

Didak Injection  
M. Emiel Van Hemeldonck  
Industrieweg 1  
2280 Grobbendonk

**your reference**  
your reference

**our reference**  
21-2004 - Labtool S210142

**contact person**  
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Liège  
18/08/21

## Rapport

Dear Sir,

Following your analysis request, please find enclosed the test results.

We stay at your disposal for any complementary information.

Best regards,

F. Schoumaker  
Laboratory coordinator

M. Gasparini  
Laboratory manager

## Remarks

The here-above tests results may be published or communicated provided 'test realised in Sirris' is mentioned.



**TESTS REPORT**

**Ref: 21-2004**

**Company : Didak**

**CONCERNING : Determination of the material behaviour and ultimate operation temperatures of your parts**

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**Samples type:**

Receipt date: 2021/07/29

Client (identification) reference: production 2021 ( black part)

Complete part

Part cut by band saw in 2 parts



Sirris Reference: Idem

**Samples conditioning:**

According to the laboratory normal atmosphere: ISO 291

For the first tests Temperature: 23°C -Humidity: 50%

For the second test, the parts are placed in the freezer during 12 hours at -30°C before being placed in the climatic chamber at -40°C. They stay there for a minimum of 2 hours before being tested

**Analysis**

The tests are performed outside the standard. The aim is to define the ultimate loads supported by the uprights at room temperature and at -40°C

**Tests date**

07/29 Pre-testing : 08/2021/08/- 02 & 03

**Methodology**

Machine parameters

Machine Shimadzu AG-Xplus


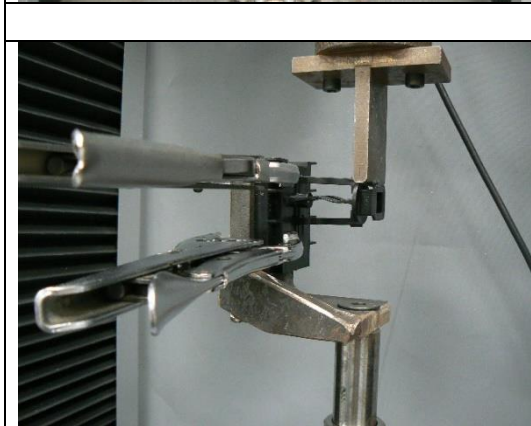
1kN capacity machine

Test speed : 25mm/min

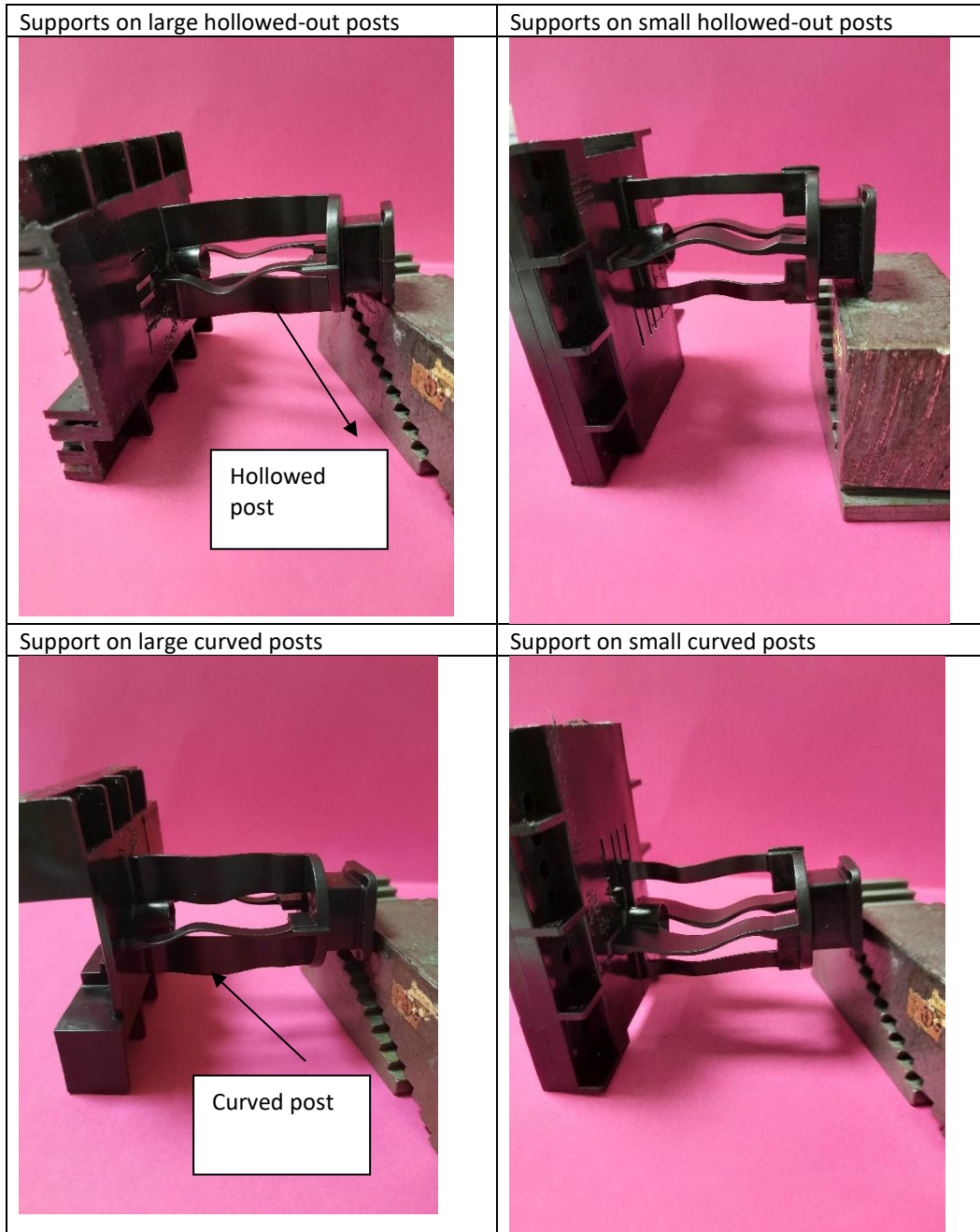
Load cell calibration certificate and the crosshead speed and displacement calibration certificates are valid and can be sent on request.

Machine and load cell : class 0.5

### **Machine mounting**

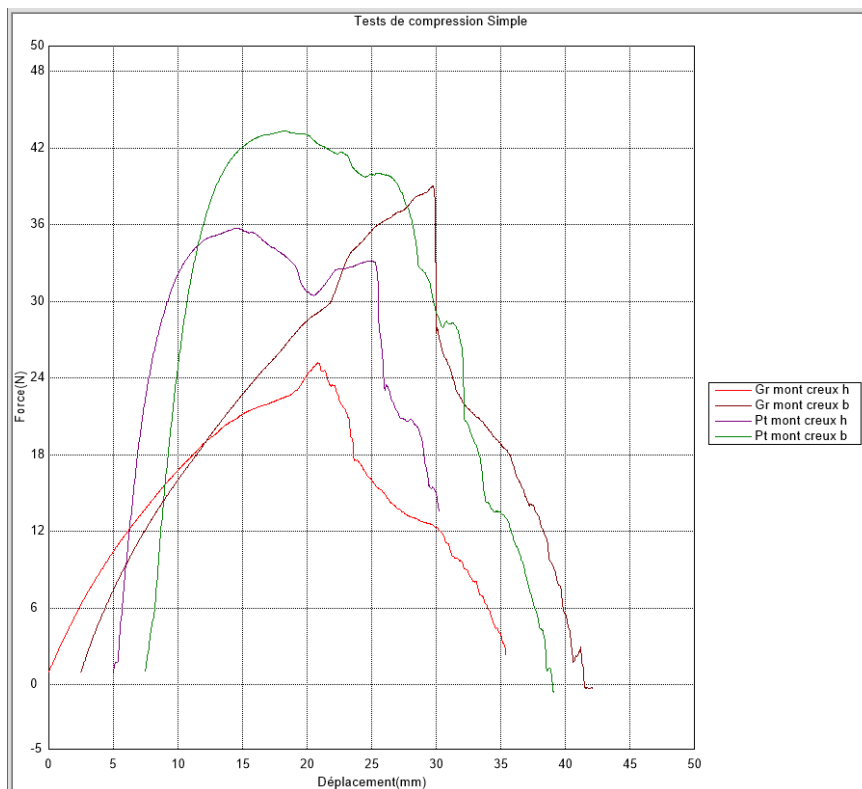
	<p>1<sup>er</sup> mounting :</p> <p>First tests with a grip clamp for locking the thermoplastic part</p>
	<p>Second mounting :</p> <p>Carrying out the tests with 2 grip clamps for more safety and to avoid twisting the test piece</p>

The tests were realized in four different positions in order to determine the least resistant direction of the part. The tests were carried out at 23°C.



**Results tests - determination of the direction for the tests**

Name	Load direction	Load N	Displacement mm
Large upper hollow post	work on small hollowed posts	25.18	20.89
Large hollowed bottom post	Work on small curved posts	39.03	27.3
Large upper hollowed post	Work on large curved posts	35.71	9.55
small hollowed bottom post	Work on large hollowed posts	43.31	10.81



In view of the results it was decided to work on the large and small amounts in the direction of the lowest results.

Five samples will be taken per temperature and per amount in order to establish an average and a suitable percentage of variation.

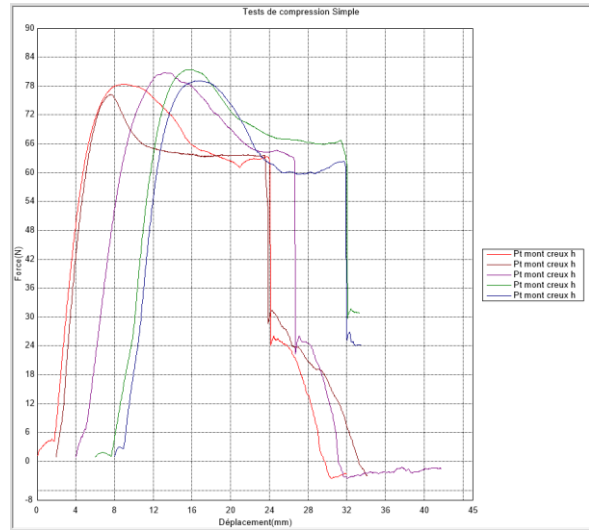
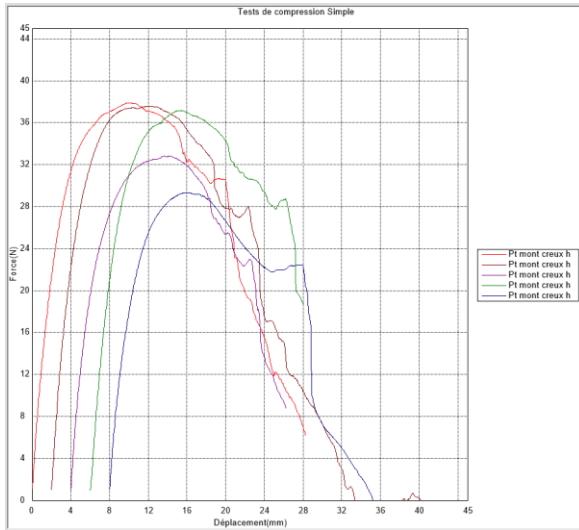
**Tests Result**

**Small hollow upright high: Work on large curved uprights.**

**Tests at 23°C**

**Tests at -40°C**

Part	Load N	Displacement mm	Part	Load N	Displacement mm
1	37.88	10.00	1	78.37	9.04
2	37.58	10.26	2	76.20	5.59
3	32.80	10.29	3	80.76	9.21
4	37.16	9.42	4	81.35	9.64
5	29.31	7.92	5	79.02	8.76
<b>Average</b>	<b>34.95</b>	<b>9.58</b>	<b>Average</b>	<b>79.14</b>	<b>8.45</b>
<b>Standt dev.</b>	<b>3.77</b>	<b>0.99</b>	<b>Standt dev.</b>	<b>2.05</b>	<b>1.63</b>
<b>Variation</b>	<b>11%</b>	<b>10%</b>	<b>Variation</b>	<b>3%</b>	<b>19%</b>

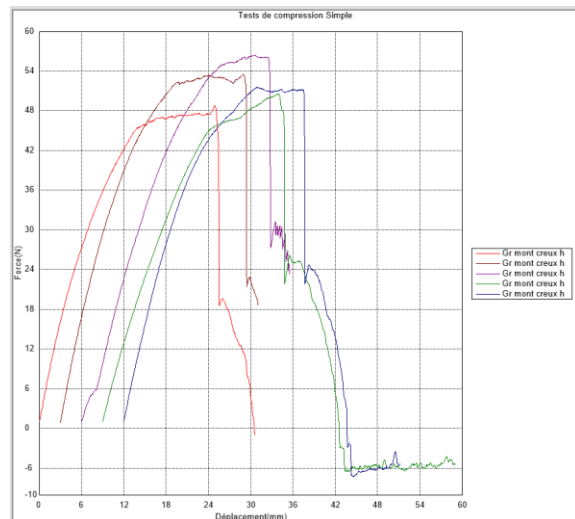
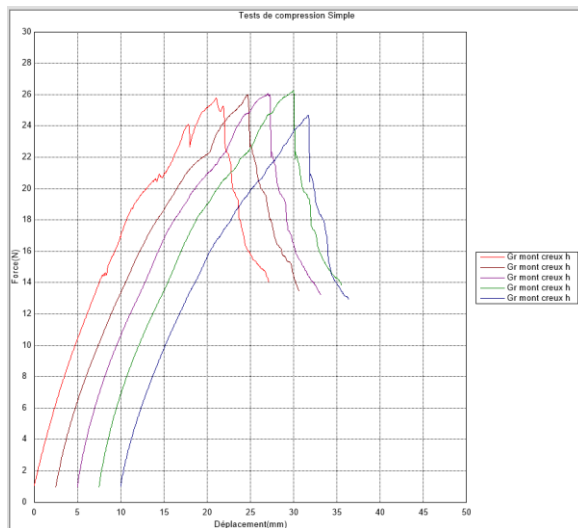


**Large hollow post high: Work on small hollow posts.**

**Tests at 23°C**

**Tests at -40°C**

Part	Load N	Displacement mm	Part	Load N	Displacement mm
1	25.78	21.10	1	47.65	22.70
2	25.97	22.21	2	53.37	21.08
3	26.06	22.08	3	56.40	24.52
4	26.25	22.50	4	50.55	24.98
5	24.68	21.72	5	51.56	18.90
<b>Average</b>	25.75	21.92	<b>Average</b>	51.91	22.44
<b>Standt dev.</b>	0.62	0.54	<b>Standt dev.</b>	3.26	2.51
<b>Variation</b>	2%	2%	<b>Variation</b>	6%	11%



Conclusion: No failure of the posts at 23°C but also at -40°C. The part is still very flexible and therefore there is little or no risk of failure of the posts, even at -40°C and when the part returns to room temperature it tends to return to its original shape.

We carried out a quick and outside of standard test, which consisted of putting the parts in a freezer at -20°C for one night. We then dropped the pieces on the floor from a height of about 1.5m and several times, none of the pieces were damaged during this test.

We then carried out torsion tests manually on the posts and depending on certain manipulations we broke or damaged the uprights.

We therefore advise you to note in your data sheet that the parts will be weakened when handled at temperatures below 0°C.

**Remark:** Test results are valid only the tested samples as received