

σ ,

[9].

[10].

-6

-6 (-6)

3200 / ,

~ 4,2

0,67

()

().

1173

Retsch PM 100

400 /

5

-6

373

-6/

-6/

SYZS-10P (

)

(

488, 498, 508

518 ,

)

35 / .

1, 3, 5, 7 10 . %.

Ray-Ran Test Equipment LTD (

)

543

373 .

(14236-81).

1-7000

Gotech

Gotech Testing Machines Inc. () .

293±3

10 / .

[9]

(

σ)

$$\sigma = \sigma (1 - \varphi^{2/3}), \tag{1}$$

σ -

[11]

$$\varphi = \left[1 + \left(\frac{\rho}{\rho} \right) \left(\frac{1-W}{W} \right) \right]^{-1}, \tag{2}$$

$\frac{\rho}{2200} \frac{\rho -}{/ 3}$ [12], W -

1140

(1)

(1)

σ

σ

[10] $\Delta d_f,$

$$\Delta d_f = d_f - d_n, \tag{3}$$

$d_f - d_n -$

Δd_f

Δd_f

[10]

$$\chi = 0,02 + 1,07(\Delta d_f)^3, \tag{4}$$

$\chi -$

[13]

$$\frac{\sigma}{\chi} = 1 + 11 \left(\frac{\phi}{\chi} \right)^{1,7}, \tag{5}$$

).

(1) Δd_f

,

,

,

[10], Δd_f

/

Δd_f

0,59-1,16, Δd_f

(1) Δd_f

0,57-1,02.

(1) Δd_f

$$\sigma = \sigma (1 - \Delta d_f \phi^{2/3}). \tag{6}$$

. 1 (6)

σ ϕ

-6/ -6/ .

(σ ϕ),

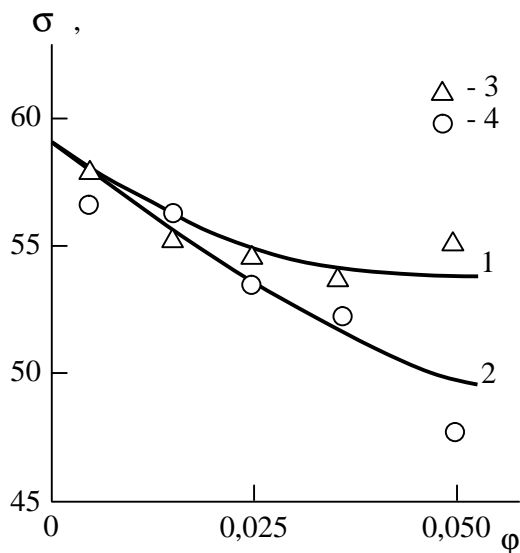
(5 %).

Δd_f

/ [10] σ (6).

Δd_f

(1).



. 1.

(3, 4)

(4) (6) (1, 2)

σ

ϕ

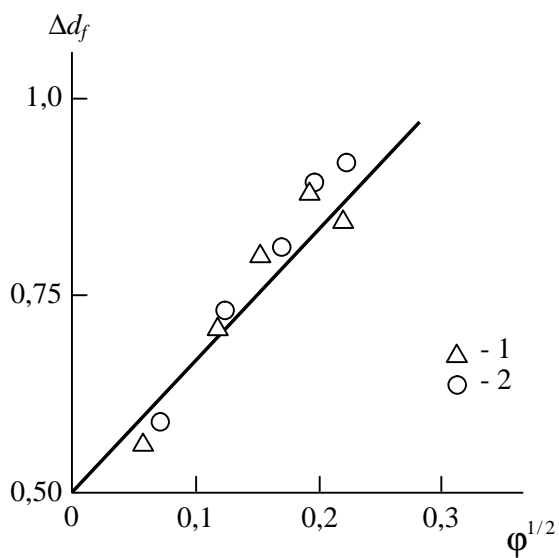
-6/ (1, 3) -6/ (2, 4)

Δd_f

$\Delta d_f(\phi^{1/2})$

. 2

$$\Delta d_f = 0,5 + 1,95\phi^{1/2} \quad (7)$$



. 2.

ϕ

Δd_f

-6/ (1)

-6/ (2)

(7) - [10].

Δd_f

0,5,
 d_n

2,0,

d_f ,

7. ... -6 // 2023. . 13, 3. . 94–99.

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