

TP 321 • UNS S32100 • 1.4541 • TPS-INOX 4541-321

High carbon steels prone more to intercrystalline attack in weld zones and slower cooling sections. This steel avoids such attacks through its stabilization with Ti. The corrosion behaviour of this alloy in natural environments is very similar to the TP 304/304L alloys. Architecturally, it may not be adequate for near-industrial or onshore locations in Europe. Satisfactory in many low-chloride waters, it is prone to pitting or crevice corrosion in seawater. Water treatment, galvanic protection and deaeration can influence the performance.

| Material grade | Norm | Chemical composition • mass in % | | | | | | | | | |
|----------------|--------------------------|----------------------------------|------|------|-------|-------|---------------|--------------|-------------|--------------------|--------|
| | | C | Si | Mn | P | S | Cr | Ni | Mo | Ti | Sonst. |
| | | max. | max. | max. | max. | max. | min. – max. | min. – max. | min. – max. | | |
| 1.4541 | EN 10216-5 | 0,080 | 1,00 | 2,00 | 0,040 | 0,015 | 17,50 - 19,00 | 9,00 - 12,00 | - | 5x% C max. 0,70 | - |
| TP321 | ASME SA / AS TM A 213 | 0,080 | 1,00 | 2,00 | 0,045 | 0,030 | 17,00 - 19,00 | 9,00 - 12,00 | - | 5x% C max. 0,70 | - |

| Material grade | Norm | Mechanical properties and heat treatment | | | | | |
|----------------|--------------------------|--|--------------|-------------|-------|----------|-----------------|
| | | Rp 0,2 [MPa] | Rp 1,0 [MPa] | Rm [MPa] | A [%] | Härte | Wärmebehandlung |
| | | min. | min. | min. – max. | min | HRB max. | |
| 1.4541 | EN 10216-5 | 200 | 235 | 500 - 730 | 35 | - | lösungsgeglüht |
| TP321 | ASME SA / AS TM A 213 | 205 | - | 515 | 35 | 90 | lösungsgeglüht |

| Tolerances | | | | |
|------------------|-----------|-----------|------------|-----------|
| AD - Rohr | AD | WD | special WT | ID |
| ab Ø4,550 mm | ±0,050 mm | ±0,150 mm | ±0,100 mm | X |
| ab Ø9,530 mm | ±0,050 mm | ±0,100 mm | ±0,080 mm | ±0,050 mm |
| ab Ø30,001 mm*** | ±0,100 mm | ±0,150 mm | | ±0,050 mm |

*** to max. ø44,500 mm

- Tolerances acc. to DIN EN 10305-1 can be confirmed to OD 30mm
- Tolerances acc. to DIN EN ISO 1127 / DIN EN 10216-5 can be confirmed
- Tolerances acc. to ASTM can be confirmed generally

Abmessungsbereich*

Abmessungsspektrum

| AD | WD | [mm] | 0,89 | 1,00 | 1,20 | 1,24 | 1,65 | 1,82 | 2,00 | 2,11 | 2,30 | 2,35 | 2,50 | 2,60 | 2,64 | 2,77 | 2,87 | 3,00 | 3,20 | 3,25 | 3,60 | 3,85 | 3,91 | 4,00 | 4,40 | 5,50 | 6,35 | 7,00 |
|-------|--------|--------|-------|------|------|-------|-------|-------|------|-------|------|-------|------|------|-------|-------|-------|------|-------|-------|------|------|-------|------|------|------|-------|------|
| [mm] | [inch] | [inch] | 0,035 | | | 0,048 | 0,065 | 0,072 | | 0,083 | | 0,093 | | | 0,104 | 0,109 | 0,113 | | 0,126 | 0,128 | | | 0,154 | | | | 0,250 | |
| 6,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6,35 | 0,250 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7,50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,53 | 0,375 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12,70 | 0,500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15,88 | 0,625 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16,80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17,15 | 0,675 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19,05 | 0,750 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21,34 | 0,840 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22,23 | 0,875 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,40 | 1,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26,67 | 1,050 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31,75 | 1,250 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33,40 | 1,315 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38,10 | 1,500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44,50 | 1,750 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

