Wieland

Clear solutions for clean drinking water

Clear solutions for clean drinking water

Company overview

The Wieland Group, with headquarters in the southern German city of Ulm, is one of the world's leading manufacturers of semi-finished and special products in copper and copper alloys: strip, sheet, tube, rod, wire and sections as well as slide bearings, finned tubes, heat exchangers and ready-to-assemble components.

Wieland's roots go back almost 200 years. Its founder, Philipp Jakob Wieland, took over his uncle's fine art and bell foundry in Ulm in 1820, and by 1828 he was already fabricating sheet and wire from brass.

Today, the Wieland Group comprises manufacturing companies, slitting centres, trading subsidiaries and sales offices in many European countries as well as in the USA, South Africa, Singapore, India and China. Wieland's output reaches over 400,000 tonnes a year in copper alloy products, from continuous cast products to ready-to-assemble components.

The starting point of the production process is Europe's biggest foundry for copper alloys at Wieland's Vöhringen/Iller location.

Through systematic investment in our facilities as well as ongoing research and development we are continuously striving to improve the products for our customers.

Copper alloys for drinking water applications

Drinking water is our most important nutrient. The quality of the drinking water has to be such that lifelong consumption is possible without restrictions. Therefore, the materials which are in contact with drinking water have to meet increasingly stringent requirements worldwide. The choice of suitable materials and products for drinking water applications is essential, with technical, economic and particularly hygienic and health aspects playing a key role.

Copper alloys have proven their worth worldwide billions of times, both technically and hygienically, and therefore continue to be the basis for clean drinking water.

Legislative framework

Aspects of hygiene and health have caused legislators worldwide to limit the maximum allowable concentrations of substances in drinking water, thus following the recommendations of the WHO. In Europe and the USA, the relevant requirements were changed accordingly at the end of 2013 and the beginning of 2014 respectively. However, both regions follow clearly different approaches.

Europe

In Europe, the Directive 98/83/EC governs the quality of water intended for human consumption. Annex I, Part B, of this directive defines the maximum allowable concentrations of specific elements. For example, the maximum allowable concentration of lead is 10 µg/l. This value became binding as from 1 December 2013.

In drinking water installations, it therefore has to be ensured that only materials are used which are suitable for contact with drinking water. DIN 50930, Part 6, provides the basis for the proof of suitability in Germany. Materials that are hygienically approved for drinking water installations are stated in the list of metallic materials suitable for contact with drinking water issued by the German Federal Environment Agency.

Based on the 4MS Initiative, supported by Germany, France, the Netherlands and the United Kingdom, there will henceforth be a common Composition List for metallic materials in line with the German Federal Environment Agency's list of metallic materials suitable for contact with drinking water. Other EU countries have already indicated that they too will adopt this common Composition List.

USA

In the USA, the Safe Drinking Water Act governs the quality of drinking water, with the focus being on specific elements used in drinking water systems. Unlike Europe, the USA regulates the lead content in components used in drinking water systems. This is governed by the Reduction of Lead in Drinking Water Act which came into effect in all U.S. states as of January 2014.

The weighted average lead content in pipes, fittings, fixtures and other components used to convey or dispense drinking water must not exceed 0.25 %. In practice, this means the lead content of components used to convey or dispense drinking water is limited to a maximum of 0.25 %.

Lead-free copper alloys

Lead-free copper alloys have a lead content of less than 0.1 % and therefore continue to meet all hygiene requirements worldwide. Wieland saw the trend towards environmentally friendly, lead-free alloys at a very early stage and therefore has taken the lead in Europe by launching ECOBRASS. This approach has proven to be far-sighted.

ECOBRASS is particularly suitable for the use in components for drinking water systems. The special brass is characterised by a combination of excellent processing properties and high corrosion resistance. Compared to conventional forms of brass it exhibits a much higher strength.

ECOBRASS is our premium alloy and is available in both machining- and hot-stamping quality.

Low-lead copper alloys

Low-lead alloys with a lead content of less than 0.25 % are distributed by Wieland under the name ECOMERICA. They have been specially developed for sanitary components in the US market but can of course be used in Europe as well.

In addition to machining- and hot-stamping brass, the ECOMERICA range of alloys also includes dezincification-resistant brass. The chemical composition of ECOMERICA has been considerably tightened compared to the standard specification in order to optimise the processing properties of the material.

Lead-containing copper alloys

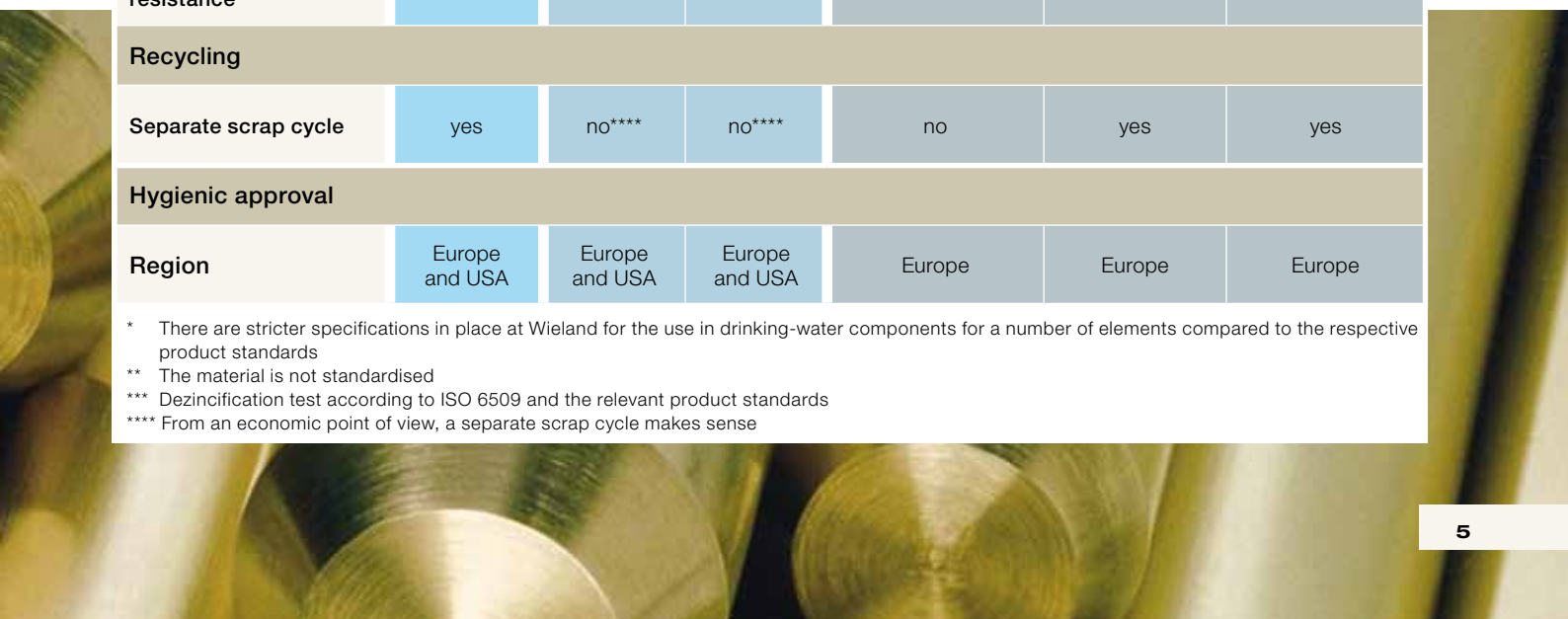
Lead-containing copper alloys have for decades proven their worth both hygienically and technically. However, with a lead content of more than 0.25 % they will no longer be permitted in the U.S. market as of 2014. Only the dezincification-resistant brass CuZn36PbAs (CW602N) has not been included in the hygenic list.

Lead-containing brass meets very high requirements in terms of processing properties and productivity. Our proven lead-containing copper alloys for drinking water applications have been complemented by an easily machinable, dezincification-resistant brass that meets the requirements of the EU Drinking Water Directive in terms of lead migration, with red brass rounding off our unique range of materials for drinking water applications.

Clear solutions for clean drinking water

Material	Lead-free	Low-lead		Lead-containing		
Brands	ECOBRASS	ECOMERICA		W5000 W5006 Wieland-PSR	AQCUARIN	
Wieland designation	SW1	M57	M41	Z41/Z48*	Z43	GD1
ISO	CuZn21Si3P	CuZn42	CuZn38As	CuZn40Pb2	CuZn33Pb1AlSiAs	CuSn5Zn5Pb2-C-CG
EN	CW724R	CW510L	CW511L	CW617N	CW725R	CC499K
UNS	C69300		C27450	C38000		
Processing properties						
Machinability [%] (CuZn39Pb3: 100 %)	80	70	50	95	75	70
Cold forming properties	fair	poor	good	poor	good	not possible
Hot forming properties	very good	very good	fair	very good	fair	not possible
Mechanical properties (reference values)						
Tensile strength Rm [MPa]	700	500	400	500	400	275
Yield strength Rp0.2 [MPa]	400	330	250	400	330	130
Hardness HB	200	150	110	140	120	85
Elongation [%]	25	25	30	20	25	35
Corrosion resistance						
Stress corrosion resistance	yes	yes, with special measures	yes, with special measures	yes, with special measures	yes, with special measures	yes
Dezincification resistance* **	yes	no	yes	no	yes	yes
Recycling						
Separate scrap cycle	yes	no****	no****	no	yes	yes
Hygienic approval						
Region	Europe and USA	Europe and USA	Europe and USA	Europe	Europe	Europe

* There are stricter specifications in place at Wieland for the use in drinking-water components for a number of elements compared to the respective product standards
** The material is not standardised
*** Dezincification test according to ISO 6509 and the relevant product standards
**** From an economic point of view, a separate scrap cycle makes sense



Product quality

Wieland products are characterised by very high quality standards. The already stringent requirements for components used in drinking-water systems are tightened by even stricter in-house test specifications. This enables us to ensure the unique product- and processing properties of our copper alloys.

Technical Advisory Service

Our Technical Marketing experts are available to discuss any aspect of your production from the planning stage in order to find the optimum solution in partnership with you. Their know-how and expertise allow them to provide you with detailed information about properties, further processing and delivery options.

Service

Together with our trading and service companies as well as our cooperation partners, we are marketing our unique range of materials for drinking water components, thus always being in close proximity to our customers.

Delivery performance

Our long-term contracts with pre-material suppliers enable us to ensure continuous supply to our customers.

Quality management

We have been certified under DIN ISO 9002 and BS 5750 pt2 since 1987 and under ISO 9001:2008 since 2000.

Your partner:

Wieland-Werke AG **www.wieland.com**

Graf-Arco-Str. 36, 89079 Ulm, Germany, Phone +49 (0)731 944 0, Fax +49 (0)731 944 2772, info@wieland.com

0541-03 062/07.14 Pa (GB/WA)