berAlweld®

WIRE SOLUTIONS

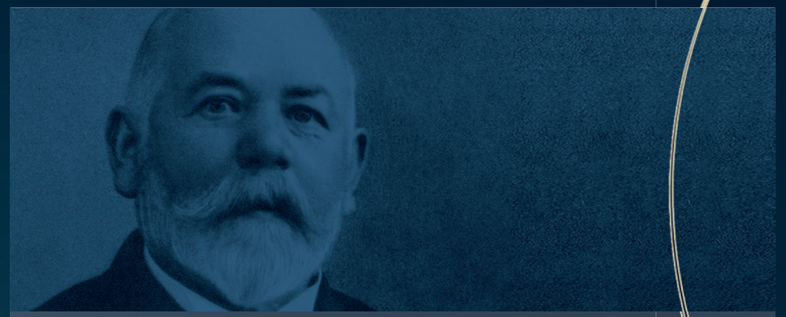
FOR BRAZING OF
ALUMINUM ALLOYS

bedra
intelligent wires

CONTENT

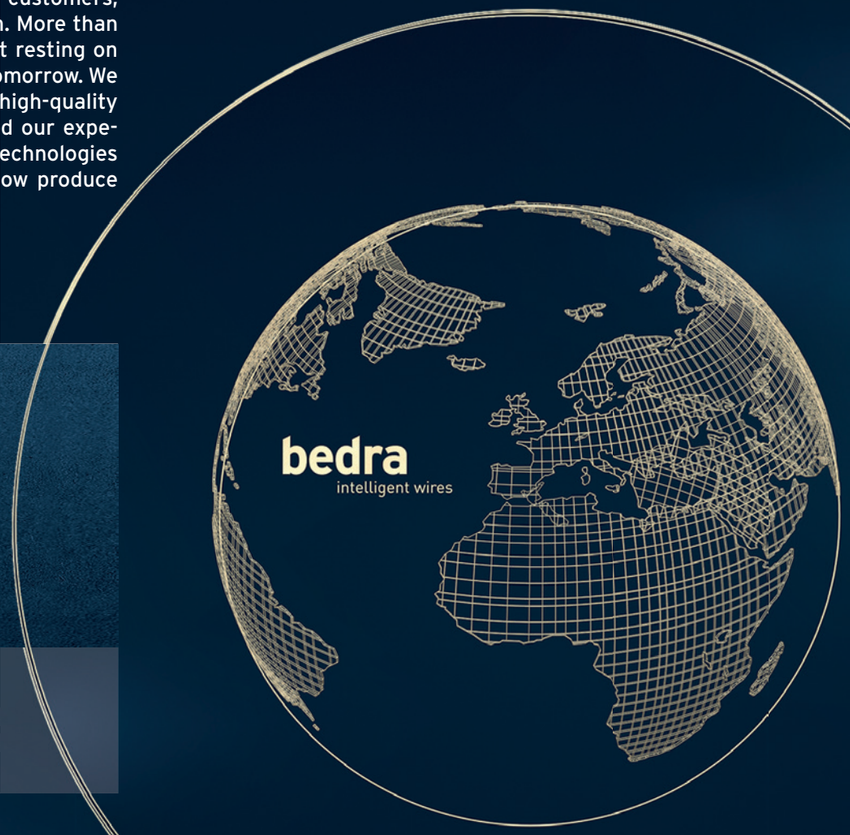
bedra et Aluminium

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. But we are not resting on our laurels. We are already working today on the innovations for tomorrow. We are expanding our brazing and welding wire portfolio to include high-quality aluminum alloy filler metals. For this purpose, we have combined our experience of more than 130 years in wire production with the latest technologies and specialists from the aluminum sector. That's why we can now produce aluminum wires in well-known high bedra quality.



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

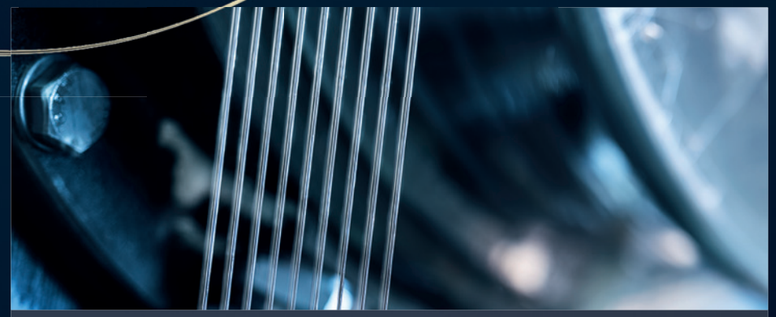
The engineers in our research and development department are close to the market and in close contact with our customers. This is how our innovations and new products are created.

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 name	Chemical Composition (acc. DIN EN ISO 18273)												Physical Properties of the Material					Mechanical Properties of the Weld Joint				Application
		Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others	Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)	Yield strength (MPa)	Tensile strength (MPa)	Elonga-tion A5 (%)	Modulus of elasticity (MPa)	
berAlweld® M1070	S Al 1070 (Al99,7) 3.0259 ER 1070	<0.20	<0.25	<0.04	<0.03	<0.03	-	<0.04	-	<0.03	≥99.70	<0.0003	-	34-36	210-230	$23.5*10^{-6}$	647-658	2.7	≥20	≥65	≥35	68000	Chemical, construction, electronics and food industry
berAlweld® M1450	S Al 1450 (Al99,5Ti) 3.0805 ER 1450	<0.25	<0.40	<0.05	<0.05	<0.05	-	<0.07	-	0.10 - 0.20	≥99.50	<0.0003	-	≥ 35	210-230	$23.5*10^{-6}$	647-658	2.7	≥20	≥65	≥35	68000	Chemical, construction and food industry
berAlweld® M4043	S Al 4043A (AlSi5(A)) 3.2245 ER 4043	4.5 - 6.0	<0.6	<0.30	<0.15	<0.05	-	<0.10	-	<0.15	Balance	<0.0003	<0.15	24-32	<170	$22.1*10^{-6}$	573-625	2.68	≥40	≥120	≥8	69000	Automotive parts Bicycle and motor bike frames Furniture
berAlweld® M4047	S Al 4047 (AlSi12) 3.2285 ER 4047	11.0 - 13.0	<0.8	<0.30	<0.15	<0.10	-	<0.20		-	Balance	<0.0003	<0.15	17-27	150-170	$20*10^{-6}$	573-585	2.65	≥60	≥130	≥5	75000	Automotive parts Heat exchangers Body panels Brazing of aluminium sheets. profiles & castings
berAlweld® M5087	S Al 5087 (AlMg4,5MnZr(A)) 3.3546 ER 5087	<0.25	<0.40	<0.05	0.7 - 1.1	4.5 - 5.2	0.05 - 0.25	<0.25	0.10 - 0.20	<0.15	Balance	<0.0003	<0.15	15-19	130-170	$23.7*10^{-6}$	574-638	2.66	≥140	≥285	≥18	69000	Automotive parts Shipbuilding Offshore applications Railway Storage tanks Structural industry Cryogenic applications
berAlweld® M5183	S Al 5183 (AlMg4,5Mn0,7(A)) 3.3548 ER 5183	<0.40	<0.40	<0.10	0.50 - 1.0	4.3 - 5.2	0.05 - 0.25	<0.25	-	<0.15	Balance	<0.0003	<0.15	16-19	110-120	$23.7*10^{-6}$	574-638	2.66	≥130	≥275	≥18	69000	Automotive parts Shipbuilding Offshore applications Railway Storage tanks Structural industry Cryogenic applications
berAlweld® M5356	S Al 5356 (AlMg5Cr(A)) 3.3556 ER 5356	<0.25	<0.40	<0.10	0.05 - 0.20	4.5 - 5.5	0.05 - 0.20	<0.10	-	0.06 - 0.20	Balance	<0.0003	<0.15	15-19	130-170	$23.9*10^{-6}$	575-633	2.64	≥120	≥250	≥18	69000	Automotive parts Shipbuilding Construction industry Tank construction
berAlweld® M5554	S Al 5554 (AlMg2,7Mn) 3.3538 ER 5554	<0.25	<0.40	<0.10	0.50 - 1.0	2.4 - 3.0	0.05 - 0.20	<0.25	-	0.05 - 0.20	Balance	<0.0003	<0.15	-	-	-	602-648	2.68	≥100	≥215	≥18	-	Chemical storage tanks Automotive wheels Trailers Rail tank cars
berAlweld® M5754	S Al 5754 (AlMg3) 3.3536 ER 5754	<0.40	<0.40	<0.10	<0.50	2.6 - 3.6	<0.30	<0.20	-	<0.15	Balance	<0.0003	<0.15 Mn+Cr: 0.10 - 0.60	20-23	130-170	$23.9*10^{-6}$	610-642	2.66	≥80	≥190	≥20	70500	Tank construction Shipbuilding Automotive parts Construction industry Outdoor furniture

berAlweld® M1070

Low alloyed AlSi filler metal for MIG and TIG welding of pure and mostly pure aluminium

Features

- good fluidity

Applications

- chemical industry
- construction industry
- electronics
- food industry

Standards

- EN ISO 18273 : **S Al 1070 (Al99.7)**
- EN ISO 1732 : **3.0259**
- AWS A5.10 : **ER 1070**

Typical base materials

- pure aluminum
- mostly pure aluminium (max. 0.5% of alloying elements)

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.20	<0.25	<0.04	<0.03	<0.03	-	<0.04	-	<0.03	≥99.70	<0.0003	-

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of xpansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
34-36	210-230	$23.5*10^{-6}$	647-658	2.7

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 20	≥ 65	≥ 35	68000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M1450

Low alloyed AlSi filler metal for MIG and TIG welding of pure and mostly pure aluminium

Features

- good fluidity
- Ti acts as a grain refiner
- enhanced corrosion reistance

Applications

- chemical industry
- construction industry
- food industry

Norme

- DIN EN ISO 18273: **S Al 1450 (Al99.5Ti)**
- DIN 1732: **3.0805**
- AWS A5.10: **ER 1450**

Typical base materials

- pure aluminum
- mostly pure aluminium (max. 0.5% of alloying elements)

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.25	<0.40	<0.05	<0.05	<0.05	-	<0.07	-	0.10-0.20	≥99.5	<0.0003	-

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
≥ 35	210-230	$23.5*10^{-6}$	647-658	2.7

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 20	≥ 65	≥ 35	68000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M4043

AlSi filler metal for MIG and TIG welding in various applications

Also available as spray wire in dimensions from 1.60 to 4.00 mm

Features

- low sensivity to weld cracking
- Si enhances the fluidity and is therefore favored by welding workers
- bright and almost smut free welding
- not recommended for anodizing

Applications

- automotive parts
- bicycle and motor bike frames
- furniture

Standards

- EN ISO 18273 : **S Al 4043A (AlSi5(A))**
- EN ISO 1732 : **3.2245**
- AWS A5.10 : **ER 4043**

Typical base materials

- AlSi alloys
- AlMgSi alloys
- cast alloys with Si content of max. 7%

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Approvals

- TÜV
- DB

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
4.5-6.0	<0.6	<0.30	<0.15	<0.05	-	<0.10	-	<0.15	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of xpansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
24-32	<170	$22.1*10^{-6}$	573-625	2.68

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 40	≥ 120	≥ 8	69000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M4047

AlSi filler metal for MIG and TIG welding in various applications

Also available as spray wire in dimensions from 1.60 to 4.00 mm

Features

- high Si content reduces sensivity to weld cracking and generates higher shear strength in fillet welding
- even higher fluidity compared to berAlweld® M4043
- bright and almost smut free welding
- not recommended for anodizing

Applications

- automotive parts
- heat exchangers
- body panels
- brazing of aluminium sheets, profiles and castings

Standards

- DIN EN ISO 18273: **S Al 4047 (AlSi12)**
- DIN 1732: **3.2285**
- AWS A5.10: **ER 4047**

Typical base materials

- cast alloys with Si content of max. 12%

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
11.0-13.0	<0.8	<0.30	<0.15	<0.10	-	<0.20	-	-	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
17-27	150-170	$20*10^{-6}$	573-585	2.65

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 60	≥ 130	≥ 5	75000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M5087

AlMg based filler metal for MIG and TIG welding of various Al alloys

Features

- low sensivity to weld cracking due to Cr and Zr
- excellent corrosion resistance to seawater and sea atmosphere
- for highest requirements on high tensile strength
- suitable for sustained elevated temperature service up to 80°C
- not recommended for anodizing

Applications

- automotive parts
- shipbuilding
- offshore applications
- railway
- storage tanks
- structural industry
- cryogenic applications

Standards

- DIN EN ISO 18273: **S Al 5087 (AlMg4.5MnZr)**
- DIN 1732: **3.3546**
- AWS A5.10: **ER 5087**

Typical base materials

- AlMg, AlMn, AlMgSi, AlMgMn and AlZnMg alloys

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Approvals

- TÜV
- DB
- DNV/GL

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.25	<0.40	<0.05	0.7-1.1	4.5-5.2	0.05-0.25	<0.25	0.10-0.20	<0.15	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
15-19	130-170	$23.7*10^{-6}$	574-638	2.66

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 140	≥ 285	≥ 18	69000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M5183

AlMg based filler metal for MIG and TIG welding of various Al alloys

Features

- excellent corrosion resistance to seawater and sea atmosphere
- for highest requirements on tensile strength
- not recommended for anodizing

Applications

- automotive parts
- shipbuilding
- offshore applications
- railway
- storage tanks
- structural industry
- cryogenic applications

Standards

- DIN EN ISO 18273: **S Al 5183 (AlMg4.5Mn0.7)**
- DIN 1732: **3.3548**
- AWS A5.10: **ER 5183**

Typical base materials

- AlMg, AlMn, AlMgSi, AlMgMn and AlZnMg alloys

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Approvals

- TÜV
- DB
- DNV/GL

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.40	<0.40	<0.10	0.50-1.0	4.3-5.2	0.05-0.25	<0.25	-	<0.15	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
16-19	110-120	$23.7*10^{-6}$	574-638	2.66

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 130	≥ 275	≥ 18	69000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M5356

AlMg based filler metal for MIG and TIG welding of various AlMg alloys

Features

- high shear strength
- excellent corrosion resistance to seawater and sea atmosphere
- very good color match on anodized parts
- not suitable for for sustained elevated temperature service (>65°C)

Applications

- automotive parts
- shipbuilding
- construction industry
- tank construction

Standards

- DIN EN ISO 18273: **S Al 5356 (AlMg5Cr(A))**
- DIN 1732: **3.3556**
- AWS A5.10: **ER 5356**

Typical base materials

- AlMg, AlMgSi and AlMgMn wrought alloys with a Mg content up to 5%
- AlMg cast alloys with a Mg content up to 10%

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Approvals

- TÜV
- DB
- DNV/GL

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.25	<0.40	<0.10	0.05-0.20	4.5-5.5	0.05-0.20	<0.10	-	0.06-0.20	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
15-19	130-170	$23.9*10^{-6}$	575-633	2.64

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 120	≥ 250	≥ 18	69000

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M5554

AlMg based based filler metal for MIG and TIG welding of AlMg based alloys

Features

- high corrosion resistance
- suitable for sustained elevated temperature service (65-160°C)

Applications

- chemical storage tanks
- automotive wheels
- trailers
- rail tank cars

Standards

- DIN EN ISO 18273: **S Al 5554 (AlMg2.7Mn)**
- DIN 1732: **3.3538**
- AWS A5.10: **ER 5554**

Typical base materials

- AlMg and AlMgMn alloys with Mg content of up to 3%

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.25	<0.40	<0.10	0.50-1.0	2.4-3.0	0.05-0.20	<0.25	-	0.05-0.20	Balance	<0.0003	<0.15

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
-	-	-	602-648	2.68

Mechanical Properties of the Weld Joint

Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 100	≥ 215	≥ 18	-

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

berAlweld® M5754

AlMg based filler metal for MIG and TIG welding of AlMg based alloys

Features

- excellent corrosion resistance
- very good color match on anodized parts

Applications

- automotive parts
- shipbuilding
- construction industry
- tank construction
- outdoor furniture

Standards

- DIN EN ISO 18273: **S Al 5754(AlMg3)**
- DIN 1732: **3.3536**
- AWS A5.10: **ER 5754**

Typical base materials

- AlMg, AlMgSi and AlMgMn wrought and cast alloys with a Mg content up to 3%

Shielding gas (EN ISO 14175)

- Ar (I1)
- Ar/He mixture (I3)

Chemical Composition (%)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Al	Be	Others
<0.40	<0.40	<0.10	<0.50	2.6-3.6	<0.30	<0.20	-	<0.15	Balance	<0.0003	<0.15 Mn+Cr : 0,10-0,60

Physical Properties of the Material

Electrical conductivity (m/Ω mm²)	Heat conductivity (W/mK)	Coefficient of expansion (20-100°C) (1/K)	Melting range (°C)	Density (g/cm³)
20-23	130-170	$23.9*10^{-6}$	610-642	2.66

Mechanical Properties of the Weld Joint

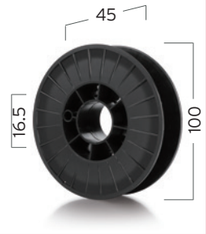
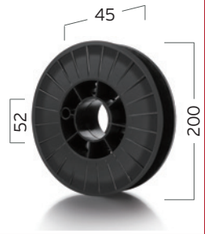
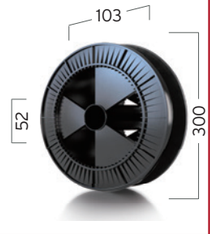
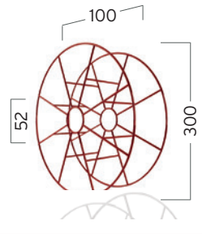
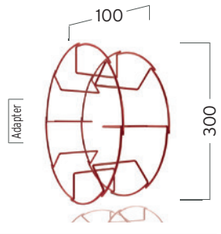
Yield strength (MPa)	Tensile strength (MPa)	Elongation A5 (%)	Modulus of elasticity (MPa)
≥ 80	≥ 190	≥ 20	70500

Overview Packaging

Make-up	Wire diameter (mm)
Spool (0.5/2/7kg)	0.8 - 1.6
Drum (80/150/250kg)	1.0 - 1.6
Rods (1000mm/10kg)	1.6 - 6.0

Packaging

Spools

Plastic spool S100 (Filling weight: 0.5kg)	Plastic spool S200 (Filling weight: 2kg)	Plastic spool S300 (Filling weight: 7kg)	Wire basket BS300 (Filling weight: 7kg)	Wire basket B300 (Filling weight: 7kg)
				

Packaging Spools:

Each unit contains a spool of welding wire, enclosed in a PE bag with desiccant and packed in a sturdy cardboard box.

Packaging Rods:

Each welding rod is marked with its alloy name and dimension and packed in a sturdy carton.

bedrabox

	Filling weight (kg)	Dimensions (mm)	Core Ø (mm)
bedrabox 510 (a)	80	510x770	315
bedrabox 620 (b)	150	620x770	400

Accessories:
For accessories, please refer to our separate accessories brochure

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.

ecofriendly

Drums

	Filling weight (kg)	Dimensions (mm)	Core Ø (mm)
Round drum 750(a)	200-250	750x1130	315
Square drum 600 (b)	130	600x600 x900	315
Square drum 600½ (c)	65	600x600 x410	315

Accessories:
For accessories, please refer to our separate accessories brochure

Finding the right berAlweld® alloy

bedra
intelligent wires

base material to base material	356.0, A356.0 357.0, A357.0, 359.0, 443,0, A444.0	7005	6005, 6061, Alclad 6061, 6063, 6351	5454	5154, 5254	5086, 514.0, 535.0	5083, 5456	5052, 5652	5005, 5050	3004, Alclad 3004	1060, 1070, 1080, 1350, 1450
1060, 1070, 1080, 1350, 1450	4043	5356	4043	4043	4043	5356	5356	4043	4043	4043	1070, 1450
3004, Alclad 3004	4043	5356	5356	5356	5356	5356	5356	4043	4043	4043	
5005, 5050	4043	5356	4043 5356	5356	5356	5356	5356	4043 5356	4043 5356		
5052, 5652	4043	5356	4043 5356	5356	5356	5356	5356	5356			
5083, 5456	5356	5556	5356	5356	5356	5356	5556 5183				
5086, 514.0, 535.0	5356	5356	5356	5356	5356	5356					
5154, 5254	4043	5356	5356	5356	5356						
5454	4043	5356	5356	5554							
6005, 6061, Alclad 6061, 6063, 6351	4043	5356	4043 5356								
7005	4043	5356									
356.0, A356.0, 357.0, A357.0, 359.0, 443.0, A444.0	4043										

Note:
1. The listed filler metals are the optimal choice for most structural material applications. If two filler metals are listed in the table, both can be used.
2. Applications with 4043 filler metal can also use 4047 as a substitution.
3. Applications with 5356 filler metal can also use 5556 or 5183 as a substitution.
4. Al-Mg alloy with Mg contenct above 3% cannot be used in applications with long-term temperature above 65°C (150°F).
5. For applications with special requirements, the selection of filling metal is diffrent from the above list.

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