- TABLE 3 -

- CHEMICAL ANALYSIS OF THE SAMPLES -

SAMPLES	Bi	Tl	Ba	Sn	Fe
TOTAL PURITY	96,5 %	99,99%	99,2%	99,9 %	99,8 %
Impurities					
Li			< 10		
Na			100	< 10	< 25
Mg	10 à 50	< 10	400	25	< 50
Al	< 50	< 10	300	< 50	< 25
Si	Traces	< 50	80	200	80
K			< 10	< 10	< 10
Ca	< 100		0,1%	< 50	< 50
Ti	< 100		< 100		
Cr	< 50				< 50
Mn	< 25		250		230
Fe	< 50	< 10	< 50	< 50	---
Co					< 10
Ni	< 100		< 100		350
Cu		< 10	< 50	< 50	
Zn			< 200		< 100
As					Traces
Sr			0,5%		
Zr					Traces
Mo	< 250			< 250	800
Ag	< 10				< 10
Cd		< 10			
Sn	1000 à 2000		< 50	---	< 50
Pb	1 à 1,5%	< 10	< 50		< 50

III - EXPERIMENTAL RESULTS.

Fifty runs have been carried out under those conditions, among which the Fe transition was obtained 3 times, the Sn transition 10 times and the Bi 3 - 5 transition 20 times. A typical resistance recording is shown on figure 4. The displacement of the pistons, as measured during each run, has the shape which is shown on figure 5. The lower part corresponds to the extrusion of the gaskets without much increase in the pressure, where as the upper part corresponds to the real compression of the cell. Calibration curves, based on the B scale (table 2), are shown on figure 6 for two different die diameters. It is to be noted that the lower part is approximately a straight line which goes through the origin of coordinates.

From those experimental results, two types of extrapolations have been made to get the transition pressures of Bi 3 - 5, Sn and Fe.

The first one is a simple linear extrapolation. The second one makes use of an analytical function. The piston displacement recordings give a clue as to the kind of function which is to be chosen. When plotted on a semilogarithmic scale those recordings are quite linear in their upper portion. (Fig. 7) With a slope thus the piston displacement $\mathcal{E}$ can be expressed as :

$$\mathcal{E} = \mathcal{E}_o \; e^{-F/K}$$

Where $\mathcal{E}_o$ is a constant
F is the load.

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