



bercoweld®

WIRE SOLUTIONS

FOR BRAZING OF
STEEL AND WELDING
OF COPPER ALLOYS

bedra
intelligent wires



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bedra and copper

Added value for our customers. That is our claim. As early as 1889, it was a matter of course for Carl Berkenhoff to offer its customers more than others. Today, customers worldwide appreciate bedra as a reliable partner for sustainable solutions in the field of high-tech precision wires made of copper and copper-based alloys for electrical discharge machining, brazing and welding, electronics applications and many others. We listen to our customers, understand their needs and offer them solutions tailored to them. More than 100 alloys are impressive proof of our know-how. We have developed the bercoweld® series for brazing of steel and welding of copper and copper alloys. Our complex range of wire electrodes provides the right product for every application. Whether you prefer MIG, MAG, TIG, laser, plasma or arc spraying processes: The bercoweld® range is as diverse as your applications. This is one reason why renowned companies from the automotive industry, plant construction, and the offshore and onshore sectors rely on bercoweld as a fundamental component of an innovative joining technology.



Tradition

We have been producing wire for more than 130 years. That's what we know, that's our core competence. We draw our skills, knowledge and know-how from this experience.

Research and Development

The engineers in our research and development department are close to the market and in close contact with our customers. This is how our innovations and new products are created.



bedra
intelligent wires



Foundry

Our own foundry is our unique selling point. This enables us to respond to requests on the market and to produce alloys for our customers according to their specifications.



Competence

Know-how is one of the keys to success. We are always expanding our knowledge and drawing on our many years of experience. For new areas we expand our competence team.



Quality

We are one of the few global suppliers to offer all services from a single source. This allows us to trace our processes back 100% and thus ensure consistently high quality.

	Standard	Chemical Composition (Reference values %)										
		Si	Fe	Al	Mn	Sn	P	Ni	Cu	Others		
Low alloyed	bercoweld® K3 (SF-Cu)	CuZ (CuP) (ISO 24373)							0.05-0.07		Balance	
	bercoweld® K5 (CuSn1)	Cu1898 (ISO 24373) SG-CuSn (1733) ERCu (AWS A5.7-2007)	0.15-0.25			0.15-0.3	0.75-0.9	0.005-0.02			Balance	≤0.5
	bercoweld® S3 (CuSi3Mn1)	Cu6560 (ISO 24373) SG-CuSi3 (DIN 1733) ERCuSi-A (AWS A5.7-2007)	2.8-2.95			0.75-0.95					Balance	≤0.5
	bercoweld® S2 (Comas)	Cu6511 (ISO 24373)	1.7-1.9			0.9-1.1	0.17-0.25	0.008-0.012			Balance	
	bercoweld® K9 (CuAg1)	Cu1897 (ISO 24373) SG-CuAg (DIN 1733)				0.04-0.1		0.01-0.05			Balance	≤0.2
Tin bronzes	bercoweld® B6 (CuSn6P)	Cu5180A (ISO 24373) SG-CuSn6 (DIN 1733) ERCuSn-A (AWS A5.7-2007)					6.0 - 6.6	0.2-0.25			Balance	≤0.5
	bercoweld® BS60 (CuSn6MnSi)	CuZ (CuSn6MnSi) (ISO 24373)	0.2-0.3			0.2-0.35	5.5-6.0				Balance	≤0.5
	bercoweld® B8 (CuSn8P)	Cu5210 (ISO 24373) SG-CuSn6 (DIN 1733) ERCuSn-C (AWS A5.7-2007)					7.6-8.0	0.05-0.1			Balance	≤0.5
	bercoweld® B10 (CuSn10MnSi)	Cu5211 (ISO 24373)	0.2-0.3			0.2-0.35	9.0-10.0				Balance	≤0.5
	bercoweld® B12 (CuSn12P)	Cu5410 (ISO 24373)					12.0-13.0	0.15-0.25			Balance	≤0.5
Aluminium bronzes	bercoweld® A52 (CuAl5Ni2Mn)	Cu6061 (ISO 24373)			4.5-5.0	0.1-0.5				1.6-2.0	Balance	≤0.5
	bercoweld® A8 (CuAl7)	Cu6100 (ISO 24373) SG-CuAl8 (DIN 1733) ERCuAl-A1 (AWS A5.7-2007)			7.5-8.0	0.1-0.3				0.1-0.5	Balance	≤0.5
	bercoweld® A822 (CuAl8Ni2Fe2Mn2)	Cu6327 (ISO 24373) SG-CuAl8Ni2 (DIN 1733)		0.5-2.5	7.0 - 9.5	0.5-2.5				0.5-3.0	Balance	≤0.4
	bercoweld® A10 (CuAl10Fe)	Cu 6180 (ISO 24373) ERCuAl-A2 (AWS 5.7-2007)		≤1.5	8.5-11.0						Balance	≤0.5
	bercoweld® A922 (CuAl8Ni2Fe2Mn2)	Cu6327 (ISO 24373) SG-CuAl8Ni2 (DIN 1733)		1.2-1.5	8.3-8.8	1.7-2.0				2.2-2.5	Balance	≤0.4
	bercoweld® A35 (CuAl9Ni5Fe3Mn2)	Cu6328 (ISO 24373) SG-CuAl9Ni5 (DIN 1733) ERCuNiAl (AWS A5.7-2007)		3.0-4.0	8.5-9.5	0.6-3.5				4.0-5.0	Balance	≤0.5
	bercoweld® A300 (CuMn12Al8Fe3Ni2)	Cu6338 (ISO 24373) SG-CuMn13Al7 (DIN 1733) ERCuMnNiAl (AWS A5.7-2007)		2.0-4.0	7.0-8.5	11.0-14.0				1.5-3.0	Balance	≤0.5
Copper nickel	bercoweld® N10 (CuNi10Fe)	Cu7061 (ISO 24373) SG-CuNi10Fe (DIN 1733)		1.0-1.5		0.6-1.0				10.2-10.7	Balance	≤0.4 Ti 0.1-0.5
	bercoweld® N30 (CuNi30Mn1FeTi)	Cu7158 (ISO 24373) SG-CuNi30Fe (DIN 1733) ERCuNi (AWS A5.7-2007)		0.4-0.7		0.6-1.0				30.7-31.3	Balance	≤0.5 Ti 0.2-0.5
Special	bercoweld® K1 (E-Cu58)	CuZ (Cu) (ISO 24373)									≤99.9	≤0.1
	bercoweld® K2 (Cu-OF1)	CuZ (Cu) (ISO 24373)									≤99.95	≤0.01
	bercoweld® M122 (CuMn12Ni2)	CuZ (CuMn12Ni2) (ISO 24373)				12.0-13.0				2.0-5.0	Balance	≤0.5
	bercoweld® Ms83 (CuZn17)	CuZ (CuZn17) (ISO 24373)		≤0.05							81-84	≤0.2

Physical Properties of the Material					Mechanical Properties Weld Joint				Application
Electrical conductivity (m/Ω mm ²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (10 ⁻⁶ /K)	Melting range (°C)	Density (g/cm ³)	Tensile strength (MPa)	Elongation (%)	Brinell hardness (HB 2.5/62.5)	Notch bar impact energy KV (J)	
41-52	293-364	17	~1080	8.94	≥220	≥40	≥50	65	Joining gray cast iron, steel and copper
15-20	120-145	18.1	1020-1050	8.9	≥220	≥30	≥60	75	Joining and overlay welding on copper, joining gray cast iron
3.5-4	35	18.1	965-1035	8.5	≥350	≥40	≥80	60	Zinc-coated car body sheets in the automotive industry
4.7-5.3	40	18.1	1030-1050	8.7	≥285	≥45	≥62	75	Zinc-coated car body sheets in the automotive industry
44-46	220-315	17.7	1070-1080	8.9	≥200	≥30	≥60	75	Especially for joining and overlay welding on copper
6-7	75	18.1	910-1040	8.7	≥260	≥20	≥80	32	Repairs to bronzes, furnace brazing, solenoid valves, heat exchangers
7.3-7.9	62	18.4	900-1040	8.8	≥359	≥44	≥101	68	Zinc-coated car body sheets in the automotive industry
6-8	67	18.5	875-1025	8.8	≥260	≥20	≥80	32	Repairs to bronzes, furnace brazing, solenoid valves, heat exchangers
5-6	47	18	887-1020	8.7	≥290	≥14	≥115	24	Zinc-coated car body sheets in the automotive industry
3-5	40-50	18.5	825-990	8.6	≥320	≥5	≥120	8	Particularly for wear-resistant coatings (bearing bushes and side rails)
8-8.8	61	17.5	1060-1085	8.2	≥353	≥45	≥84	161	Solenoid valves, shipbuilding, containers, rail cars
7-9	65	17	1030-1040	7.7	≥430	≥40	≥100	100	Joining of zinc-coated car body sheets with higher strength demand
4.5-5.5	50	17	1030-1050	7.5	≥530	≥30	≥140	70	Seawater and corrosion resistant applications
6.5-7.5	55	16.5	1030-1040	7.6	≥500	≥35	≥140	95	Galvanized sheet metal, solenoid valves, shipbuilding
4.5-5.5	50	17	1030-1050	7.5	≥530	≥30	≥150	70	Seawater and corrosion resistant applications
3-4	20-40	19.3	1015-1045	7.5	≥690	≥16	≥200	68	For high wear, cavitation and corrosion resistant applications
3-5	30	21.5	945-985	7.4	≥900	≥10	≥290	180	Ship propellers, slide rails, control valve housings
2.8-3.2	30	17	1100-1145	8.9	≥300	≥34	≥80	190	Shipbuilding, pipelines, chemical industry
2.7-3.3	30	17.3	1180-1240	8.9	≥420	≥36	≥115	240	Shipbuilding, pipelines, chemical industry
58.6	394	17.3	1083	8.93	≥200	≥40	≥50	60	Especially for joining and overlay welding on copper
58.6	394	17.3	1083	8.94	≥200	≥40	≥50	60	Especially for joining and overlay welding on copper
2.2-2.4	22	18.3	950-970	8.4	≥400	≥40	≥100	100	Especially for solenoid valves
20-22	148	18.6	985-1020	8.75	≥220	≥35	≥70	55	MIG and TIG welding Suitable for tandem welding

Our highlights for laser brazing

What we have to offer:

- Special treatment and monitoring of our premium quality for laser applications
- More than 20 years experience in the production of bercoweld® S3 and A8 for MIG and laser applications in the automotive industry
- Preferred quality supplier to all European and Asian car manufacturers and their subcontractors
- Technical cooperation with all European welding and laser equipment suppliers
- Worldwide footprint due to cooperation with agents and distributors well experienced in MIG and laser applications

Our tolerances:

bedra commits to even tighter tolerances than the international standards. That's why we can guarantee an absolute consistent and reproducible brazing result. Through the use of high quality metals impurities are kept at minimum. Thus, porosities and spatters in the seam can be avoided.

Designation	Chemical Composition (%)										
	Cu	Al	Fe	Mn	Ni	Pb	Si	Sn	Zn	P	Others total (incl. *)
bercoweld® S3	Balance	≤0.01	≤0.1	0.75-0.95	-	≤0.01	2.8-2.95	≤0.05	≤0.1	≤0.02	≤0.2
Cu6560 (ISO 24373)	Balance	≤0.01	≤0.5	0.5-1.5	-	≤0.02	2.8-4.0	≤1.0	≤1.0	-	≤0.5
ERCuSi-A (C65600) (ANSI/AWS A5.7)	Balance	≤0.01	≤0.5	≤1.5	-	≤0.02	2.8-4.0	≤1.0	≤1.0	-	≤0.5
bercoweld® A8	Balance	7.5-8.0	≤0.1	0.1-0.3	0.1-0.3	≤0.01	≤0.1	≤0.03	≤0.07	≤0.02	≤0.2
Cu6100 (ISO24373)	Balance	6.0-8.5	*	≤0.5	*	≤0.02	≤0.1	*	≤0.2	-	≤0.5
ERCuAl_A1 (C61000) (ANSI/AWS A5.7)	Balance	6.0-8.5	*	≤0.5	*	≤0.02	≤0.1	*	≤0.2	-	≤0.5

Your benefits:

- Our bercoweld® S3 ensures an impeccable paint of the brazed joint (e.g. laser roof seam. No local shading of the paint is generated.
- Due to bedra's very narrow tolerances a readjustment of the parameters of the power source is not necessary.
- For diameter 1,60 mm bedra supplies an optimized specification that allows for very smooth and uniform unwinding even with this bigger dimension. That leads to a better feeding of the wire out of the drum and all the way to the welding tip.



Packaging

Spools

Plastic spool S200	Plastic spool S300	Wire basket BS300	Wire basket B300
<h3>Coils</h3> <p>outer diameter: ~450-600mm inner diameter: ~350-450mm weight (depending on dimension): 25-100kg Special dimensions on demand</p>			<h3>Rods</h3> <p>length: ~250-3000mm Special dimensions on demand, burr-free cut, flat embossing possible for meter rods</p>

bedrabox

		<table border="1"> <thead> <tr> <th></th> <th>Filling weight (kg)</th> <th>Dimensions (mm)</th> <th>Core Ø (mm)</th> </tr> </thead> <tbody> <tr> <td>bedrabox</td> <td>175-200</td> <td>510x770</td> <td>315</td> </tr> </tbody> </table>		Filling weight (kg)	Dimensions (mm)	Core Ø (mm)	bedrabox	175-200	510x770	315
			Filling weight (kg)	Dimensions (mm)	Core Ø (mm)					
bedrabox	175-200	510x770	315							
<p>Accessories: For accessories, such as hood or wire feeding please refer to our separate accessories brochure.</p> <p>The bedrabox is made from recycled and recyclable cardboard. That's good for the environment and good for you as the bedrabox can easily be returned into the raw material cycle. </p>										

Drums

		<table border="1"> <thead> <tr> <th></th> <th>Filling weight (kg)</th> <th>Dimensions (mm)</th> <th>Core Ø (mm)</th> </tr> </thead> <tbody> <tr> <td>Drum (a)</td> <td>100</td> <td>510x410</td> <td>315</td> </tr> <tr> <td>Drum (b)</td> <td>200</td> <td>510x800</td> <td>315</td> </tr> </tbody> </table>		Filling weight (kg)	Dimensions (mm)	Core Ø (mm)	Drum (a)	100	510x410	315	Drum (b)	200	510x800	315
			Filling weight (kg)	Dimensions (mm)	Core Ø (mm)									
Drum (a)	100	510x410	315											
Drum (b)	200	510x800	315											
<p>Accessories: For accessories, such as hood or wire feeding please refer to our separate accessories brochure.</p>														

Delivery options

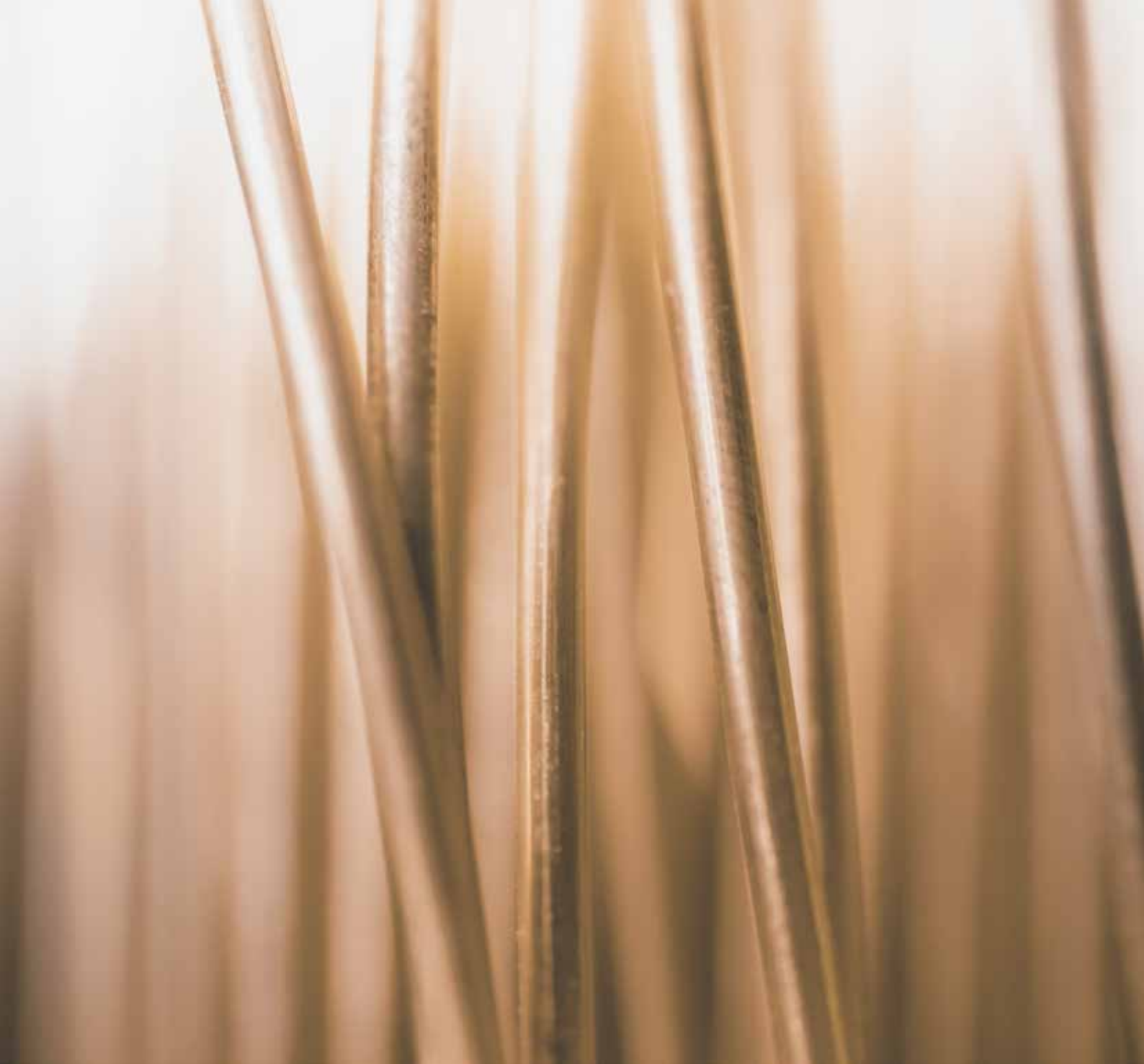
	Make up	Filling weight/length	Diameters
	bedrabox / Drum	175-200 kg	0.80-1.6 mm
	SD300/BS300/K300	12-15 kg	0.80-2.40 mm
	H500 H560 H760	150-250 kg	0.80-2.40 mm
	Coil	25-100 kg	1.60-6.00 mm
	Rod	250-3000 mm	1.60-6.00 mm

Calculation of running length

Make-Up and Dimensions	S3 (Density: 8.5 kg/dm ³)	A8 (Density: 7.7 kg/dm ³)
Spool: 15kg Diameter: 0,8mm	3,515 m	3,877 m
Spool: 15kg Diameter: 1 mm	2,248 m	2,482 m
Spool: 15kg Diameter: 1.2 mm	1,564 m	1,723 m
Spool: 15kg Diameter: 1.6 mm	878 m	969 m
Drum: 200kg Diameter: 1mm	29,974 m	33,088 m
Drum: 200kg Diameter: 1.2mm	20,814 m	22,978 m
Drum: 200kg Diameter: 1.6mm	11,709 m	12,925 m

Finding the right bercoweld® alloy

base to base material	DC 05, 1.0 mm	DC 05, 1.0 mm	DC 05, 0.9 mm	DX 54D+Z, 1.6mm	DX 54D+Z, 3.0mm	DX 55D+Z, 1.0mm	H180 B, 0.8mm	H220 B, 1.0mm	H220 B, 2.0mm	H260 LA, 1.0mm	H260 LA, 1.2mm	H260 LA, 2.0mm	H340 LA, 1.5mm
DC 05, 1.0mm	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
DC 05, 1.5mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8					
DX 53D+Z, 0.9mm	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
DX 54D+Z, 1.6mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8					
DX 54D+Z, 3.0mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8		S3 A8			
DX 55D+Z, 1.0mm	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
H180 B, 0.8mm	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
H220 B, 1.0mm	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
H220 B, 2.0mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8		S3 A8			
H260 LA, 1.0mm	S3 A8		S3 A8		S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8	S3 A8
H260 LA, 1.2mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8		S3 A8			
H260 LA, 2.0mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8		S3 A8			
H340 LA, 1.5mm	S3 A8		S3 A8			S3 A8	S3 A8	S3 A8		S3 A8			



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