

Mechanical properties: Fasteners from corrosion-resistant stainless steels



Chemical resistance of stainless steel fasteners A 2 and A 4

In practice, the resistance specifications can change; the pure agents rarely have an effect, admixtures often strengthen or weaken the attack. Residue on the part can also change the conditions. The safest approach is always to check the operating conditions.

Table 6: Extract from the resistance list

(Further information on request and from <http://mdmetric.com>)

Agents	Degree of resistance		Agents	Degree of resistance		Agents	Degree of resistance	
	A 2	A 4		A 2	A 4		A 2	A 4
Acetic acid, cold	1	1	Ethyl acetate	1	1	Photograph. Developer/Fixer	1	1
Acetone, all conc.	1	1	alcohol, all conc.	1	1	Potash	1	1
Al (10%), cold	1	1	Ethylether, boiling	1	1	Potassium bichromate (25%)	1	1
saturated solution, boiling	3	1	Fatty acid, 150 °C	1	1	bitartrate, cold	1	1
Aluminium acetate	1	1	Formalin	1	1	chlorate	1	1
saturated, cold	2	1	Formic acid, cold	1	1	cyanide	1	1
sulphate (10%), cold	1	1	Fruit juices	1	1	hydroxyde (caustic potash)	1	1
Ammonium carbonate	1	1	Glue oil	1	1	nitrate	1	1
nitrate	1	1	Glycerine	1	1	permanganate	1	1
sulphate, cold	1	1	Hydrogen cyanide	1	1	sulphate	1	1
sulphite	1	1	peroxide	1	1	Salicylic acid	1	1
Aniline	1	1	sulphide	1	1	Salt water, 20 °C	1L	1L
Azotic acid up to 60%, cold	1	1	Iron nitrate	1	1	Soap	1	1
Beer	1	1	sulphate	1	1	Sodium aluminate	1	1
Benzine	1	1	Lactic acid (80%), boiling	3	2	bisulphate, boiling	1	1
Benzoic acid	1	1	all conc., cold	1	1	bisulphide, boiling	1	1
Benzol	1	1	Latex	1	1	carbonate (soda)	1	1
Boric acid	1	1	Lime milk	1	1	hydroxide, cold	1	1
Butyl acetate	1	1	Liquid ammonia	1	1	nitrate	1	1
Calcium bisulphite, boiling	3	1	Liquid gases (propane, butane)	1	1	perchlorate	1	1
bisulphite, cold	1	1	Magnesium sulphate	1	1	phosphate	1	1
hydroxyde (10-50%), cold	1	1	Maleic acid	1	1	silicate	1	1
nitrate	1	1	Mercury	1	1	sulphide	1	1
Camphor	1	1	amalgam	1	1	sulphite	1	1
Carbon dioxide	1	1	nitrate	1	1	Sulphur (molten)	1	1
disulphide	1	1	Methyl alcohol	1	1	chloride, waterless	1	1
tetrachloride, waterless	1	1	Molasses	1	1	dioxide	1	1
Chlorine, dry	1	1	Nickel sulphate	1	1	Sulphuric acids, saturated, 20 °C	1	1
Chloroform, waterless	1	1	Nitrous acid	2	1	Tannic acid	1	1
Chromic acid (10%), cold	1	1	Oils (lubricating and vegetable oils)	1	1	Tar	1	1
boiling	2	2	Oxalic acid, 5%, cold	1	1	Tartaric acid	1	1
Citric acid 50%, boiling	3	2	Phenol, boiling	2	1	Treacle	1	1
saturated, cold	1	1	Phosphoric acid up to 70%, cold	1	1	Trichloroethylene, waterless	1	1
Copper acetate	1	1	Developer (photo)	1	1	Viscose	1	1
arsenite	1	1				Waste waters without acid sulphur	1	1
nitrate	1	1				Wine	1	1
sulphate	1	1				Zinc sulphate	1	1
Creosote	1	1						

1 – resistant (substance loss less than 0.1 g/m² x h) 3 – not very resistant (substance loss of 1.0 to 10.0 g/m² x h)
 2 – conditionally resistant (substance loss of 0.1 to 1.0 g/m² x h) 4 – not resistant (substance loss over 10.1 g/m² x h)
 L – danger of hole, crack or stress corrosion

Field of application	Materials
Non-loaded fasteners with occasional refilling/areas which come into contact with pool water which have to be cleaned regularly (e.g. section at the side of the pool, decorative linings)	1.4401 1.4404 1.4571
Non-loaded fasteners with occasional refilling/areas which come into contact with pool water which do not have to be cleaned regularly (e.g. overflow basins, steel gratings and slides)	1.4439 1.4539 1.4462
Loaded fasteners without refilling/fasteners which do not come into contact with pool water which do not have to be cleaned regularly (e.g. pendant lamp holders, ceiling suspensions, water slides)	1.4539* 1.4529* 1.4565* 1.4547*

* general technical approval Z-30.3-6 (DIBT/Germany)