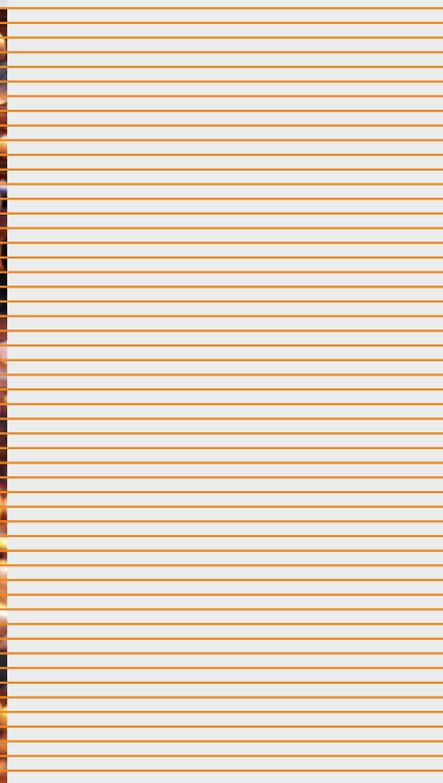


Diehl 474 HT

A TEC.PURE[®] alloy

High-Performance Brass with Unique Properties



Diehl 474 HT

Wear Resistance

- without expensive coatings

Excellent dry running Properties

- safe operation despite lubrication system failure

Resistance to Softening

- same as sintered steel



Diehl 474 HT is a new generation of brass alloys with high-performance properties opening up new possibilities for technical applications.

Diehl 474 HT is characterized by excellent wear resistance. The dry running properties are by far superior compared with those of standard brasses even after a lubrication system failure.

In contrast to the standard brass alloys the resistance to heat and softening has substantially been improved by maintaining the well-known advantages of free-machining brass:

- good forming properties
- excellent machining properties

Further reforms of regulations of the environmental legislation make it necessary to implement lead-free alloys in components in the future. Our lead-free **Diehl 474 HT** meets already today the EU directives ELV (directive on end-of-life vehicles) and RoHS (directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment) which will become effective in the near future.

All these characteristics make **Diehl 474 HT** a more competitive material for new series production.

Chemical Composition

(Reference values in % by weight)

Alloy	Diehl 474 HT
Cu	70
Mn	8
Al	5
Si	2
Fe	1
Pb	0
Zn	remainder

Physical Properties

Density	7.6 g/cm ³
Electrical conductivity	5.4 m/Ωmm ²
Thermal conductivity	43 W/mK
Modulus of elasticity	115 GPa
Coefficient of thermal expansion	18.5 x 10 ⁻⁶ /K

Mechanical Properties

R _m tensile strength	620	MPa
R _{p0.2} proof strength	420	MPa
A ₅ elongation	13	%
HB hardness	180	HB

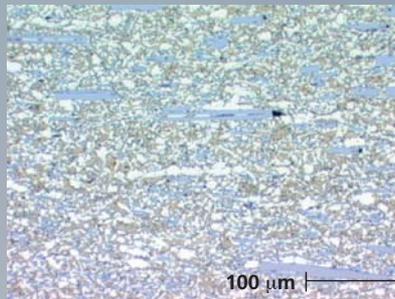
(Reference values for a rod of 13.3 mm diameter drawn and stress-relieved in **Diehl 474 HT**)





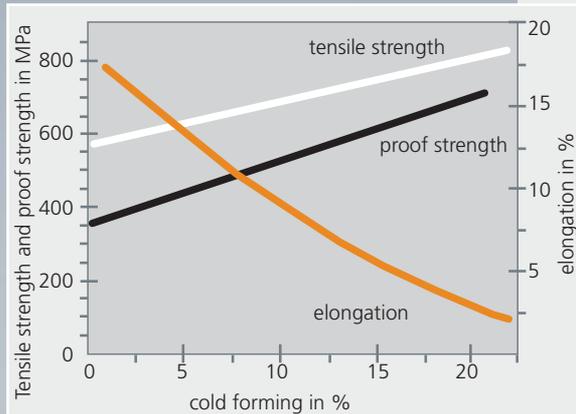
Microstructure

The microstructure consists of a solid solution of alpha (up to 80 %) and beta phases. The hard intermetallic phases (Fe and Mn silicides) are the reason for the excellent wear resistance of **Diehl 474 HT**.



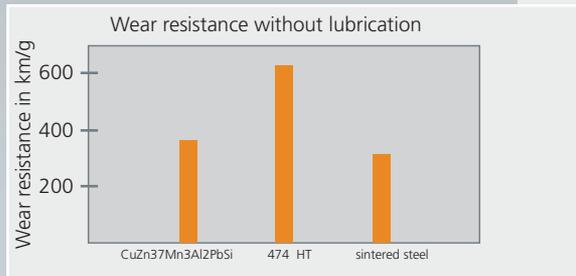
Mechanical Properties

Diehl 474 HT is a special brass with high-tensile strength properties superior to those of standard alloys. Therefore, new ground can be broken in weight-reducing engineering.



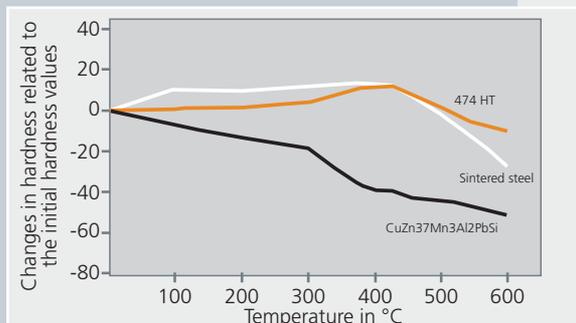
Wear Resistance

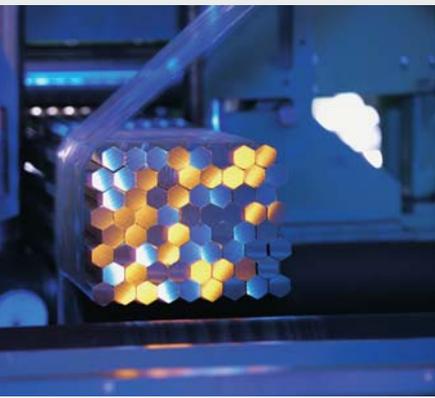
Some of our special brasses like CuZn37Mn3Al2PbSi meet already today the high requirements regarding wear resistance. **Diehl 474 HT** exceeds the above-mentioned alloy even when insufficiently lubricated. Some of the sintered steels could not reach these tribological values.



Resistance to Softening

Higher temperatures in the new generation of engines demand high-performance materials. **Diehl 474 HT** does not show any signs of softening up to 400°C and therefore has a far better resistance to heat in comparison with other materials.





Machining Properties

Machinability	moderate (Index mark: 40% of CuZn39Pb3) comparable to special brasses	
Hot forming properties	good	
Cold forming properties	moderate	
Heat treatment:	Relief annealing	200 - 400°C
	Soft annealing	550 - 700°C

Manufacturing Programme

Rods round	10-85 mm
Sections	10-85 mm
Tubes (OD x wall thickness)	30-120 x 5-15 mm

Other dimensions upon request.

Technical Support

Certainly there are more possibilities for the application of **Diehl 474 HT** than those listed above.

We know from experience that a number of questions will arise in this context. Our technical experts are therefore prepared to help and support you in discussions with your customers.

Under the designation Diehl 470 HT an alloy with a moderate lead content can be obtained.

TEC.PURE®

Our lead-free group of alloys known under the name **TEC.PURE®** has especially been developed for the steadily increasing requirements of the automotive, machine-building and electronic industry. The use of these alloys is recommended in any case where technical requirements put very high demand on the materials involved.

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