropped
01	42	Exposed face: Magnetic cover on C165 (Hoody 1) dropped
02	20	Small amounts of smoke appearing from frame and Hoody's
04	37	Exposed face: C180 speaker (Hoody 2) dropped
05	27	Exposed face: C165 speaker (Hoody 1) dropped
11	50	Both Hoody's beginning to discolour and still smoking

19	00	Base of both Hoody's discoloured and still smoking
30	00	No significant visible changes – both Hoody's discoloured at the top and around the base, with small amounts of smoke
43	05	Smoke increasing from Hoody 2 – little to no smoke from Hoody 1
45	00	Steady smoke from Hoody 2
60	00	Both Hoody's blackened, with small amounts of smoking
64	00	Plasterboard around both Hoody's beginning to char
70	35	Charring spreading on plasterboard
75	00	Plasterboard and Hoody's charred and smoking
85	30	Glowing of the plasterboard
87	15	Plasterboard flaming
88	40	Flaming extinguished
91	00	Plasterboard flaming
102	00	Plasterboard beginning to collapse
107	00	Test stopped

APPENDIX A: Pre-Test Pictures

Hoody 2 - outside the furnace

Hoody 1 - outside the furnace

Speaker C165

Speaker C180

APPENDIX B: Post-Test Pictures

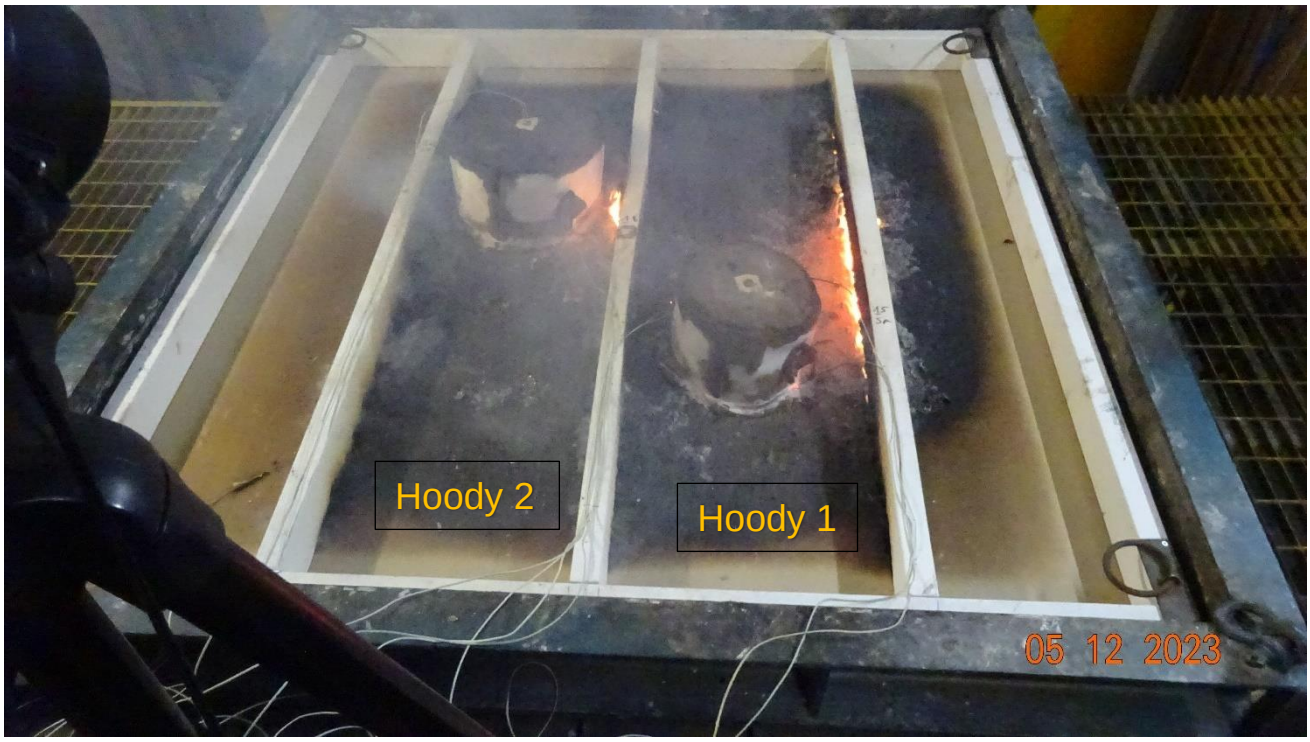


Image of unexposed face of specimen at 90 minutes

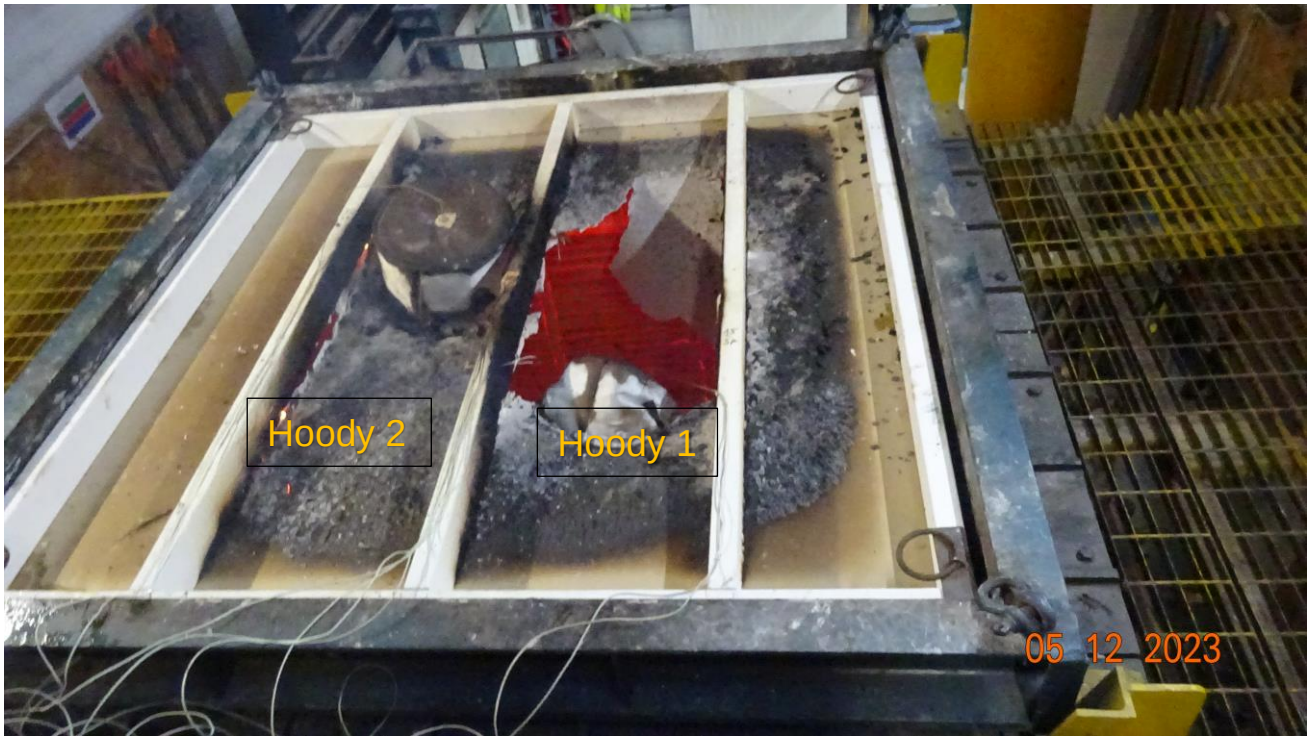
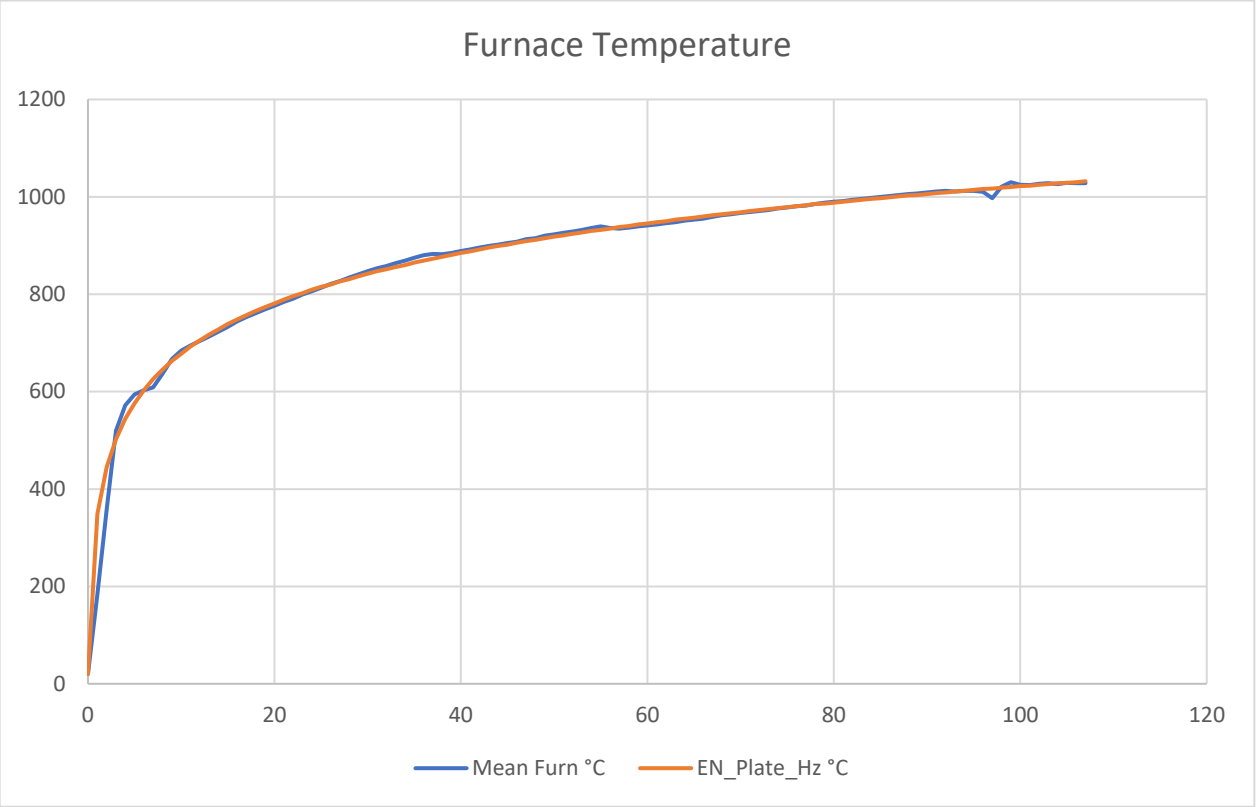


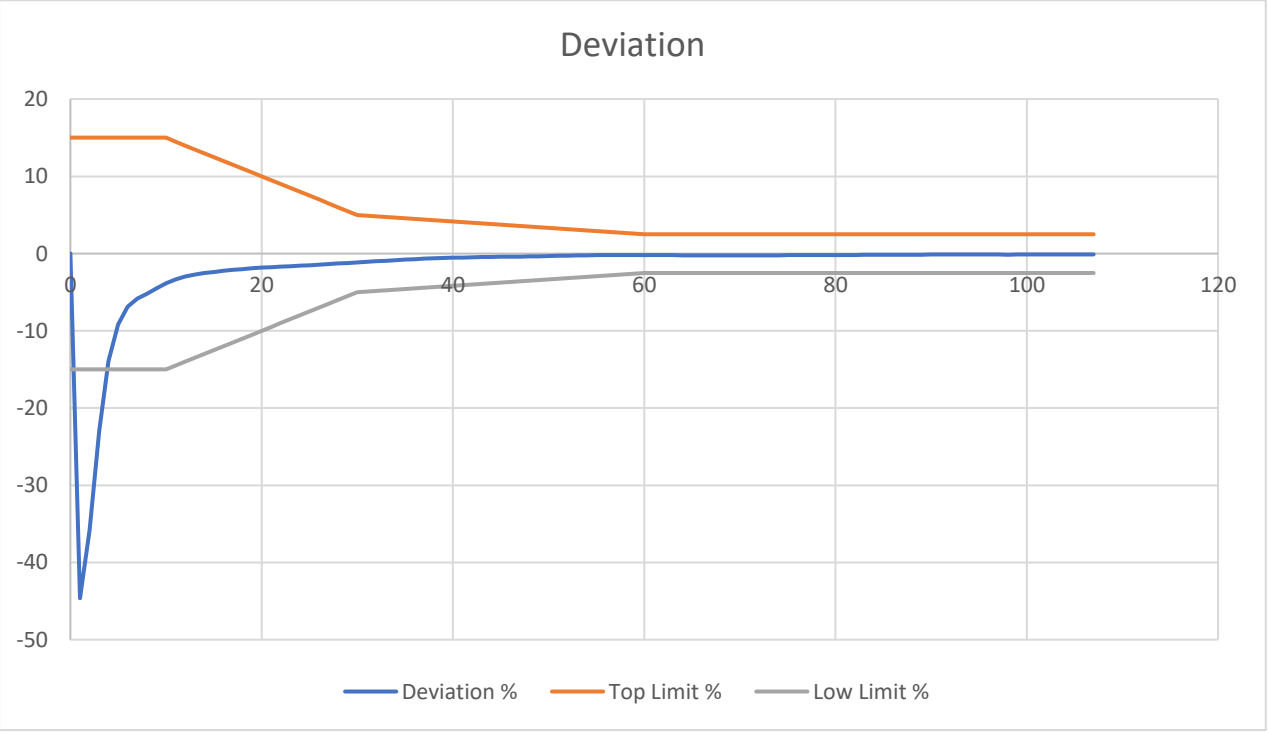
Image of unexposed face of specimen at 107 minutes (end of test)

APPENDIX C: Graphs

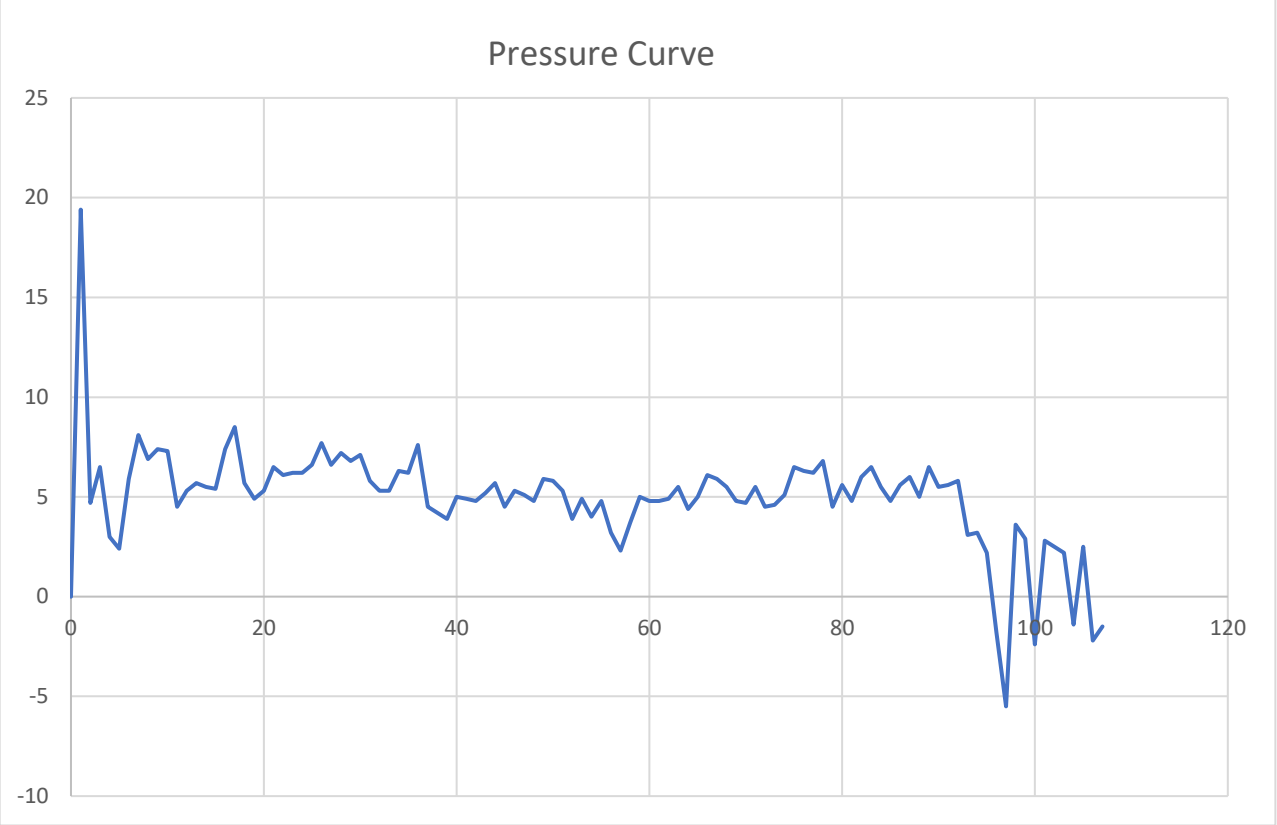
Furnace Temperature



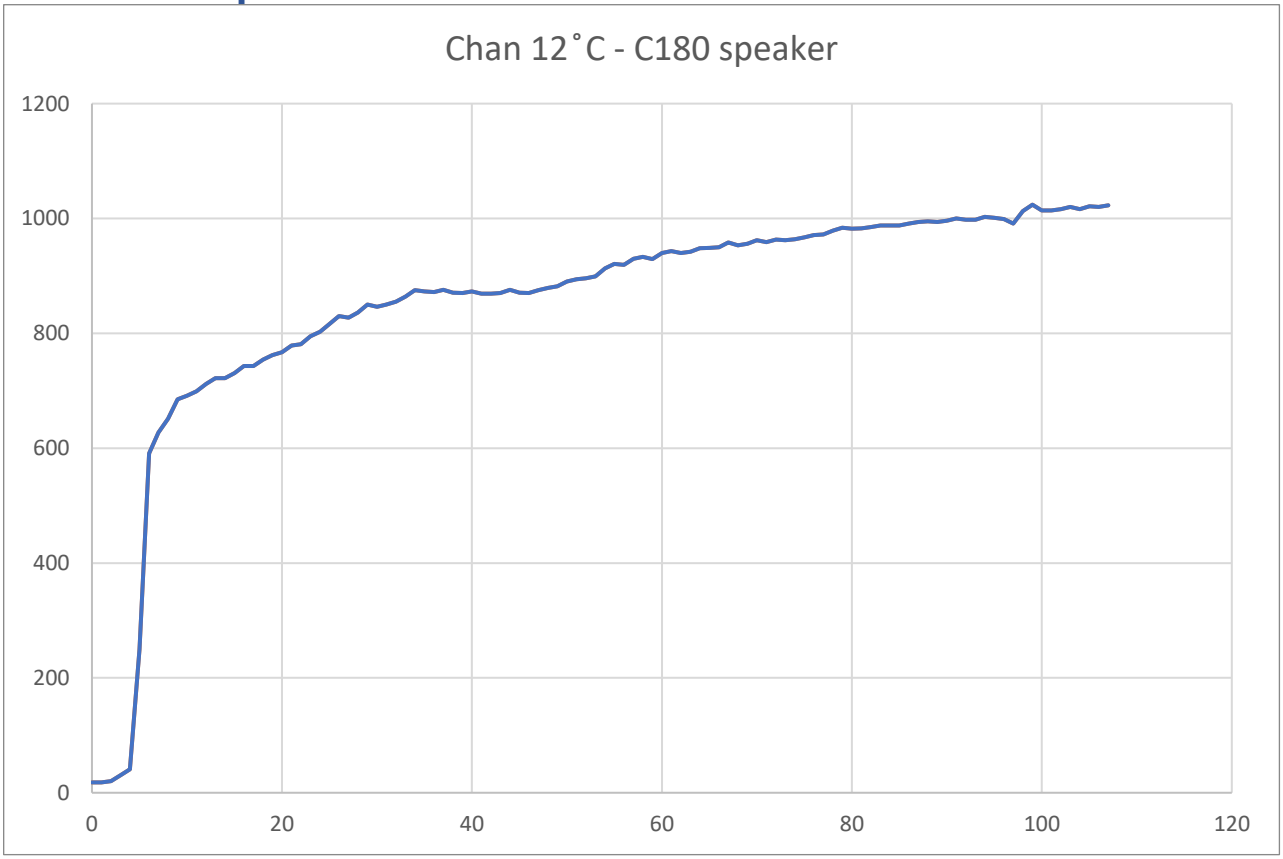
Deviation:



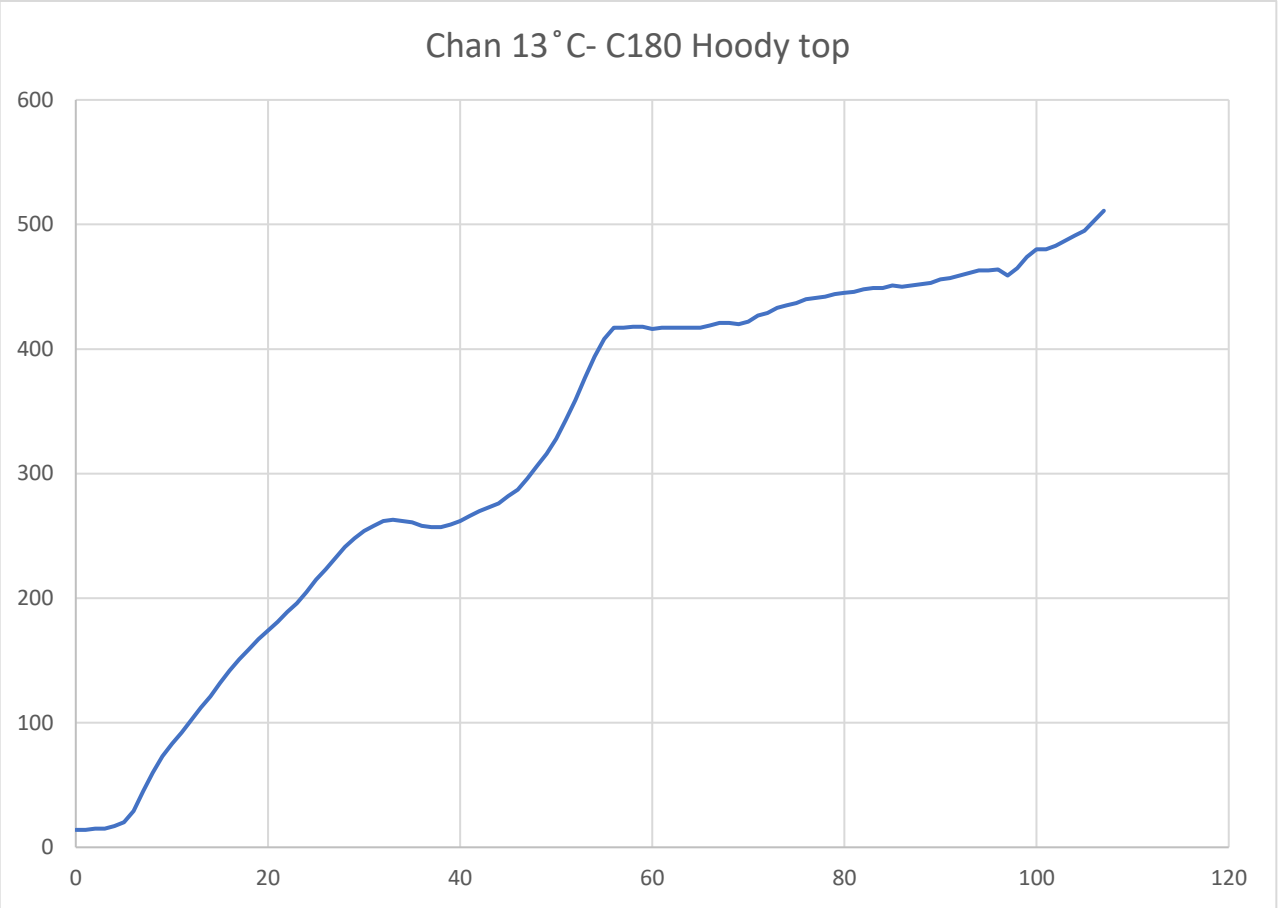
Pressure:



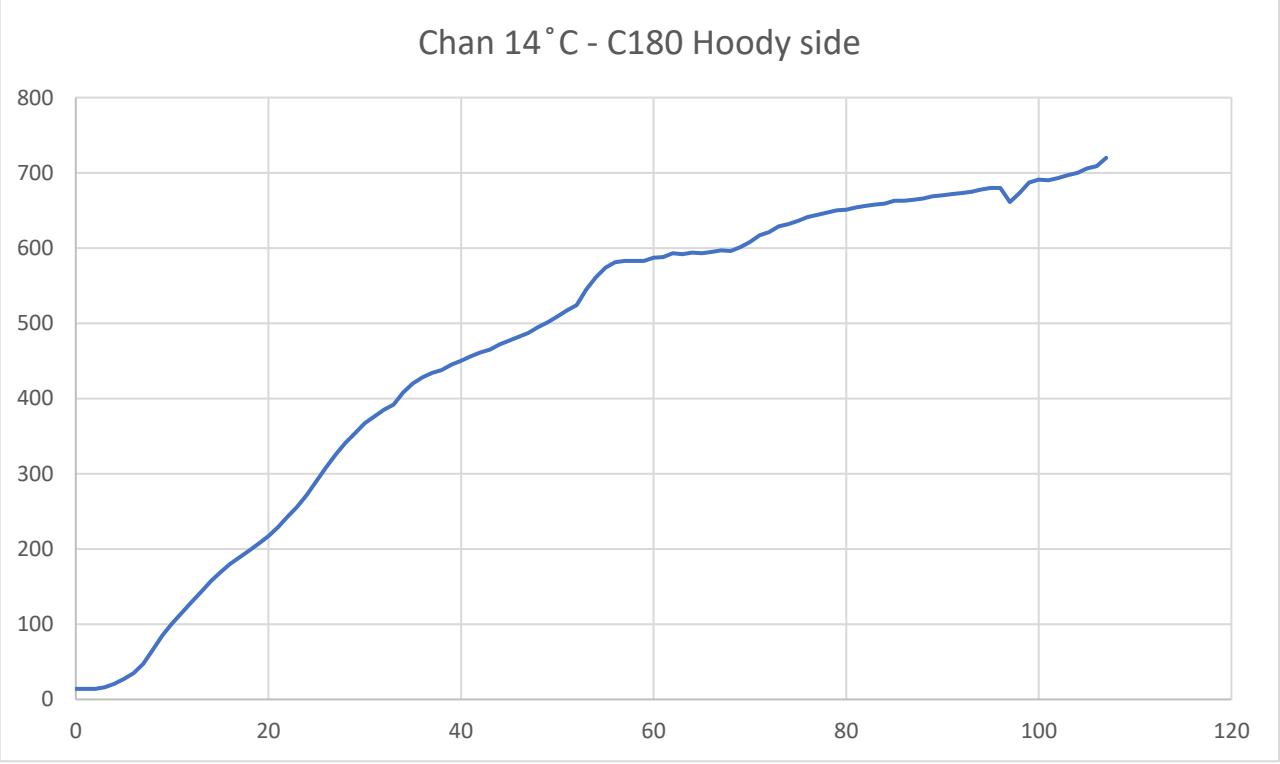
Thermocouple 12:



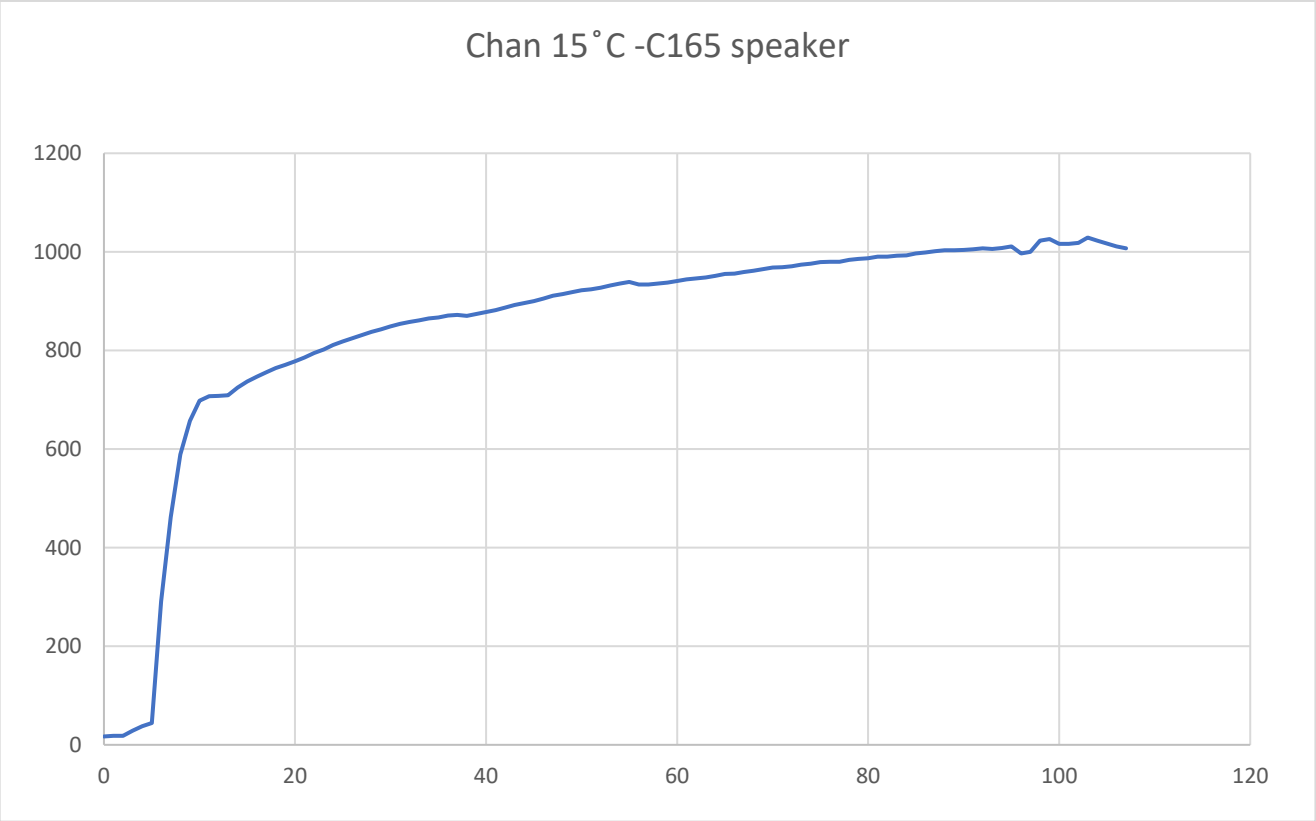
Thermocouple 13:



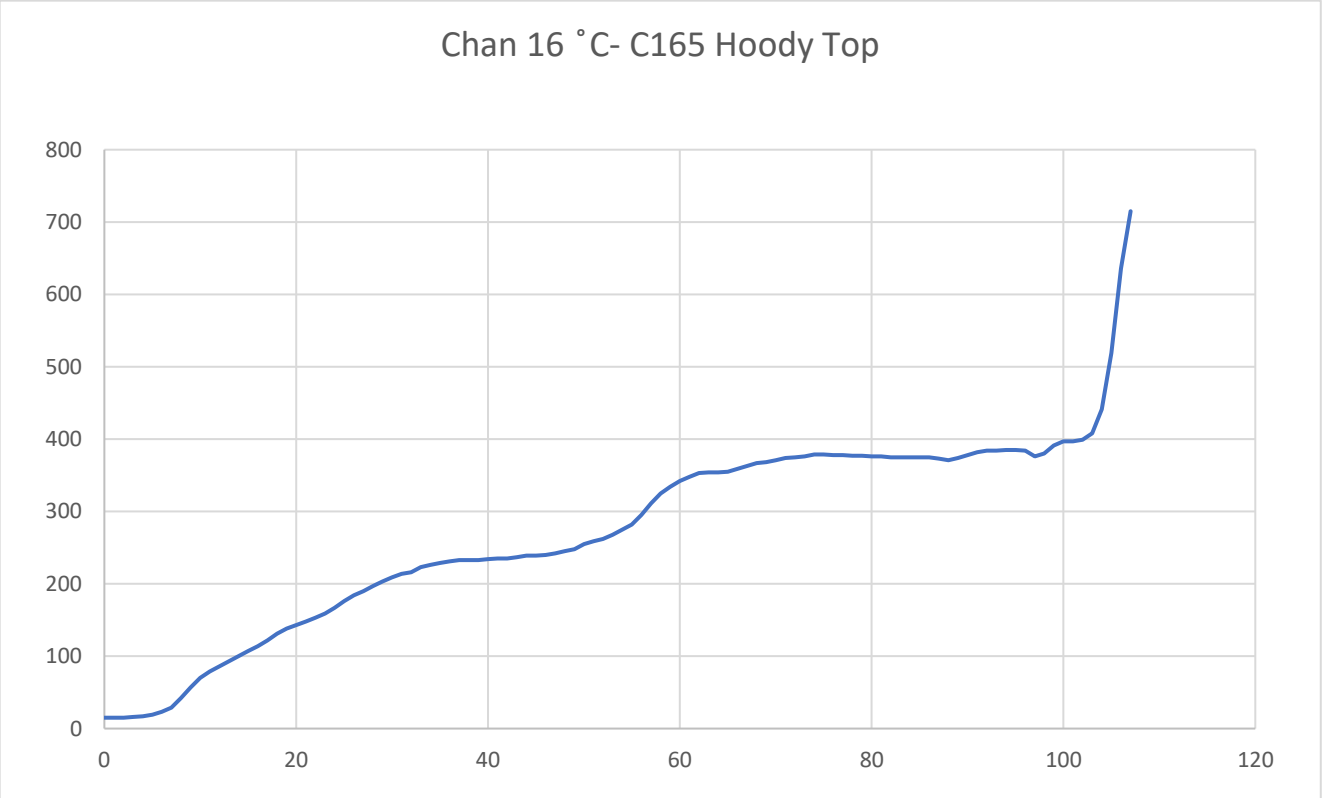
Thermocouple 14:



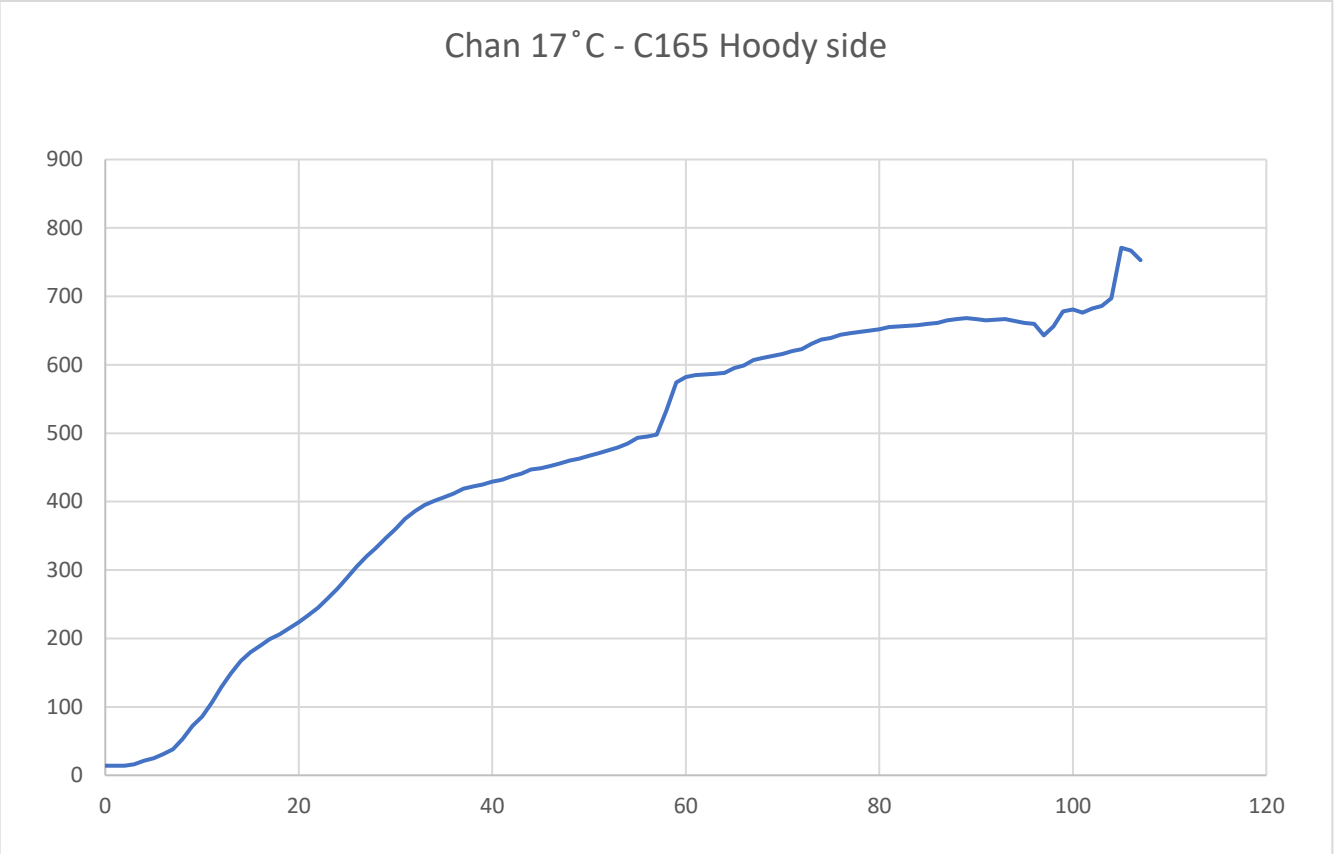
Thermocouple 15:



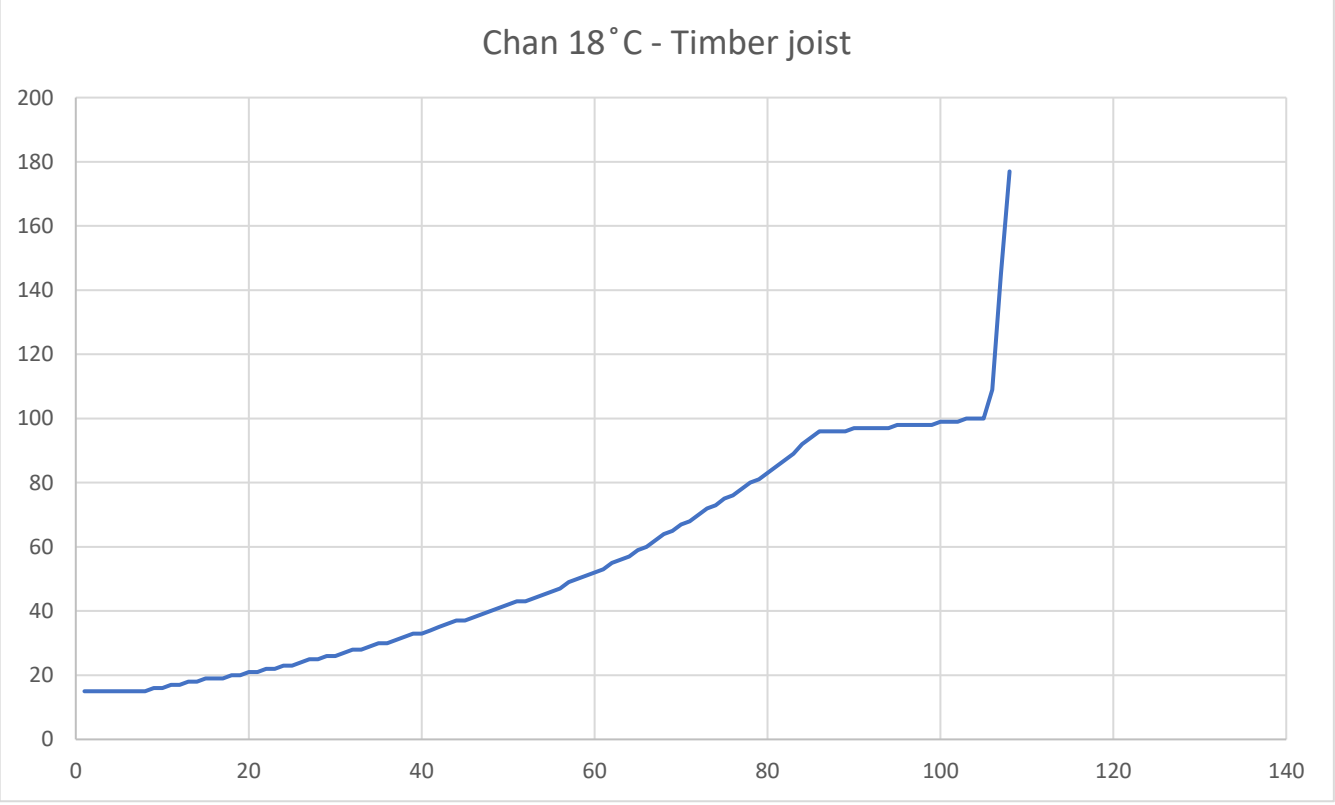
Thermocouple 16:



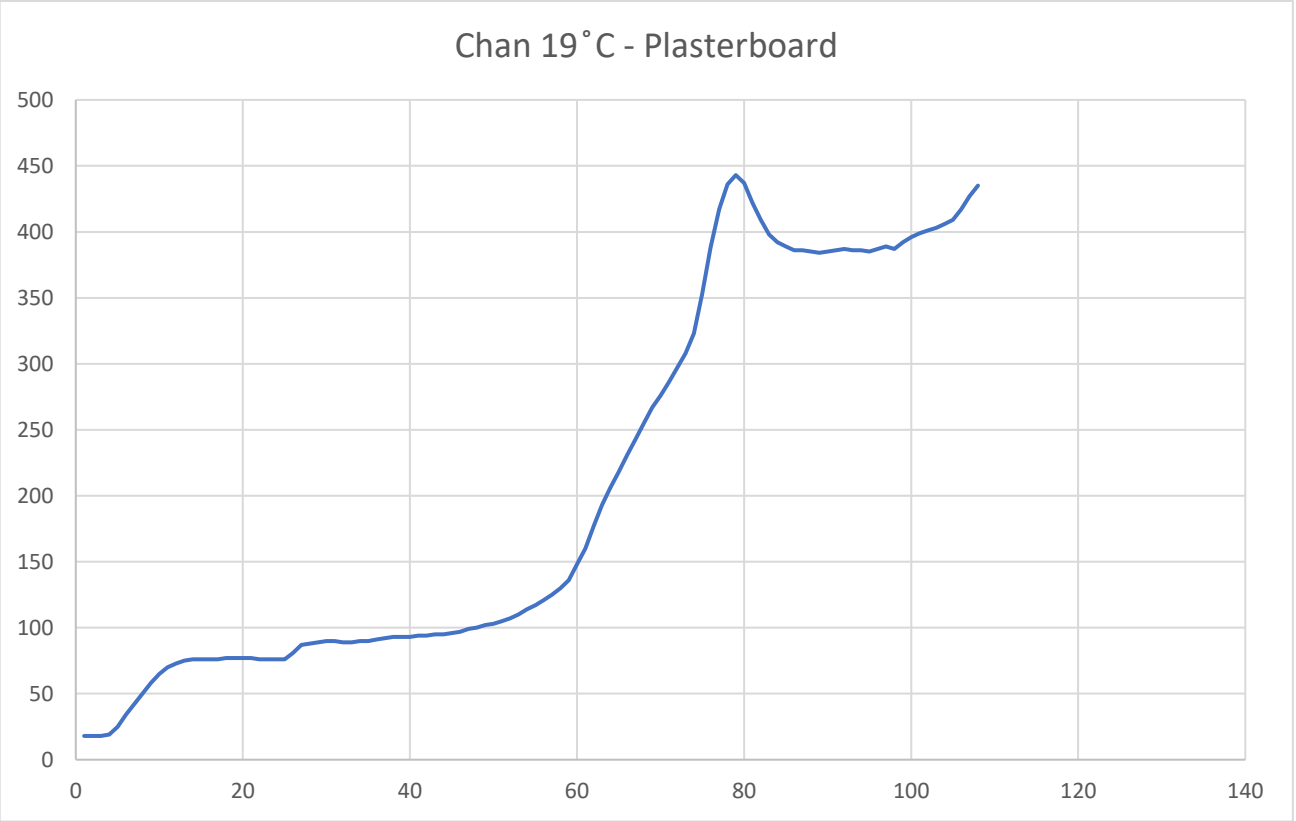
Thermocouple 17:



Thermocouple 18:



Thermocouple 19:



End of report