

The foundation of needs-based products

In the area of material development, we carry out in-house design of patented high-performance brasses for synchronizer rings. The broad spectrum of alloys,

including lead-free special brasses, already takes into account the future requirements of the EU guidelines for used cars.

Brass

Diehl Metall DIN EN	DIN EN Symbol	State	Mechanical Properties				Material behavior
			Brinell hardness HBW 2.5/62.5 min.	Tensile strength ¹⁾ R _m (MPa) min.	Yield strength ¹⁾ R _{p0.2} (MPa) min.	Elongation ¹⁾ A ₅ (%) min.	
356 ²⁾ –	CuZn36Mn3Al2Si1		170-220 HBW2.5/62.5	630	330	13	Very high strength, good sliding abrasion properties
452 CW713R	CuZn37Mn3Al2PbSi	H130	130 HBW2.5/62.5	580 550	270 200	20 8	Good wear properties, excellent oil corrosion resistance
455 ²⁾ –	CuTn36Mn2Al1FePbSiSn		160 HBW2.5/62.5	580	270	20	High strength, good toughness, good oil corrosion resistance
458 CW713R	CuZn37Mn3Al2PbSi	H130	130 HBW2.5/62.5	580 550	270 200	20 8	High strength, good sliding abrasion properties
466 CW704R	CuZn23Al6Mn4Fe3Pb		200 HBW2.5/62.5	780 700	540 500	8 5	Very high strength
467 ²⁾ –	CuZn23Al6Mn4Fe3		200 HBW2.5/62.5	780	540	8	Very high strength
470 ²⁾ –	CuZn13Mn8Al5Si2Fe1Pb		180 HBW2.5/62.5	630	430	12	Very high strength
474 ²⁾ –	CuZn13Mn8Al5Si2Fe1		180 HBW2.5/62.5	630	430	12	Lead-free
479 ²⁾ –	CuZn30Mn3Al3Si1NiCr		195-225 HBW2.5/62.5	650	400	15	High hardness, high wear resistance
482 ²⁾ –	CuZn29Al4Ni3Co1SiFePb		190 HBW2.5/62.5	790	710	5	High hardness, high wear resistance
488 ²⁾ –	CuZn32Ni7Al4Si2Fe		240-300 HV50	830	720	3	Highly wear resistant, high strength
489 ²⁾ –	CuZn18Mn8Al5Si2Fe1Pb		220-300 HV50	840	800	5	Highly wear resistant, high strength
490 ²⁾ –	CuZn35Ni14Si4Pb		170 HV50	560	400	4	Maximum wear resistance
492 ²⁾ –	CuZn18Mn8Al5Si2Fe1		220-300 HV50	840	800	5	Highly wear resistant, high strength, lead-free

¹⁾Guidelines ²⁾Not standardized according to EN 12420

Information according to Diehl material data sheet

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By using patented layers, ideal friction behavior can be achieved under different load conditions.

Friction Layers

Diehl Metall DIN EN	q [J/mm ²]	p [N/mm ²]	v [m/s]
Diehl BlackLine	1.5 (5.0)	12 (24)	24 (42)
Diehl GoldLine	0.4 (1.5)	10 (16)	8 (12)

nominal (maximum)