

## PROPERTIES OF METAL MATERIALS

### CARBON STEELS, ZINC ALLOYS, ALUMINIUM AND BRASS

| Description                           | Steel for threaded studs   | Steel for threaded studs  | Zinc alloy for pressure die-casting   | Aluminium for handle tubes  | Brass for bosses with threaded or plain hole  | Brass for reinforcing square holes  |
|---------------------------------------|--|---|---|---|---|---|
| <b>Designation</b>                    | 11SMnPb37  | C10C U+C  | ZnAl4Cu1  | Alloy EN AW-6060  | Brass CW614N  | Brass CW508L  |
| <b>UNI standard</b>                   | UNI EN 10277 : 2000  | UNI EN 10263-2 : 2003   | UNI EN 1774 : 1999  | UNI EN 573-3  | UNI EN 12164  | EN 12449 : 99   |
| <b>% components of alloy</b>          | C ≤ 0.14<br>Pb ≤ 0.20-0.35<br>Si ≤ 0.05<br>Mn 1.00 ÷ 1.50<br>P ≤ 0.11<br>S 0.340.40<br>Fe rest | C 0.08-0.12<br>Si ≤ 0.10<br>Mn 0.30-0.50<br>P ≤ 0.025<br>S ≤ 0.025<br>Al 0.02-0.06<br>Fe rest | Cu 0.7-1.1<br>Pb ≤ 0.003<br>Fe ≤ 0.020<br>Al 3.8-4.2<br>Sn ≤ 0.001<br>Si ≤ 0.02<br>Ni ≤ 0.001<br>Mg 0.035-0.06<br>Cd ≤ 0.003<br>Zn rest | Si 0.03-0.6<br>Fe 0.1-0.3<br>Cu ≤ 0.10<br>Mn ≤ 0.10<br>Mg 0.035-0.06<br>Cr ≤ 0.05<br>Zn ≤ 0.15<br>Ti ≤ 0.10<br>Total impurities ≤ 0.15<br>Al rest | Cu 57-59<br>Pb 2.5-3.5<br>Fe ≤ 0.30<br>Al ≤ 0.05<br>Sn ≤ 0.30<br>Si ≤ 0.90<br>Ni ≤ 0.30<br>Total impurities ≤ 0.20<br>Zn rest | Cu 62-64<br>Pb ≤ 0.10<br>Fe ≤ 0.10<br>Al ≤ 0.05<br>Sn ≤ 0.10<br>Ni ≤ 0.30<br>Total impurities ≤ 0.10<br>Zn rest |
| <b>Tensile breaking load Rm [MPa]</b> | 400-650  | 510-520   | 280-350   | 120-190   | 490-530   | 340-360   |
| <b>Yield point Rp 0.2 [MPa]</b>       | ≤ 305  | /   | 220-250   | 60-150  | /   | /   |
| <b>Modulus of elasticity [Mpa]</b>    | /  | /   | 100000  | 67000   | 100000  | 103400  |
| <b>Ultimate elongation %</b>          | 9  | 58  | 2-5   | 16  | 12-16   | 45  |
| <b>Special features</b>               | Steel for high-speed machining.<br>Used for parts obtained by turning.                         | Steel for moulding.   |   |   | Brass for high-speed machining.<br>Used for parts obtained by turning.  | Brass for machining with good plastic deformability.  |

## PROPERTIES OF PLASTIC MATERIALS

### Resistance to chemical agents at ambient temperature (23°C)

#### DUROPLAST

- = good resistance
  - = fair resistance (limited use according to working conditions)
  - ▲ = poor resistance (should not be used)
- Blanks stand for data not available

| CHEMICAL AGENTS RESISTANCE                          | DUROPLAST (PF) | PAINTED DUROPLAST CLEAN |
|---|----------------|-------------------------|
| Alcohol (methanol, ethanol, isopropanol...)         | ●              | ●                       |
| Boiling water                                       | □              | □                       |
| Edible oils   | ●              | ●                       |
| Esters (methyl acetate, ethyl acetate, ...)         | ●              |                         |
| Ether (ethyl eter, oil ether, ...)                  | ●              |                         |
| Fat   | ●              |                         |
| Ketons (acetone)                                    | ●              | ●                       |
| Mineral oils  | ●              | ●                       |
| Petrol, gas oil, benzene                            | ●              | ●                       |
| Strong acids (hydrochloric, nitric, sulphuric, ...) | ▲              | ▲                       |
| Strong alkali                                       | ▲              | ▲                       |
| Toluene   | ●              | □ (milk effect)         |
| Water   | ●              | ●                       |
| Weak acids (butyric, oleic, lactic, ...)            | □              |                         |
| Weak alkali   | □              |                         |
| Xylene  | ●              | □ (milk effect)         |

The characteristics described should be treated as guidelines only. No guarantee is made.  
The user is responsible for checking the exact operating conditions.