

## DUPLEX ALLOYS

### MECHANICAL REQUIREMENTS

#### CORROSION RESISTANT ALLOYS WITH HIGH YIELD LIMITS

| ALLOY | UNS    | W.-Nr. | ASTM | Trade Name   | Heat Treatment | Dia        | Tensile Strength min. Mpa | Yield Strength min,0.2% Mpa | Elongation in 4 D, min % | Reduction of area min % | Hardness HB |
|-------|--------|--------|------|--------------|----------------|------------|---------------------------|-----------------------------|--------------------------|-------------------------|-------------|
| F51   | S31803 | 1.1162 | A182 | Duplex       | sol'n annealed | all size   | 620                       | 450                         | 25                       | 50                      |             |
| F44   | S31254 | 1.4529 | A182 | Super Duplex | sol'n annealed | all size   | 650                       | 300                         | 35                       | 50                      | <290        |
| F53   | S32750 | 1.4468 | A182 | Super Duplex | sol'n annealed | all size   | 800                       | 550                         | 15                       |                         | <310        |
| F55   | S32760 | 1.4496 | A182 | Super Duplex | sol'n annealed | all size   | 7501-895                  | 550                         | 25                       | 45                      | <300        |
| F61   | S32550 | 1.4515 | A479 | Super Duplex | sol'n annealed | all size   | 760                       | 550                         | 15                       |                         | <297        |
| 500   | N05500 | 2.4375 | F467 |              | sol+pre.harden | 1/4 to 7/8 | 900                       | 620                         | 20                       |                         | 24-37 HRC   |
|       |        |        |      |              | sol+pre.harden |            | 900                       | 590                         | 20                       |                         | 24-37 HRC   |
| 660** | S66286 | 1.498  | A453 |              |                | all size   | 895                       | 585                         | 15                       | 18                      | 248- 341    |

\*\*Stress Rupture Test : temperature 650degree c, stres >385 Mpa: time to rupture >100 hours: elong. >5%

### CHEMICAL REQUIREMENTS

#### CORROSION RESISTANT ALLOYS WITH HIGH YIELD LIMITS

| ALLOY | UNS    | C    | Mn max | P max | S max | Si max | Cr max    | Ni        | Mo        | Ti        | W       | OTHERS               |             |
|-------|--------|------|--------|-------|-------|--------|-----------|-----------|-----------|-----------|---------|----------------------|-------------|
| F51   | S31803 | 0.03 | 2.00   | 0.03  | 0.02  | 1.00   | 21.0-23.0 | 4.50-6.50 | 2.5-3.5   |           | -       | -                    | N 0.08-0.20 |
| F44   | S31254 | 0.02 | 1.00   | 0.03  | 0.01  | 0.80   | 19.5-20.5 | 17.5-18.5 | 6.0-6.5   |           | -       | Cu 0.50-1.0          | N 0.18-0.22 |
| F53   | S32750 | 0.03 | 1.20   | 0.04  | 0.02  | 0.80   | 24.0-26.0 | 6.0-8.0   | 3.0-5.0   |           | -       | Cu 0.50              | N 0.24-0.32 |
| F55   | S32760 | 0.03 | 1.00   | 0.03  | 0.01  | 1.00   | 24.0-26.0 | 6.0-8.0   | 3.0-4.0   |           | 0.5-1.0 | Cu 0.50-1.0          | N0.20-0.30  |
| F61   | S32550 | 0.04 | 1.50   | 0.04  | 0.03  | 1.00   | 24.0-27.0 | 4.50-6.50 | 2.9-3.9   |           | -       | Cu 1.50-2.5          | N0.10-0.25  |
| 660   | S66286 | 0.08 | 2.00   | 0.04  | 0.03  | 1.00   | 13.5-16.0 | 24.0-27.0 | 1.0-1.50  | 1.90-2.35 | 0.1-0.5 | B 0.001-0.01         | Al 0.35 max |
| 500   | N05500 | 0.25 | 1.50   | -     | 0.01  | 0.50   | -         | 63.0-70.0 | 1.00-1.50 | 0.35-0.85 |         | Al 2.3-3.15 ; Cu bal | Fe 2.00 max |

## TITANIUM ALLOYS

### MECHANICAL REQUIREMENTS

#### CORROSION RESISTANT ALLOYS WITH LOW DENSITY

| ALLOY     | UNS    | W.-Nr. | ASTM | Tensile Strength min. Mpa | Yield Strength min,0.2% Mpa | Elongation in 4 D, min % | Reduction of area min % |
|-----------|--------|--------|------|---------------------------|-----------------------------|--------------------------|-------------------------|
| Ti gr. 1  | R50250 | 3.7025 | B348 | 240                       | 170                         | 24                       | 30                      |
| Ti gr. 2  | R50400 | 3.7035 | B348 | 345                       | 275                         | 20                       | 30                      |
| Ti gr. 3  | R50400 | 3.7055 | B348 | 450                       | 380                         | 18                       | 30                      |
| Ti gr. 4  | R50400 | 3.7065 | B348 | 550                       | 483                         | 15                       | 25                      |
| Ti gr. 5  | R56400 | 37165  | B348 | 895                       | 828                         | 10                       | 25                      |
| Ti gr. 6  | R54520 | -      | B348 | 828                       | 795                         | 10                       | 25                      |
| Ti gr. 7  | R52400 | 37235  | B348 | 345                       | 275                         | 20                       | 30                      |
| Ti gr. 9  | R58030 | -      | B348 | 620                       | 483                         | 15                       | 25                      |
| Ti gr. 11 | R52250 | 37225  | B348 | 240                       | 170                         | 24                       | 30                      |
| Ti gr. 12 | R53400 | -      | B348 | 483                       | 345                         | 18                       | 25                      |

### CHEMICAL REQUIREMENTS

#### CORROSION RESISTANT ALLOYS WITH LOW DENSITY

| ALLOY     | C max | Ni      | Mo      | V        | Ti max  | Al max   | Fe       | O max | H max | N max | Sn      | Pd        | Residual each max | Residual total max |
|-----------|-------|---------|---------|----------|---------|----------|----------|-------|-------|-------|---------|-----------|-------------------|--------------------|
| Ti gr. 1  | 0.08  | -       | -       | -        | balance | -        | 0.20 max | 0.18  | 0.02  | 0.03  | -       | -         | 0.10              | 0.40               |
| Ti gr. 2  | 0.08  | -       | -       | -        | balance | -        | 0.30 max | 0.25  | 0.02  | 0.03  | -       | -         | 0.10              | 0.40               |
| Ti gr. 3  | 0.08  | -       | -       | -        | balance | -        | 0.30 max | 0.35  | 0.02  | 0.05  | -       | -         | 0.10              | 0.40               |
| Ti gr. 4  | 0.08  | -       | -       | -        | balance | -        | 0.50 max | 0.40  | 0.02  | 0.05  | -       | -         | 0.10              | 0.40               |
| Ti gr. 5  | 0.08  | -       | -       | 3.50-4.5 | balance | 5.5-6.75 | 0.40max  | 0.20  | 0.02  | 0.05  | -       | -         | 0.10              | 0.40               |
| Ti gr. 6  | 0.08  | -       | -       | -        | balance | 4.00-6.0 | 0.50max  | 0.20  | 0.02  | 0.03  | 2.0-3.0 | -         | 0.10              | 0.40               |
| Ti gr. 7  | 0.08  | -       | -       | -        | balance | -        | 0.30max  | 0.25  | 0.02  | 0.03  | -       | 0.12-0.25 | 0.10              | 0.40               |
| Ti gr. 9  | 0.08  | -       | -       | 2.00-3.0 | balance | 2.50-3.5 | 0.25max  | 0.15  | 0.02  | 0.03  | -       | -         | 0.10              | 0.40               |
| Ti gr. 11 | 0.08  | -       | -       | -        | balance | -        | 0.20max  | 0.18  | 0.02  | 0.03  | -       | 0.12-0.25 | 0.10              | 0.40               |
| Ti gr. 12 | 0.08  | 0.6-0.9 | 0.2-0.4 | -        | balance | -        | 0.30max  | 0.25  | 0.02  | 0.03  | -       | -         | 0.10              | 0.40               |