

* . - . . , . . . , ** . . . , . . . ,
** . - . . , . . .

* ,
**

05 18 9 12 18 10 - 95% 5%

. - , -

, , . -
-
-

[1]. (AISI321, 304, 321H .)
+ δ- (-
(0.01...5%), . , δ-

, , . -
-

() () δ- () -
-

, . -
-

[2], (,), , . -
-

. -
-

(→). -
-

, , -
-

[3-6],

δ-

δ-

P

[7]:

$$P_{\alpha} = \frac{\sigma_m}{\sigma_{\alpha}} \cdot 100\% = \frac{(\chi - \chi_{\infty}) \cdot H}{\sigma_{\alpha}} \cdot 100\%$$

σ -

; σ_m -

; χ -

; χ_∞ -

$$\chi_{\infty} = \chi_0 + \chi_p, \quad \chi_0 -$$

, χ_p -

; H -

$$(H = 4.22 \cdot 10^5 \text{ / })$$

12 18 10

12 18 9

1.

1

	, %						
	C	Cr	Ni	Ti	Mn	Si	Mo
12 18 9	0.12	17.854	9.420	0.252	1.316	0.250	0.121
12 18 10	0.12	18.089	10.463	0.460	1.582	0.304	0.112

202, 204, 205

12 18 10

61, 62, 64 12 18 9
1050°C, 30 ..

52, 71, 72, 73, 81

12 18 9

2.

3 3 3 3,

ε=(d₀-

d)/d₀, d₀ d

10 / .

850°C

[2],

~650°C.

(δ-) ~600°C,

δ- , ,

δ-

2

δ-

χ_{∞}

	ε , %	(δ), °C	P_{δ} , %	$\chi_{\infty} \cdot 10^{-8}$ $^{3/}$
12 18 9	52	910	0.123	6.7
	71	1050	0.078	5.2
	72	1100	0.012	3.2
	73	1200	0.015	3.3
	81	1250	0.042	4.3

12 18 10
 1050°C (30), 12 18 9
 910,1050,1100,1200 1250°C

0.01...0.15% (. .2).

(+), + δ- + '- (+ +). ()

12 18 10

.1

($\varepsilon=0$) 202 $\chi_0=2.8 \cdot 10^{-8} \text{ }^{3/}$ 12 18 10 30 850°C

12 18 10 850°C

(.1).

(. 204)

(.2).

$\chi_{\varepsilon}=3.05 \cdot 10^{-8} \text{ }^{3/}$ $2.8 \cdot 10^{-8} \text{ }^{3/}$, . .

$\varepsilon=0$ (. .1).

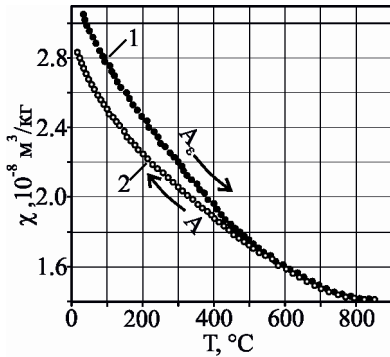
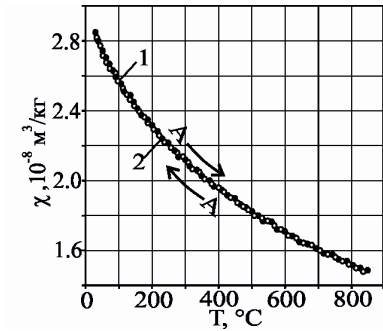
P

($\varepsilon=7.12\%$)

($\varepsilon=0$) ,

($\epsilon=7.12\%$)

12 18 10
(\rightarrow).



1 χ
() ($\epsilon=0$)
12 18 10
1 - 202,
 $\chi=2.8 \cdot 10^{-8} \text{ }^3 / , P \leftarrow 0.$
202,
 $\chi=2.8 \cdot 10^{-8} \text{ }^3 / , P \leftarrow 0.$

2 χ (A_ϵ)
($\epsilon=7.12\%$)
12 18 10
1 -
 $\chi_\epsilon=3.05 \cdot 10^{-8} \text{ }^3 / ,$
2 -
 $\chi=2.8 \cdot 10^{-8} \text{ }^3 / ,$
P $\leftarrow 0.$

(+) 12 18 10
($\epsilon=12.4\%$),
 $P_\alpha=0.057\%$ (.3).

12 18 9 (.4).

850°C
(.4). 12 18 9

$P_\delta=0.067\%$,

$P_\delta=0.027\%$.
0.027% 0.040%

1050°C.

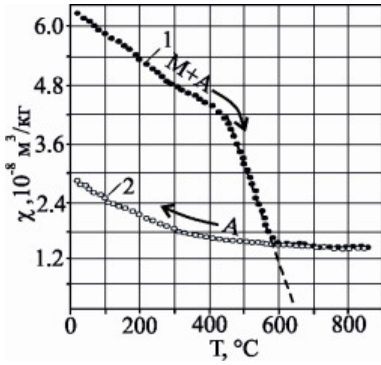
12 18 9 . 5 6

(+ +)

62 ($\epsilon=3.42$) 64 ($\epsilon=5.25$) 12 18 9 ,
+ + . 850°C

- $P_\delta=0.028\%$ (.5). 64:

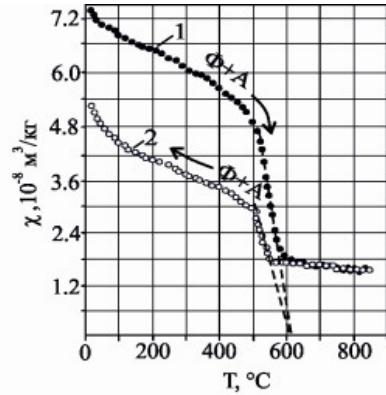
$P_{\delta+}=0.21\%$, $P_\delta=0.029\%$ (.6).



3 χ ($\epsilon=12.4\%$)
 (+) 12 18 10
 1 - 205,
 $P_{\alpha'}=0.057\%$. 2 -
 205, -
 $P_{\alpha'}=0\%$.

~600°C ~650°C,

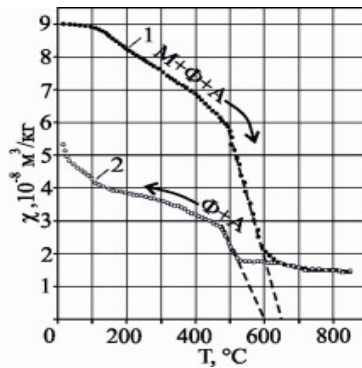
δ -



4 χ ($\epsilon=0$)
 (+) 12 18 9
 1 - 61,
 $P_{\delta}=0.067\%$. 2 -
 61,
 $P_{\delta}=0.027\%$.

δ -

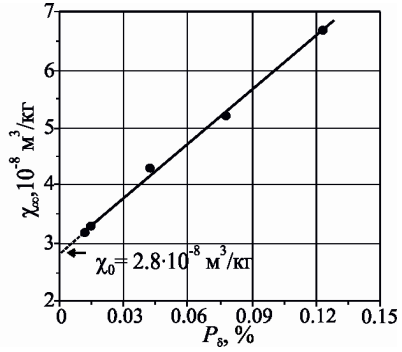
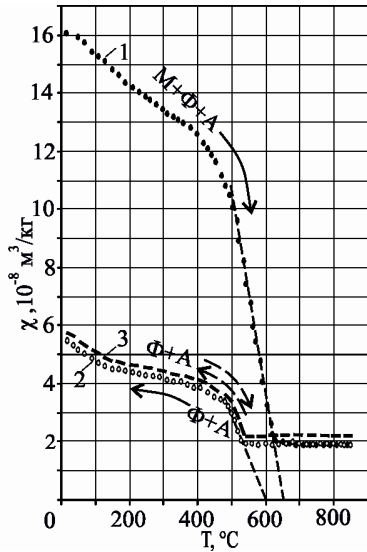
2 (.5 6)



5 χ ($\epsilon=3.42\%$)
 (+ +) 12 18 9
 1 - 62,
 $P_{\delta+}=0.103\%$. 2 - 62, $P_{\delta}=0.028\%$.

$P_{\delta} \rightarrow 0$ [7] (δ -)

$\chi_0 = 2.8 \cdot 10^{-8} \text{ M}^3/\text{K}\Gamma$ (.7).



. 6 χ -
 (+ +)
 ($\epsilon=5.25\%$) 12 18 9 -
 1 - 64, -
 $P_{\delta+} = 0.21\%$ 2 -
 64,
 $P_{\delta} = 0.029\%$ 3 () -

. 7 -
 $\chi_{\infty} = \chi_0 + \chi_p$
 12 18 9
 δ -
 2 - 910...1250°C.

1. 12 18 10
 ($\epsilon=7.12\%$)

1 -
 ($\epsilon=12.4\%$ -
 0.057%,
 850°C.

2.	(+)	12 18 9	-
	2.5	.	-
			850°C.
	$\epsilon=5.25\%$		
850°C	2.5	,	-
3.		12 18 10	-
	$\epsilon=7.12\%$.		-
4.		12 18 9	-
	12.4%	.	-

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