

ГОСТ 22897-86

Трубы бесшовные холоднодеформированные из сплавов на основе титана. Технические условия

Сортамент.

1.1. Размеры труб должны соответствовать указанным в табл.1.

1.2. По длине трубы изготовляют:

немерные:

длиной от 0,8 до 8,0 м, с толщиной стенки 0,5—0,8 мм;

длиной от 1,0 до 8,0 м, с толщиной стенки 1,0 мм и более;

мерные, длиной не более указанной в табл.1. В каждой партии мерных труб допускается наличие 10% немерных тру.

Кратные мерным с припуском на каждый рез по 5мм.

Предельные отклонения по длине труб (кратных и мерных) не должны превышать +15мм.

1.3. Предельные отклонения по наружному диаметру и толщине стенки труб должны соответствовать указанным в табл.2.

По требованию потребителя допускается изготавливать трубы по внутреннему диаметру и толщине стенки.

Таблица 1.

| Наружный диаметр трубы, мм | Длина мерной трубы, м, не более, при толщине стенки, мм | | | | | | | | | | | | | |
|----------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0,5 | 0,6 | 0,8 | 1,0 | 1,2 | 1,4 | 1,5 | 1,6 | 1,8 | 2,0 | 2,2 | 2,5 | 2,8 | 3,0 |
| 5,8 | — | — | — | 4,0 | 4,0 | 4,0 | 4,0 | — | — | — | — | — | — | — |
| 6 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | — | — | — | — | — | — | — |
| 7 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | — | — | — | — | — | — | — |
| 8 | 4,0 | 4,0 | 4,0 | 5,0 | 5,0 | 5,0 | 5,0 | — | — | — | — | — | — | — |
| 9 | 3,0 | 4,0 | 4,0 | 5,0 | 5,0 | 5,0 | 5,0 | — | — | — | — | — | — | — |
| 10 | 3,0 | 4,0 | 4,0 | 6,0 | 6,0 | 6,0 | 6,0 | — | 6,0 | 6,0 | — | — | — | — |
| 11 | 3,0 | 3,0 | 4,0 | 6,0 | 6,0 | 6,0 | 6,0 | — | 6,0 | 6,0 | — | — | — | — |
| 12 | 3,0 | 3,0 | 4,0 | 6,0 | 6,0 | 6,0 | 6,0 | — | 6,0 | 6,0 | — | — | — | — |
| 13 | 3,0 | 3,0 | 4,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 2,8 | 2,8 | 2,8 | — |
| 14 | 3,0 | 3,0 | 4,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 2,8 | — |
| 15 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 2,8 | — |
| 16 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 2,8 | — |
| 18 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 20 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 21 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 22 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 23 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 24 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 25 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 27 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 28 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 29 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 30 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 7,0 | — | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 | 7,0 |
| 32 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |
| 33 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |
| 34 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |
| 35 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |
| 36 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |
| 38 | 3,0 | 3,0 | 3,0 | 7,0 | 7,0 | 7,0 | 6,0 | — | 6,0 | 6,0 | 6,0 | 6,0 | 5,5 | 5,5 |

Продолжение табл.1.

ГОСТ 22897-86 Трубы бесшовные холоднодеформированные из сплавов на основе титана

Автор: Administrator

| Наружный диаметр трубы, мм | Длина мерной трубы, м, не более, при толщине стенки, мм | | | | | | | | | | | | |
|----------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 3,2 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 | 7,0 | 7,5 | 8,0 | 8,5 | 9,0 |
| 5,8 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 6 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 7 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 8 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 9 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 10 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 11 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 12 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 13 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 14 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 15 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 16 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 18 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 20 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 21 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 22 | 6,0 | 6,0 | — | — | — | — | — | — | — | — | — | — | — |
| 23 | 6,0 | 6,0 | — | — | — | — | — | — | — | — | — | — | — |
| 24 | 6,0 | 6,0 | — | — | — | — | — | — | — | — | — | — | — |
| 25 | 6,0 | 6,0 | — | — | — | — | — | — | — | — | — | — | — |
| 27 | 6,0 | 6,0 | — | — | — | — | — | — | — | — | — | — | — |
| 28 | 6,0 | 6,0 | 5,0 | — | — | — | — | — | — | — | — | — | — |
| 29 | 6,0 | 6,0 | 5,0 | — | — | — | — | — | — | — | — | — | — |
| 30 | 6,0 | 6,0 | 5,0 | — | — | — | — | — | — | — | — | — | — |
| 32 | 5,0 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 33 | 5,5 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 34 | 5,0 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 35 | 5,0 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 36 | 5,0 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 38 | 5,0 | 5,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |

Продолжение табл. 1

| Наружный диаметр трубы, мм | Длина мерной трубы, м, не более, при толщине стенки, мм | | | | | | | | | | | | | |
|----------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0,5 | 0,6 | 0,8 | 1,0 | 1,2 | 1,4 | 1,5 | 1,6 | 1,8 | 2,0 | 2,2 | 2,5 | 2,8 | 3,0 |
| 40 | 3,0 | 3,0 | 3,0 | 5,0 | 5,0 | 5,0 | 5,0 | 5,0 | 5,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| 42 | 3,0 | 3,0 | 3,0 | 5,0 | 5,0 | 5,0 | 5,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| 45 | 3,0 | 3,0 | 3,0 | 5,0 | 5,0 | 5,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| 48 | 3,0 | 3,0 | 3,0 | 5,0 | 5,0 | 5,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| 50 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 5,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 3,5 | 3,5 |
| 51 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 |
| 53 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 |
| 54 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 |
| 56 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 |
| 57 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 |
| 60 | 2,5 | 2,5 | 3,0 | 5,0 | 5,0 | 5,0 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | 3,0 |
| 63 | 2,5 | 2,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 |
| 65 | 2,5 | 2,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 |
| 68 | 2,0 | 2,0 | 2,5 | 2,5 | 2,5 | 2,5 | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 |
| 70 | 2,0 | 2,0 | 2,5 | 2,5 | 2,5 | 2,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| 73 | 2,0 | 2,0 | 2,5 | 2,5 | 2,5 | 2,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| 75 | 2,0 | 2,0 | 2,5 | 2,5 | 2,5 | 2,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| 76 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| 80 | — | 2,0 | 2,0 | 2,0 | 2,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| 83 | — | — | — | — | — | — | — | — | — | — | — | 3,0 | 3,0 | 3,0 |
| 85 | — | — | — | — | — | — | — | — | — | — | — | — | — | 3,0 |
| 89 | — | — | — | — | — | — | — | — | — | — | — | — | — | 4,0 |
| 90 | — | — | — | — | — | — | — | — | — | — | — | — | — | 4,0 |
| 95 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 102 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 105 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 108 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 110 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 120 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 130 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

Продолжение табл. 1

| Наружный диаметр трубы, мм | Длина мерной трубы, м, не более, при толщине стенки, мм | | | | | | | | | | | | |
|----------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 3,2 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 | 7,0 | 7,5 | 8,0 | 8,5 | 9,0 |
| 40 | 4,0 | 4,0 | 4,0 | 3,0 | 3,0 | — | — | — | — | — | — | — | — |
| 42 | 4,0 | 4,0 | 4,0 | 3,0 | 2,5 | 2,5 | 2,5 | — | — | — | — | — | — |
| 45 | 4,0 | 4,0 | 4,0 | 3,0 | 2,5 | 2,5 | 2,5 | 2,5 | — | — | — | — | — |
| 48 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | — | — | — | — | — |
| 50 | 3,5 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,5 | 2,5 | — | — | — | — | — |
| 51 | 3,5 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,5 | 2,5 | — | — | — | — | — |
| 53 | 3,5 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,5 | 2,5 | — | — | — | — | — |
| 54 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 56 | 3,0 | 3,0 | 3,0 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 57 | 3,0 | 3,0 | 3,0 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 60 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,5 | 2,0 | 2,0 | — | — | — | — | — |
| 63 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,5 | 2,0 | 2,0 | — | — | — | — | — |
| 65 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,5 | 2,0 | 2,0 | — | — | — | — | — |
| 68 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 70 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 73 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | — | — | — | — | — |
| 75 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 1,5 | — | — | — | — | — |
| 76 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 1,5 | — | — | — | — | — |
| 80 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 2,0 | 1,5 | — | — | — | — | — |
| 83 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 |
| 85 | 2,5 | 2,5 | 2,5 | 2,0 | 2,0 | 2,0 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 |
| 89 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 90 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 95 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 102 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 105 | 4,0 | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 108 | — | 4,0 | 4,0 | 3,5 | 3,5 | 3,5 | 3,5 | — | — | — | — | — | — |
| 110 | — | — | 4,0 | 3,5 | 3,5 | 3,0 | 2,5 | — | — | — | — | — | — |
| 120 | — | — | — | 4,0 | 3,5 | 3,5 | 3,0 | 2,5 | — | — | — | — | — |
| 130 | — | — | — | — | 1,5 | 1,5 | 1,5 | 1,5 | — | — | — | — | — |

Таблица 2

Предельное отклонение по наружному диаметру труб точности изготовления

| Наружный диаметр, мм | Предельное отклонение по наружному диаметру труб точности изготовления | |
|----------------------|--|-----------|
| | повышенной | обычной |
| От 5,8 до 10 включ. | ± 0,20 мм | ± 0,30 мм |
| От 11 до 30 включ. | ± 0,30 мм | ± 0,45 мм |
| Св. 30 | ± 1,0 % | ± 1,5 % |

Продолжение табл. 2.

ГОСТ 22897-86 Трубы бесшовные холоднодеформированные из сплавов на основе титана

Автор: Administrator

| Толщина стенки, мм | Предельное отклонение по толщине стенки труб точности изготовления | |
|----------------------|--|--------------------|
| | повышенной | обычной |
| От 0,5 до 0,6 включ. | ± 0,10 мм | ± 0,12 мм |
| От 0,8 до 1,0 включ. | ± 0,12 мм | ± 0,15 мм |
| От 1,2 до 3,0 включ. | + 12,5 % - 10,0 % | ± 15,0 % |
| От 3,2 до 7,0 включ. | + 12,5 % - 10,0 % | ± 12,5 |
| Св. 7,0 | ± 10,0 % | + 12,5 % - 10,0 |

| Марка сплава | Пределное сопротивление разрыву σ_B , Н/мм ² (кгс/мм ²), при температуре | | |
|--------------|--|----------|----------|
| | +20 °С | +150 °С | +350 °С |
| | Не менее | | |
| ВТ1-0 | 340-560 (35-50) | 216 (22) | - |
| ПТ-ИИ | 340-560 (35-50) | 205 (23) | - |
| ПТ-ИИ | 470-660 (40-60) | - | 238 (20) |
| СТ4 | 630-810 (70-95) | - | - |

| Марка сплава | Предел текучести σ_T , Н/мм ² (кгс/мм ²), при температуре | | Относительное удлинение δ_5 , %, при +20 °С |
|--------------|---|----------|--|
| | +20 °С | +350 °С | |
| | Не менее | | |
| ВТ1-0 | 246 (25) | 147 (15) | 24 |
| ПТ-ИИ | 236(22) | 157 (16) | 27 |
| ПТ-ИИ | 372 (38) | - | 28 |
| СТ4 | - | - | 30 |