



**LABORATORIO UFFICIALE PER LE ESPERIENZE
SUI MATERIALI DA COSTRUZIONE**

INTERDEPARTMENT CENTRE OF THE UNIVERSITY OF PISA

Test Report

N° 55/16

Pp. N° 57684/2

Pisa, 08/07/2016

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Results of the tensile tests carried out on nine samples declared by the Applicant as:

“Security seals for goods’ transport - type CABLE SEAL 2,5 x 200 mm”.

Applicant: LEGHORNGROUP S.r.l, via degli Arrotini, 34/36 – 57121 Livorno (LI).

Order letter received on: 09/05/2016

Material received in the Laboratory on: 09/05/2016.

1 INTRODUCTION

The tensile tests on samples were carried out in this Laboratory on the dates indicated in Table 1. The following tests were conducted as per the indications given by the Applicant:

- tensile test on three samples as provided by the applicant;
- tensile test on three samples previously maintained for 24 hours at a temperature of +60°C;
- tensile test on three samples previously maintained for 24 hours at a temperature of -30°C.

Figure 1 shows the sample as provided by the applicant.

2 TEST PROCEDURES AND INSTRUMENT SET-UP

The test aims at evaluating the maximum load for the sample in his operational condition.

Each sample was closed and subsequently placed between two annular elements connected to the test machine. The rate of increase of the distance between the annular elements was set equal to 20 mm / min.

The load was applied to the sample by means of an universal testing device INSTRON 1186, with maximum load capability of 200 kN, adopting the full scale equal to 10 kN. Such load was measured by means of the load cell included in the universal testing device with full scale equal to 10 kN.

Figure 2a shows the testing device, while Figure 2b shows the force measuring system.

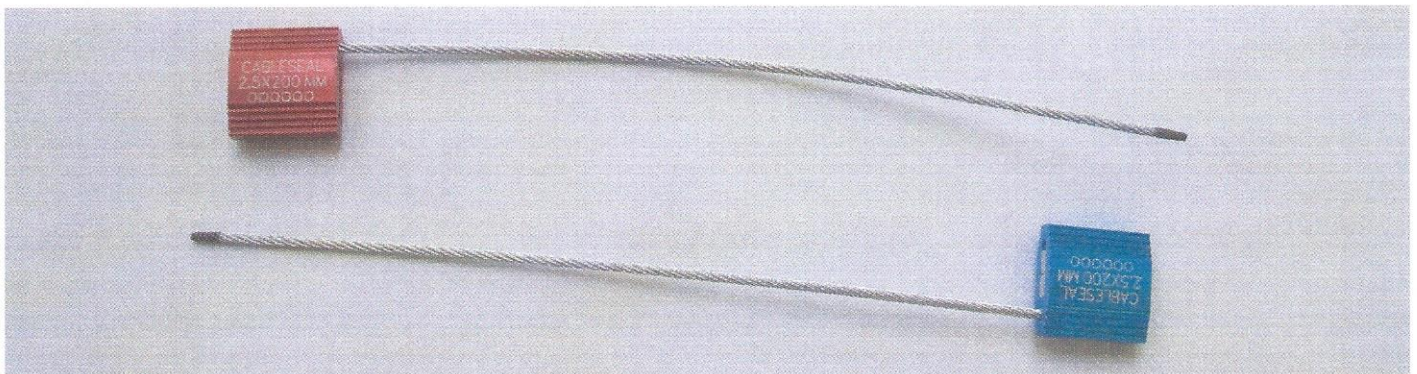


Figure 1. Test sample “Security seals for goods’ transport - type CABLE SEAL 2,5 x 200 mm”

EXPERIMENTER
Giuseppe Cheloni, PhD

HEAD OF LABORATORY
Prof. Stefano Bennati.

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Prof. Riccardo Barsotti



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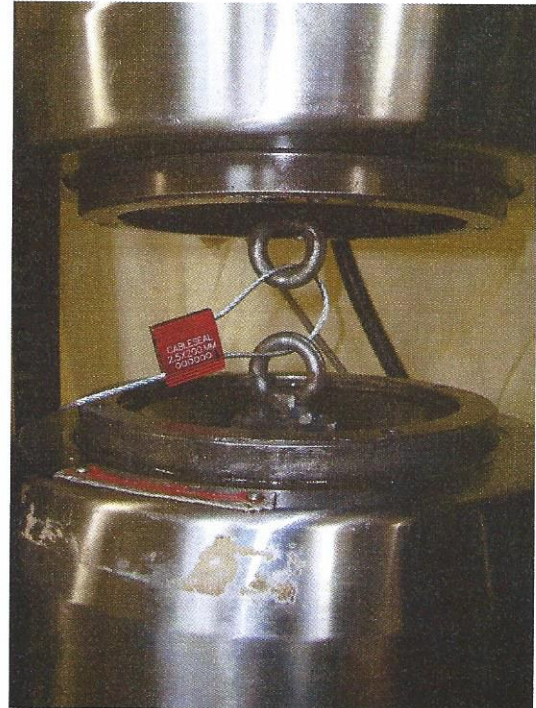
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a)



b)

Figure 2. a) the testing device; b) the force measuring system.

3 TEST RESULTS

Table 1 presents the tests' main information and results for each sample: the markings, the maximum load (in N) and the room temperature at which the tests were executed, along with the date and type of test. Figure 3 shows the samples condition after the test.

Table 1. Tests' main information and test results.

Sample #	Mark	Ultimate load [N]	Air Temperature [°C]	Test Date	Sample condition
1	CABLE SEAL 2,5 x 200 mm	5744	18	25/05/16	samples as provided by the applicant
2	CABLE SEAL 2,5 x 200 mm	6118			
3	CABLE SEAL 2,5 x 200 mm	6077			
4	CABLE SEAL 2,5 x 200 mm	5223	18	25/05/16	samples previously maintained for 24 hours at a temp. of +60°C
5	CABLE SEAL 2,5 x 200 mm	6394			
6	CABLE SEAL 2,5 x 200 mm	6763			
7	CABLE SEAL 2,5 x 200 mm	6109	18	25/05/16	samples previously maintained for 24 hours at a temp. of -30°C.
8	CABLE SEAL 2,5 x 200 mm	5317			
9	CABLE SEAL 2,5 x 200 mm	5873			

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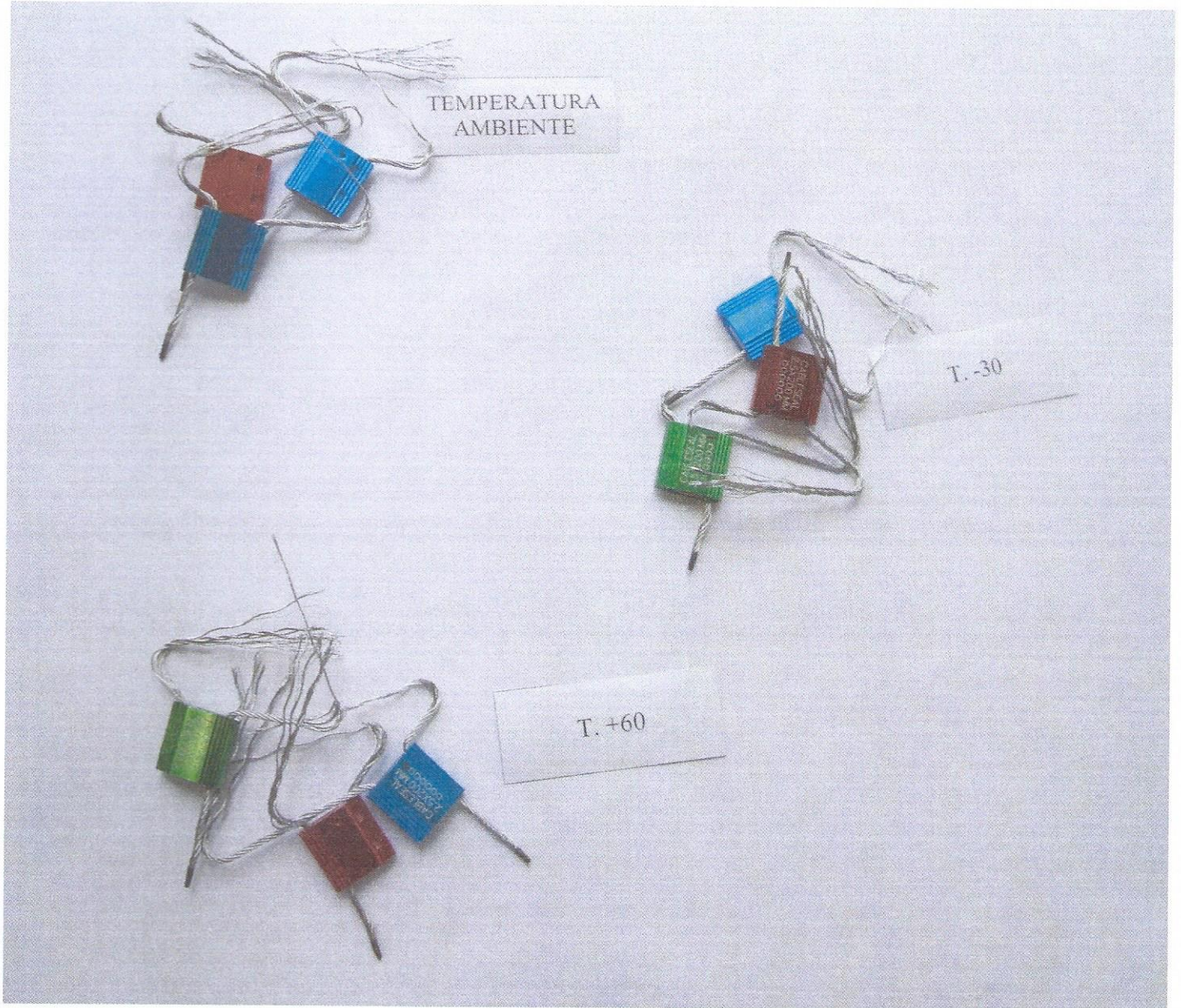


Figure 3. Samples condition after the tensile test.

Experimental tests were carried out by : Geom. Mirko DONATI, Giuseppe CHELLINI, PhD.

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