DIEHL
Brass Solutions

MATERIAL DATASHEET

ALLOY 413 (AQCUARIN)

Designation	
Diehl Brass Solutions	413 (AQCUARIN, machining alloy)
DIN EN symbol	CuZn33Pb1AlSiAs
DIN EN	CW725R
UNS	-

Composition (mass as %, reference values)			
Cu	65.7	Al	0.2
Pb	0.6	Si	0.2
As	0.06	Zn	remainder

Application

- Alloy 413 is an engineering material of medium strength and good toughness.
- The alloy is particularly suitable for use in aggressive tap water.
- The lead-reduced alloy 413 is suitable for automated machining and can be cold formed.
- The alloy is suitable for drinking water applications and is included in the positive list of the German Environment Agency (UBA).
- Following cold forming, it is advisable to carry out stress relief annealing at <300 °C with a dwell time of 1 - 2 hours. If processing operations are carried out at temperatures above 600 °C, the dezincification resistance is impaired. It can be restored by means of suitable heat treatment. The annealing temperature for this lies at between 500 °C and 550 °C over a period of 2 hours. For further information, please contact the manufacturer.

Products and relevant standards

(conditions correspond to the alloy CuZn36Pb2As, composition is not standardized)

Rods (free machining purposes))	EN 12164
Hollow rods (free machining purposes)	EN 12168
Profiles (general purposes)	EN 12167

Physical properties

Density	g/cm³	8.47
Coefficient of linear thermal expansion: 20 – 200 °C	• 10^{-6}/K	19.71
Electrical conductivity	m/(Ω · mm²)	12.8

Processing properties

Machinability (CuZn39Pb3 = 100%)	good (Index 75)
Hot formability	good
Cold formability	moderate

Mechanical properties and hardness

- The strength properties and hardness values correspond to the alloy CuZn36Pb2As and are specified in the relevant product standards.
- The properties depend on the product, the condition and the dimensions.

Heat treatment

Soft annealing	450 – 550 °C
Stress relief annealing	200 – 250 °C

Corrosion resistance

- Generally good resistance to neutral, alkaline and organic aqueous solutions.
- Dezincification resistance according to relevant standards.

Diehl Brass Solutions Stiftung & Co. KG

Heinrich-Diehl-Str. 9 | D-90552 Röthenbach a. d. Pegnitz | Phone +49 911 5704-0 | Email: dbs-sales@diehl.com

www.diehl.com/metall