LAMP-BLACK AS RAW MATERIAL FOR CARBON PRODUCTS

The consumer of raw material demands that the quality of such raw material remains unchanged from shipment to shipment. Needless to say that not all properties of the raw material are of importance, but only those which may affect its conduct during production and the quality of the product made therefrom. We have tried to set up parameters for lamp-black which will correlate with its conduct during production.

The deviation of normal analysis-values such as: humidity, volatile matters, ash as well as methylene blue adsorption, was not found very useful. The standard deviation of the specific surface, according to the method of B.R.Puri and R.C.Bansal (1), amounted to + 10% during a six months period. A correlation to the amount of binder required for lamp-black mixtures could not be found. The fluidity of mixtures showed that only a fraction of the surface is wetted.

It was possible to define the required amount of binder with a sufficiently high accuracy according to a modified method after Blaine (2). The standard deviation amounted to $\pm$ 7,5% (Fig.1). A sensitive method to ascertain variations is the measurement of specific electrical resistance (3). Plotting logarithmically the electrical resistance against the packing-density, we get two straight lines of different slopes (Fig.2). The first slope is fixed by the particle size and distribution. The steeper the slope, the smaller the necessary amount of binder. The shear strength of lamp-black is defined by the second slope.

The modified Blaine method and the specific electrical resistance measurement are suitable for ascertaining quite reliably the deviation of lamp-black for the prognosis of the amount of binder required.

(1) B.R.Puri, R.C.Bansal, Carbon 3 (1965) 227

(2) C. Orr, J.M. Dallavalle, Fine Particle Measurement, New York, 1959, p. 142

(3) S. Mrozowski, Proc. 3rd Carbon Conf., Pergamon Press 1959, p. 495

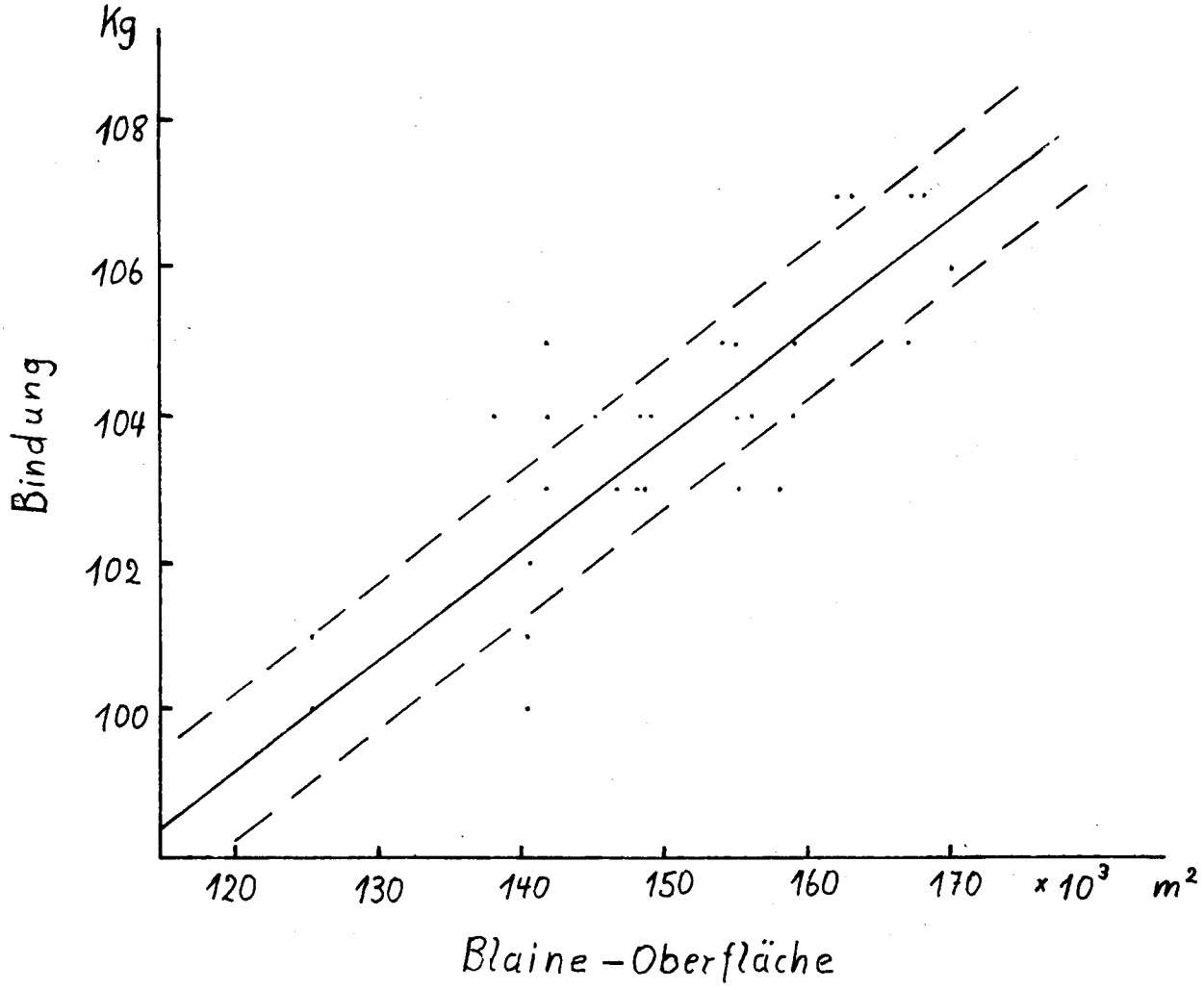
Kg
108
106
104
102
100
Bindung
120
130
140
150
160
170
x 10³ m²
Blaine-Oberfläche

Fig. 1

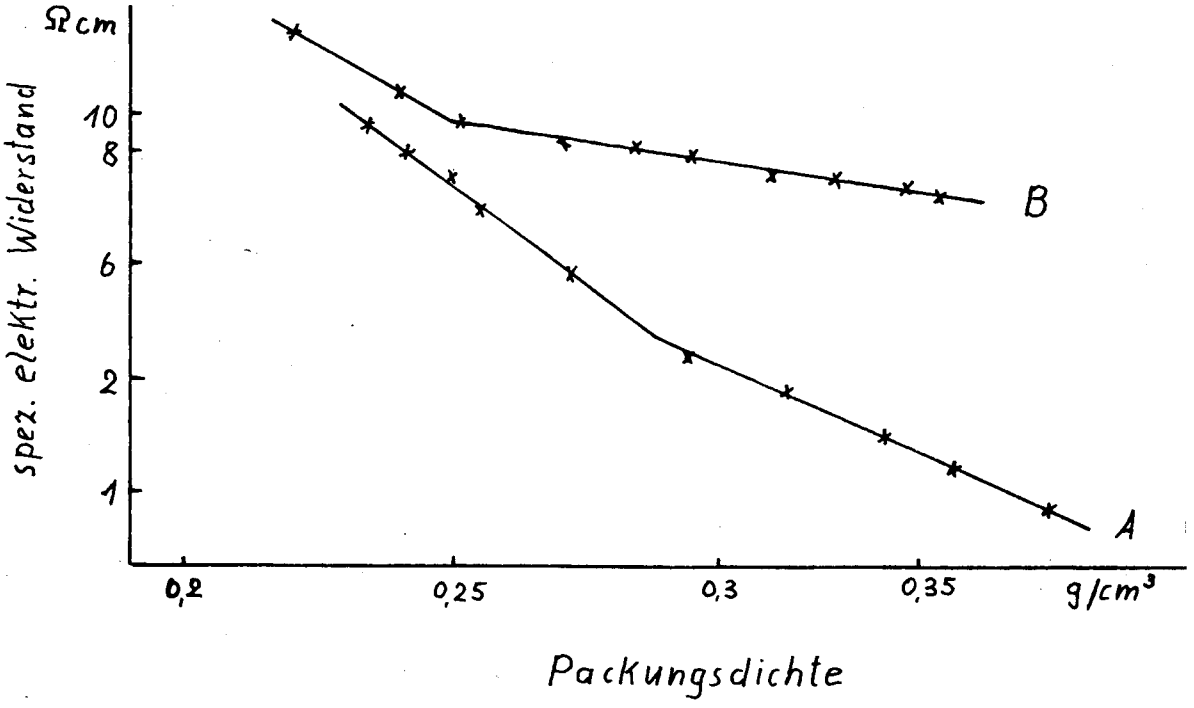
Ωcm
10
8
6
2
1
spez. elektr. Widerstand
B
A
0,2
0,25
0,3
0,35
g/cm³
Packungsdichte

Fig. 2