



Fig. 2. Calibration curve in pressures, for chamber built to take 100 kbar.

The chamber 6 depicted in Fig. 1 was made of U-8 grade steel, tempered to Rc = 48 to 50. The liner 4 was made of U-10 grade steel, tempered to Rc = 60 to 62. The plungers were made of U-10 grade steel, tempered to Rc = 58 to 60. The outer support 7 of the chamber 6, as well as the supports of the pistons 8, were made of 45KhNMFA steel, with subsequent tempering to Rc = 45 to 48.

As the investigations showed, the chamber is capable of withstanding pressures to 100 kbar, and can be used repeatedly, with no changes of any consequence in the accuracy of the pressure measurements.

Pressure calibration of the chamber, i.e., correlation of the pressures within the chamber to the loads on the press plunger, was carried out in terms of the polymorphic transitions in Bi, Tl, and Ba, corresponding to 25.4, 27.0, 36.7, 59.6, and 89.0 kbar. Results of the calibrations (Fig. 2) as processed by the method of least squares showed that the rms error in pressure measurements did not exceed $\pm 6\%$ up to pressures of 100 kbar. All of the chambers are intended for optical investigations, and were provided with side cylindrical viewing ports, steps widening out from the center to the periphery ϕ 0.8, 1.5, 3.0, 5.0, and 12.0 mm at the respective heights 4.5, 5.0, 5.0, 5.0, 5.0, and 10 mm. The ports were filled with crystalline NaCl. This chamber, like its precursors, can be used for investigations of other processes occurring at high pressures and high temperatures.

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