

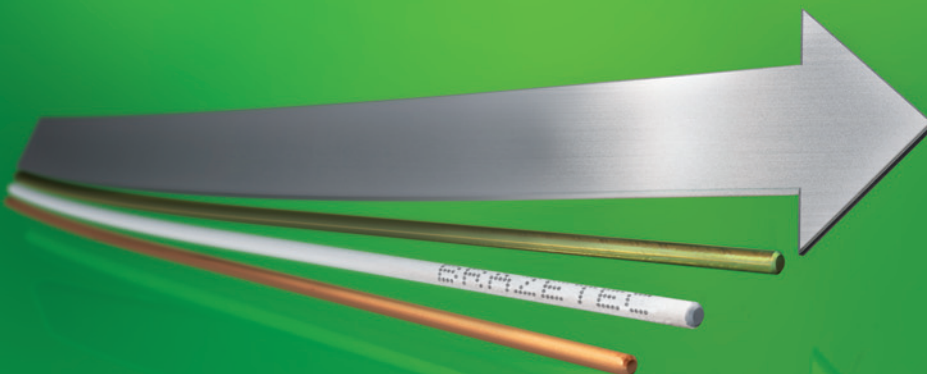
# BrazeTec's Delivery Programme

## Umicore Brazing Technology

Brazing Alloys & Brazing Fluxes

Brazing Pastes

Soft Solders & Soft Solder Fluxes



Brazing is BrazeTec 

- BrazeTec production facilities
- Umicore location



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# Brazing is BrazeTec

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# Brazing is BrazeTec

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## BrazeTec Brazing Pastes

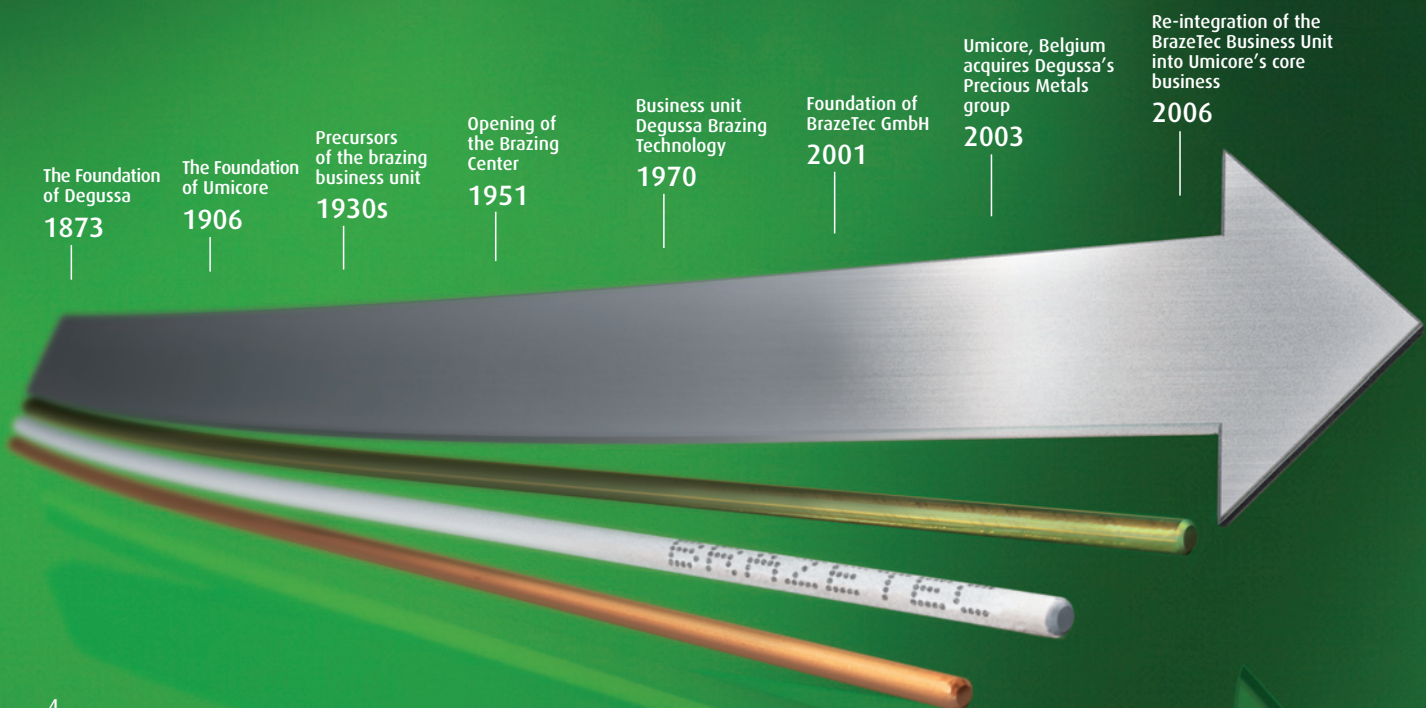
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# Convincing Through Performance – for generations – BrazeTec

In line with our claim “Brazing is BrazeTec”, we offer solutions, which set standards, products, and technologies that set the trend and a service that always puts the needs of our customer first.







German Institute for  
Quality Assurance and  
Labeling



German Technical and  
Scientific Association for  
Gas and Water



TQM & Responsible  
Care



Certified to  
DIN EN ISO 9001:2008



Certified to  
DIN EN ISO 14001:2004

## Umicore – BrazeTec Your Partner in Brazing Technology

BrazeTec is a world leader in the manufacture and supply of high quality brazing materials, brazing paste and flux. Originally part of Degussa, today BrazeTec is part of the multinational materials technology group Umicore, which focuses on application areas where it is foremost for its know how in materials science, chemistry and metallurgy. This union offers BrazeTec an optimum environment for stability and innovation.

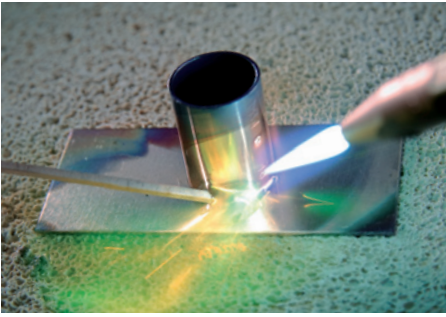
With production sites in Europe, America and Asia, as well as a worldwide sales and logistics network, we are here for you when it comes to joining metals permanently and reliably. Our customer service naturally meets all requirements on export documents, REACH requirements and safety data sheets in local languages for customers in all parts of the world. Through our integration into

the Umicore Group, we offer you the additional facilities of precious metal recycling, precious metal management and other Umicore services, to meet your requirements.

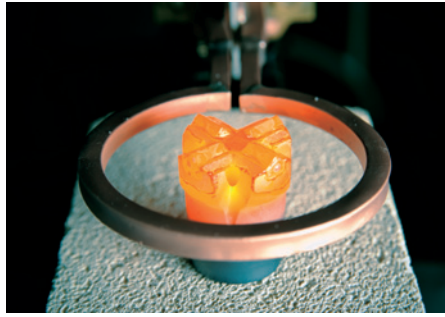
A stable and unprecedented product quality is the foundation of our long-term and successful partnerships with customers. Continuous improvement processes ensure that our employees and products meet the growing demands and thanks to our team of experts at the Brazing Center we can, together with you, develop customized solutions, optimize your production processes and adapt our extensive range of products to suit your particular needs.

# Brazing is BrazeTec

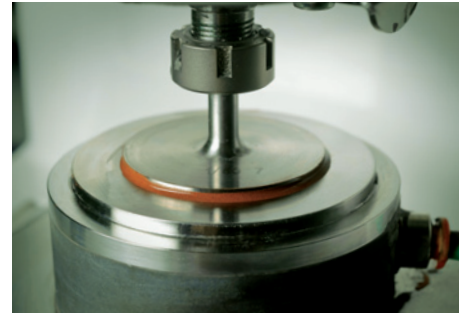
... since 1930



Flame brazing



Induction brazing



Viscosity measurement

# The Knowledge Center and the Basis of Every Innovation – our Brazing Center

Our Brazing Center has offered technical services to our customers around the world for over 60 years.

## Service & Know-how

### Brazing Center Service

- Application technology consultation
- Brazing trials on production parts
- Brazing seminars and training courses
- Partnership project work

### Brazing Center Brazing Equipment

- Oxyacetylene burner
- Medium and high frequency induction facility
- Inert gas furnace
- Muffle furnace
- Vacuum furnace

### Brazing Center Analysis

- Metallographic analysis
- Optical and electron microscopy
- Thermic analysis
- Elementary analysis
- Determination of mechanical parameters (hardness, strength)



With our Brazing Center in Hanau, Germany, we have for over 60 years maintained a unique and first-class center for technical advice and project work with our customers, and for the development of new, superior metal and chemical products, which meet the demanding requirements of our customers in connection technology.

### **Application Technology Consultation**

Our experienced personnel in the Brazing Center will assist you with regard to the optimum product selection for your brazing process, discuss with you the correct design of your components for brazing and make recommendations for suitable brazing techniques, including the required parameters.

### **Brazing Trials**

Thanks to our wide range of brazing equipment, we are able to carry out brazing trials directly on prototype and production parts. Using state of the art analytical methods, we can assess the quality of the brazed joints and subsequently evaluate the trials. The process parameters determined in this way enable the specification of the production requirements for our customers.

### **Brazing Seminars and Training Courses**

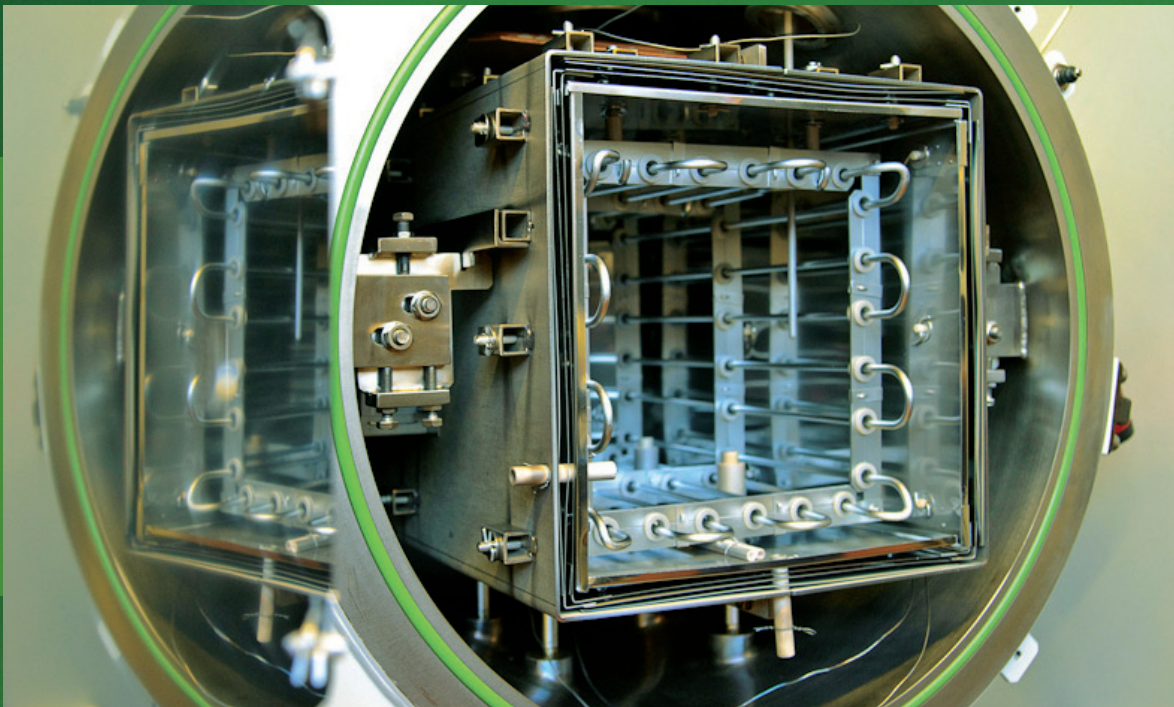
With the aid of conferences, meetings and seminars of various organisers, our personnel at the Brazing Center discuss, expand, and share their knowledge. Specifically it is possible to support our customers by means of brazing seminars and training courses conducted on their own premises, as well as personalised events locally.

Web seminars on current brazing topics also offer our customers the opportunity to acquire technical brazing knowledge online.

### **Partnership Project Work**

In partnership with our customers, we address complex and long-term brazing topics in the form of project work. These include the optimisation of existing processes or the development of new production and brazing processes to meet individual adaptation of our products as well as joint research and development work.


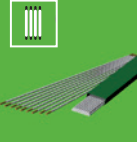
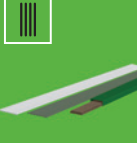





Vacuum furnace





## Available Forms

### The most widely used forms are:

	<p><b>Wire</b></p> <p>Ø: 1.5 / 2.0 / 3.0 mm in coils or on spools</p>		<p><b>Flux coated brazing rods</b></p> <p>Core-Ø: 1.5 und 2.0 mm Length: 500 mm Flux coating: standard, thin or extra-thin</p>
	<p><b>Rods</b></p> <p>Ø: 1.5 / 2.0 / 3.0 mm Length: 500 mm</p>		<p><b>Flux</b></p> <p>Quantity: 0.1/0.5/1/10/40 kg</p>
	<p><b>Strip</b></p> <p>Thickness: 0.1 / 0.2 / 0.25 / 0.3 / 0.4 mm Width: 1.5 to 70 mm</p>		<p><b>Brazing Paste</b></p> <p>Quantity: 1/3/5/10/25 kg Custom cartridges available on demand</p>
	<p><b>Sandwich Alloy/Trifoil</b></p> <p>Thickness: 0.25 / 0.3 / 0.4 mm Width: 1.5 to 70 mm</p>		<p><b>Preforms</b></p> <p><b>Wire:</b> Rings, segments, multiform parts <b>Strip / Sandwich Alloy:</b> Segments, stamped and multi- form parts, platelets, washers, discs, squares, etc.</p>

Information about our products and equipment as well as our systems and procedures is based on comprehensive research and application technological experience. We communicate these results, but take no liability for respective single contracts that are exceeding thereof. We reserve the right to make technical changes in the process of product development in spoken and written terms to the best of our knowledge. Furthermore, our application technology services are available at your convenience for more detailed consultation such as the involvement in solving manufacturing and application technology problems. This does not however, release the user from their own responsibility for checking the input and recommendations we give for their own use prior to using that input or recommendation. This is especially applicable for foreign deliveries. This also applies to the trade mark rights of third parties, for applications and procedures that are not specifically given by us. In the event of damage or loss our liability is limited to indemnification of the same admeasurement as is foreseen in our general terms of sales and delivery in reference to deficiencies in quality.

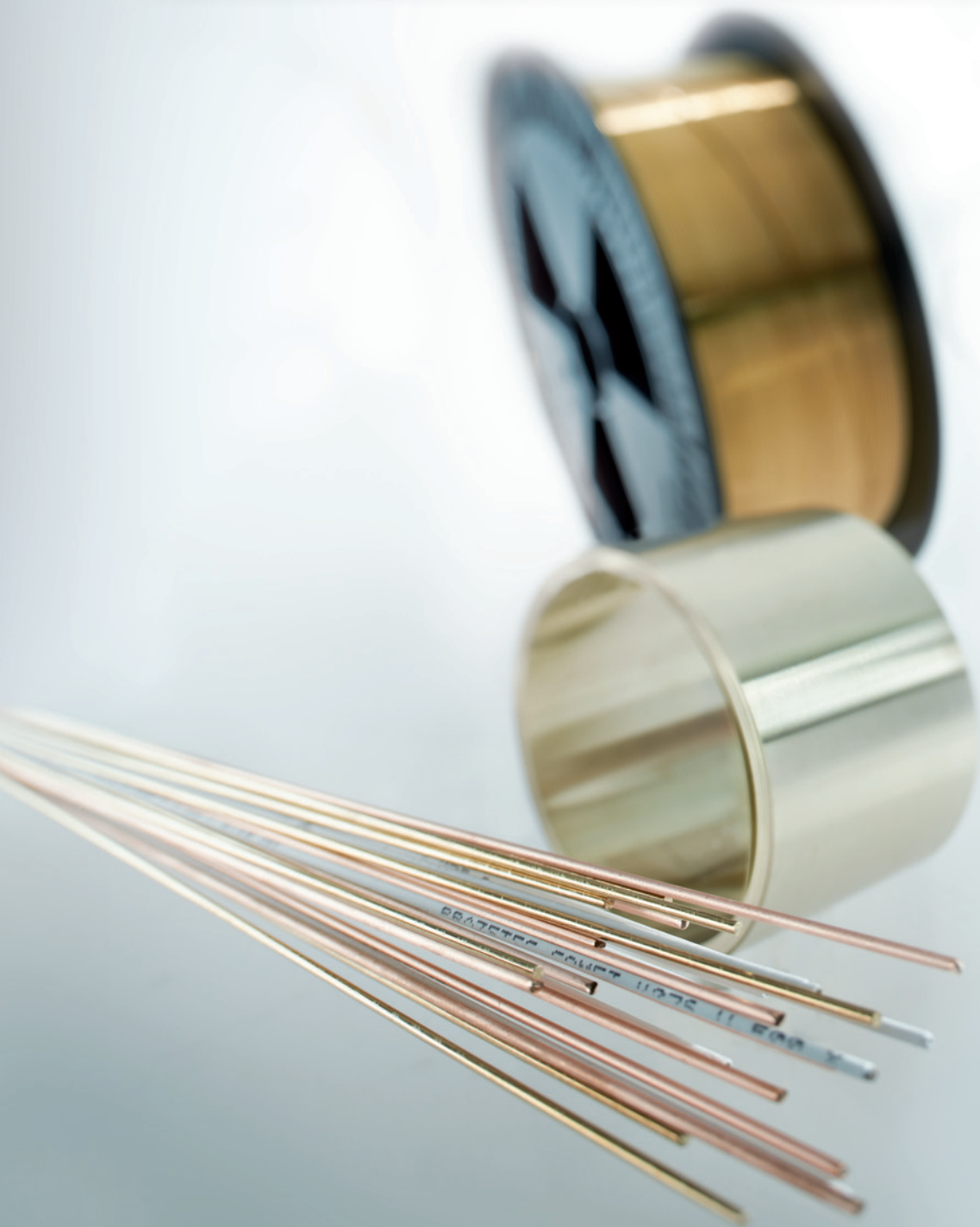
Please note these are our standard forms - many other forms are available upon request.

# BrazeTec Products

Brazing Alloys and Brazing Fluxes

Brazing Pastes

Soft Solders and Soft Solder Fluxes



# Brazing Alloys & Brazing Fluxes



## A BrazeTec Brazing Alloys, Cadmium Free

Name	Composition by Weight %				Melting Range in °C	Working Temp. in °C	Tensile Strength acc. to DIN EN 12797 in Mpa		Density in g/cm <sup>3</sup>	ISO 17672	DIN EN 1044	Available Forms			
	Ag	Cu	Zn	Misc.			on Steel S 235	on Steel E 295				●	■	○	⊕
BrazeTec 5662	56	19	17	5 Sn/3 Ga	608 – 630	630	350	420	9.1	–	–	●	●	–	–
BrazeTec 5600	56	22	17	5 Sn	620 – 655	650	350	430	9.5	Ag 156	AG 102	●	●	●	●
BrazeTec 5507	55	21	22	2 Sn	630 – 660	660	350	430	9.4	Ag 155	AG 103	●	●	●	●
BrazeTec 4576 <sup>1)</sup>	45	27	25.5	2.5 Sn	640 – 680	670	350	430	9.2	Ag 145	AG 104	●	●	●	●
BrazeTec 4076	40	30	28	2 Sn	650 – 710	690	350	430	9.1	Ag 140	AG 105	●	●	●	●
BrazeTec 3476 <sup>1)</sup>	34	36	27.5	2.5 Sn	630 – 730	710	360	480	9.0	Ag 134	AG 106	●	●	●	●
BrazeTec 3076	30	36	32	2 Sn	665 – 755	740	360	480	8.8	Ag 130	AG 107	●	●	–	●
BrazeTec 2576	25	40	33	2 Sn	680 – 760	750	360	480	8.7	Ag 125	AG 108	●	●	–	●
BrazeTec 4404 <sup>1)</sup>	44	30	26	–	675 – 735	730	400	480	9.1	Ag 244	AG 203	●	●	●	●
BrazeTec 3075	30	38	32	–	680 – 765	750	380	430	8.9	Ag 230	AG 204	●	●	●	●
BrazeTec 2500	25	40	35	–	700 – 790	780	380	430	8.8	Ag 225	AG 205	●	●	–	●
BrazeTec 2009	20	44	35.8	0.15 Si	690 – 810	810	380	430	8.7	–	AG 206	●	●	–	●

<sup>1)</sup> German Institute for Quality Assurance and Labeling

German Technical and Scientific Association for Gas and Water

Most alloys can be supplied with 0.15% Si

The silver brazing alloys shown on this page are generally capable of being used for operating temperatures from –200 °C to +200 °C.

They can be used with any type of steel, copper and copper alloy, also nickel and nickel alloy.

## B CoMet – Brazing Rods, Cadmium Free & Flux Coated

Name	Melting Range	Working Temperature	Available Forms 
	in °C	in °C	
BrazeTec CoMet 5600U	620 – 655	650	●
BrazeTec CoMet 4576U	630 – 660	670	●
BrazeTec CoMet 4404U	675 – 735	730	●
BrazeTec CoMet 4076U	650 – 710	690	●
BrazeTec CoMet 3476U	630 – 730	710	●
BrazeTec CoMet 3076U	665 – 755	740	●
BrazeTec CoMet 2009U	690 – 810	810	●

Most alloys can be supplied with 0.15% Si

BrazeTec offers the following cadmium free brazing alloys from its comprehensive range of products under the name of CoMet (coated metal) as flux coated rods as well. The flux is equivalent to the type FH 10 in accordance with DIN EN 1045 and is boracic

acid free. The respective instructions for the use of cadmium free brazing alloys are effective for its application. The silver content by weight of the coated brazing rod is lower than the silver content of a bare brazing rod because of the flux coating. The content of



the bare brazing rod of course meets the composition found in cadmium free brazing alloys.



## BrazeTec Brazing Alloys for Copper and Copper Based Materials C

Name	Composition by Weight %				Melting Range in °C	Working Temp. in °C	Tensile Strength acc. to DIN EN 12797 in MPa on Cu	Density in g/cm <sup>3</sup>	ISO 17672	DIN EN 1044	Available Forms			
	Ag	Cu	P	Sn							⊕	▨	Ⓢ	⚙
BrazeTec S 18	18	75	7	–	645	650	250	8.4	CuP 286	CP 101	•	•	–	•
BrazeTec S 15	15	80	5	–	645 – 800	700	250	8.4	CuP 284	CP 102	•	•	•	•
BrazeTec S 5	5	89	6	–	645 – 815	710	250	8.2	CuP 281	CP 104	•	•	•	•
BrazeTec S 2 <sup>1)</sup>	2	91.7	6.3	–	645 – 825	740	250	8.1	CuP 279	CP 105	•	•	•	•
BrazeTec S 94 <sup>1)</sup>	–	93.8	6.2	–	710 – 890	760	250	8.1	CuP 179	CP 203	•	•	–	•
BrazeTec S 93	–	93	7	–	710 – 820	730	250	8.05	CuP 180	CP 202	•	•	–	•
BrazeTec S 92	–	92.2	7.8	–	710 – 770	720	250	8.0	CuP 182	CP 201	•	•	–	–
BrazeTec S 90	–	89.5	6.2	43	650 – 700	690	250	8.0	–	–	•	–	–	–
BrazeTec S 86	–	86.2	6.8	7	650 – 700	700	250	8.0	CuP 386	CP 302	•	–	–	–

<sup>1)</sup> German Institute for Quality Assurance and Labeling

German Technical and Scientific Association for Gas and Water

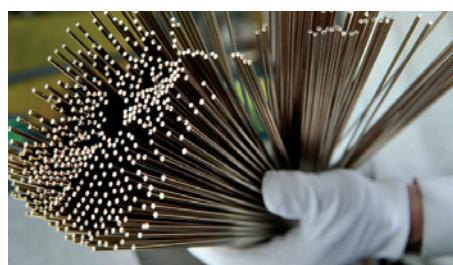
These Brazing alloys can be used at working temperatures from –70 °C to +150 °C. The phosphorous containing brazing alloys on this page were especially developed for the joining of copper with copper or of copper alloys (brass, bronze, red brass). The use of an additional flux is not necessary when brazing

copper to copper due to its phosphorous-content but should be used with copper alloys. These brazing alloys should not be used in the brazing of materials that contain sulphur. This particularly applies to animal breeding facilities where an atmosphere containing sulphur can develop due to the

decomposition of protein. These brazing alloys are not suitable for steels (Fe) and nickel alloys due to brittle-phase-generation. BrazeTec S 2 and BrazeTec S 94 are approved for use according to DVGW regulations.

## BrazeTec Brazing Alloys for Special Applications D

Name	Composition by Weight %					Melting Range in °C	Working Temp. in °C	Density in g/cm <sup>3</sup>	ISO 17672	DIN EN 1044	Notes on Application	Available Forms			
	Ag	Cu	Sn	Si	Zn							⊕	▨	Ⓢ	⚙
<b>Silver Brazing Alloys</b>												⊕	▨	Ⓢ	⚙
BrazeTec 7200	72	28	–	–	–	780	780	10.0	Ag 272	AG 401	metallized ceramic	•	•	•	•
BrazeTec 7291	72	–	–	–	28	710 – 730	730	8.43	–	–	any steel	•	•	•	•
BrazeTec 6009	60	30	10	–	–	600 – 730	720	9.8	Ag 160	AG 402	stainless steel	•	•	•	•
<b>Brass Brazing Alloys</b>															
BrazeTec 60/40	60	Rest	–	0.2	–	870 – 900	900	8.4	Cu 680	Cu 303	galvanized steel pipes	•	•	•	•
BrazeTec 48/10	48	Rest	10	0.2	–	890 – 920	910	8.7	Cu 773	Cu 305	steel pipe frames	•	•	–	•



BrazeTec 7200 and BrazeTec 6009 brazing alloys can be brazed in air with flux as well as in a protective atmosphere furnace without flux. BrazeTec 6009 is used with flux BrazeTec special h for the brazing of stainless steel. The brazing processes in a vacuum

should not exceed 900 °C for both brazing alloys to avoid the evaporation of silver. The furnace brazing temperature is governed in accordance with the base material.





### E BrazeTec Sandwich Alloys for the Brazing of Tungsten Carbides

Name	Composition by Weight %						Melting Range in °C	Working Temp. in °C	Shear Strength in MPa	Density in g/cm <sup>3</sup>	Notes on Application	Available Forms
	Ag	Cu	Zn	Mn	Ni	Misc.						
BrazeTec 49/Cu	49	27.5	20.5	2.5	0.5	–	670 – 690	690	150-300	9.0	intermediate copper layer	• •
BrazeTec 49/Cu <sup>plus</sup>	49	27.5	20.5	2.5	0.5	–	670 – 690	690	200-300	9.0	modified intermediate layer	• •
BrazeTec 49/NiN	49	27.5	20.5	2.5	0.5	–	670 – 690	690	150-300	9.0	nickel net sandwich brazing alloy	• •
BrazeTec 49/CuNiFe	49	27.5	20.5	2.5	0.5	–	670 – 690	690	150-250	9.0	intermediate CuNiFe layer	• •
BrazeTec 64/Cu	64	26	–	2	2	6 In	730 – 780	770	150-300	9.6	suitable for TiN-coating, intermediate copper layer	• •
BrazeTec Cu/NiN	–	100	–	–	–	–	1,085	1.100	200-300	8.9	nickel net sandwich brazing alloy	• •

The data on the composition of sandwich brazing alloys refer only to the brazing layer.

BrazeTec has developed a sandwich alloy brazing system that can compensate for internal stresses caused by the different thermal expansion coefficients during cooling.

We recommend the sandwich brazing alloy BrazeTec 49/Cu<sup>plus</sup> for applications that require an especially high degree of shear strength. The strength to be achieved is

dependent upon the strength of the base material.

### F BrazeTec Brazing Alloys for the Brazing of Tungsten Carbides



Name	Composition by Weight %						Melting Range in °C	Working Temp. in °C	Shear Strength in MPa	Density in g/cm <sup>3</sup>	ISO 17672	DIN EN 1044	Notes on Application	Available Forms
	Ag	Cu	Zn	Mn	Ni	Misc.								
BrazeTec 6488	64	26	–	2	2	6 In	730 – 780	770	150 – 300	9.6	–	–	TiN-coatable	• • • •
BrazeTec 5662	56	19	17	–	–	5 Sn/3 Ga	608 – 630	630	150 – 250	9.1	–	–	–	• • – –
BrazeTec 5081	50	20	28	–	2 Ni	–	660 - 715	710	–	9.3	AG 450	–	–	• • • •
BrazeTec 4900	49	16	23	7.5	4,5	–	680 – 705	690	250 – 300	8.9	Ag 449	AG 502	–	• • • •
BrazeTec 4900 A	49	27.5	20.5	2.5	0.5	–	670 – 690	690	250 – 300	8.9	–	–	–	• • • •
BrazeTec 2700	27	38	20	9.5	5.5	–	680 – 850	840	150 – 300	8.7	Ag 427	AG 503	–	• • • •
BrazeTec 21/80	–	86	–	12	2	–	970 – 990	990	200 – 300	8.8	Cu 595	–	Zn-free alloys suitable for furnace brazing	• • • •
BrazeTec 21/68	–	87	–	10	–	3 Co	980 – 1,030	1.020	200 – 300	8.8	–	–	–	• • • •

The following Brazing Alloys are suitable for the brazing of tungsten carbides and hard to wet materials such as wolfram, molybdenum

tantalum, and chrome. The strength achieved is dependent upon the strength of the base material.



## BrazeTec Active Brazing Alloys for the Brazing of Ceramic Materials G

Name	Composition by Weight %				Melting Range in °C	Optimal Brazing Temperature in °C	Density in g/cm <sup>3</sup>	Notes on Application	Available Forms			
	Ag	Cu	In	Ti					⊕	▨	⊕	⊕
BrazeTec CB 2	96	–	–	4	970	1,000 – 1,050	10.3	ceramic, ceramic/metal-connections, graphite, sapphire, ruby	•	•	•	•
BrazeTec CB 4	70.5	26.5	–	3	780 – 805	850 – 950	9.9		•	•	•	•
BrazeTec CB 5	64	34.2	–	1.8	780 – 810	850 – 950	9.9		•	•	•	•
BrazeTec CB 6	98.4	–	1	0.6	948 – 959	1,000 – 1,050	10.3	silicon nitride	•	•	•	•

A minimal brazing temperature of 850 °C is necessary in order to achieve a bond with ceramics using BrazeTec Active Brazing Alloys. Higher brazing temperatures can

improve the wetting behaviour. Pure Argon (4.8) or vacuum (<10<sup>-3</sup>mbar) is used as the protective brazing atmosphere. The temperature for a vacuum brazing should range

between 900 °C to 1,000 °C to avoid the evaporation of silver.



## BrazeTec Brazing Alloys for the Brazing of Aluminium H

Name	Composition by Weight %		Melting Range in °C	Optimal Brazing Temperature in °C	Density in g/cm <sup>3</sup>	ISO 17672	DIN EN 1044	Notes on Application	Available Forms			
	Al	Si							⊕	▨	⊕	⊕
BrazeTec L 88/12	88	12	575 – 585	590-610	2.65	Al 112	AL 104	brazing alloy	•	•	•	–
BrazeTec P 20/45	88	12	575 – 585	590-610	<sup>1)</sup>	Al 112	AL 104	contains flux FL 20m, flux residues are not corrosive, suitable for furnace brazing	–	–	–	•

<sup>1)</sup> Dependent upon the metal content of the paste

BrazeTec brazing alloys and BrazeTec pastes for the brazing of aluminium can be used for brazing in air as well as in protective gas atmospheres in furnaces.



## I BrazeTec Brazing Fluxes

Name	DIN EN 1045	Effective Temperature Range in °C	Available Forms			Notes on Application
			Paste	Dispensable Paste	Powder	
BrazeTec h <sup>1)</sup>	FH 10	550-970	•	–	•	universal flux for heavy metals
BrazeTec h 28	FH 10	580-940	•	–	–	flux for automated brazing
BrazeTec h 80	FH 10	550-850	•	–	–	flux for surface brazing
BrazeTec h 86	FH 10	550-850	•	–	–	flux for surface brazing
BrazeTec h 280	FH 10	520-850	•	•	–	flux for automated brazing
BrazeTec r 1	FH 10	520-630	•	–	–	flux for non-ferrous metals for special tools
BrazeTec d 21	FH 10	520-760	–	–	•	powder-type flux for steel and non-ferrous metals, powder clings to hot rods
BrazeTec d	FH 10	550-850	–	–	•	flux for any steel type, non-ferrous metals for special purposes
BrazeTec l	FH 11	490-730	•	–	–	flux for heavy metals with up to 10% aluminium
BrazeTec spezial h	FH 12	520-1,030	•	–	•	flux for stainless and scale resistant steels, carbides, special materials
BrazeTec h 90	FH 12	520-850	–	–	•	flux for special carbides
BrazeTec h 285	FH 12	520-910	•	•	–	flux for automated brazing, also suitable for carbide brazing
BrazeTec h 900	FH 12	520-820	•	•	–	flux for machine brazing for special carbides
BrazeTec s <sup>2)</sup>	FH 20	650-1,050	•	–	•	flux, also for high-alloy-steel, Ni-alloys, carbides
BrazeTec spezial s <sup>2)</sup>	FH 20	650-1,050	•	–	–	flux for non-rusting steels, super alloys, carbides, special metals
BrazeTec rs	FH 21	800-1,100	•	–	•	flux for copper and copper alloys, steels, nickel alloys
<b>BrazeTec Aluminium Fluxes</b>						
BrazeTec F30/70	FL 10	500 – 660	–	–	•	flux for aluminum, Al-Alloys up to 2% alloy additives
BrazeTec F32/80 <sup>2)</sup>	FL 20	570 – 660	–	–	•	flux for aluminum, Al-Alloys up to 2% alloy additives

<sup>1)</sup> German Institute for Quality Assurance and Labeling

German Technical and Scientific Association for Gas and Water

<sup>2)</sup> Flux residues are not corrosive

The choice of flux is made in accordance with the working temperature of the brazing alloy and the base materials. The working temperature or melting range of the brazing alloy

should be within the effective temperature range of the flux. The effective temperature ranges specified are derived from our extensive research. Additional fluxes for special

applications are available upon request.

## J BrazeTec Anti Flux

Name	Delivery Form	Brazing Procedure	Brazing Atmosphere
BrazeTec Antiflux ASV	Paste	soft soldering, brazing and high temperature brazing	air, protective gas, vacuum

BrazeTec Anti-Flux ASV prevents the wetting of the brazing alloy on surfaces that should not be

wet and thereby permits selective and precise brazing.

# Brazing Pastes



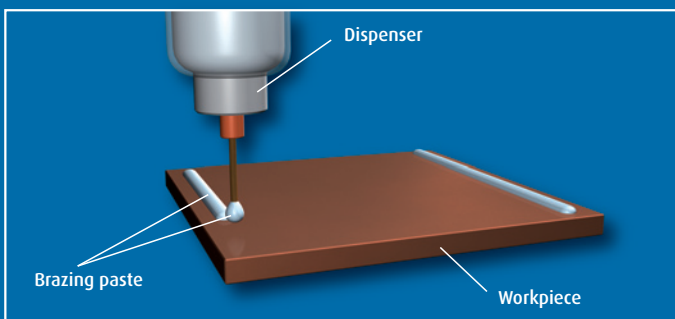
## BrazeTec Brazing Paste Systems

For innovative connection possibilities, BrazeTec also offers brazing materials as pastes, in addition to the solid forms. A brazing paste is a homogenous, ready to use, mixture of metallic brazing powder, flux and solvents. Polymers and other additives prevent the settlement of the brazing powder and determine the application and flow characteristics of the brazing paste. The following processes are available for the application according to the task in hand.

BrazeTec offers tailor made brazing paste systems for these application processes. For this purpose, a wide range of binder systems and brazing paste formulations have been developed and can be further adapted for specific customer processes. Brazing pastes are particularly suitable for automated brazing processes, because they can be easily integrated into a production process. They enable the optimum use of materials for both small and large series production.

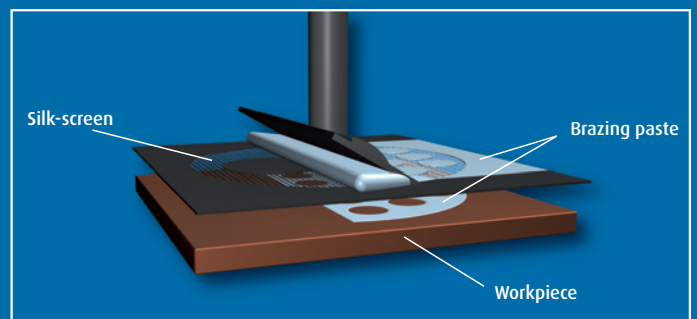
## Application processes

### D = Dispensing



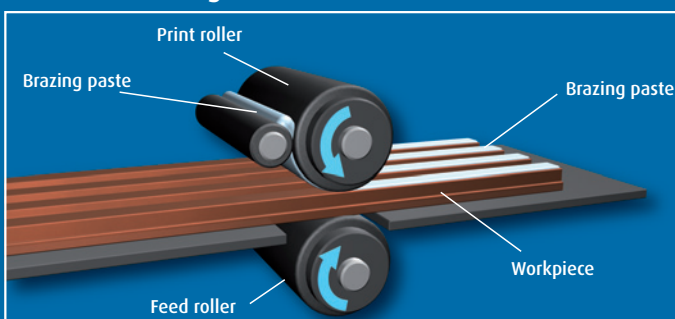
Point or line application

### P = Screen Printing



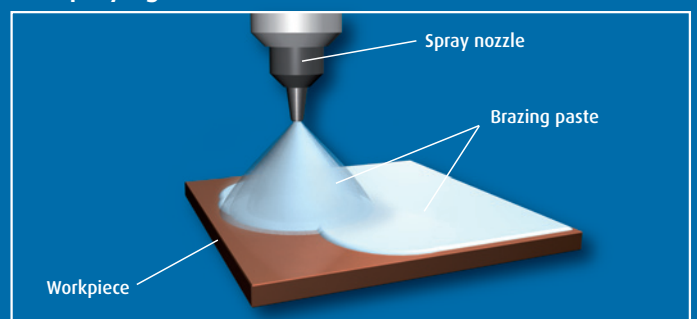
Contour-fit application to geometric structures

### R = Roller-Coating



Application to flat component surfaces

### S = Spraying





Large component surfaces





## K BrazeTec Nickel Based Brazing Paste Systems

Name	Composition by Weight %						Melting Range in °C	Optimal Brazing Temp. in °C	ISO 17672	DIN EN 1044	Atmosphere <sup>1)</sup>			Solvent based Pastes <sup>2)</sup>			Water based Pastes <sup>2)</sup>		Available Forms  
	Ni	Cr	Fe	Si	B	P					A	B	C	P	R	S	D	S	
BrazeTec 897	76	14	-	-	-	10	890	980	Ni 710	NI 107	•	•	•	•	-	•	•	•	•
BrazeTec 1002	82.4	7	3	4.5	3.1	-	970 – 1,000	1.050	Ni 620	NI 102	•	•	-	•	•	•	•	•	•
BrazeTec 1080	73.9	14	4.5	4.5	3.1	-	980 – 1,070	1.175	Ni 610	NI 1A1	•	•	-	•	-	•	-	-	•
BrazeTec 1090	60	30	-	4	-	6	980 – 1,040	1.090	-	-	•	•	•	-	•	-	•	•	•
BrazeTec 1130	72	18	-	8	-	2	1,050 – 1,090	1.080	-	-	•	•	•	-	-	-	•	-	•
BrazeTec 1135	70.9	19	-	10.1	-	-	1,080 – 1,135	1.190	Ni 650	NI 105	•	•	•	•	•	•	•	•	•

<sup>1)</sup> A = dry hydrogen B = vacuum C = H<sub>2</sub>N<sub>2</sub>-gas atmospheres (dew point -30 ° C)



<sup>2)</sup> Description of the application processes see page 15

Modern application-systems can be used for almost all known powder-type nickel-based brazing alloys. The products shown below are available as standard products from BrazeTec.

Among others, the application of the BrazeTec nickel-based brazing pastes is commonly practiced in heat exchangers and the automotive industry.



## L BrazeTec Silver Based Brazing Paste Systems

Name	Composition by Weight %						Melting Range in °C	Working Temperature in °C	ISO 17672	DIN EN 1044	Notes on Application	Available Forms  
	Ag	Cu	Zn	Mn	Ni	Sonstige						
BrazeTec D 7200	72	28	-	-	-	-	780	780	Ag 272	AG 401	any steel, copper-Ni and Ni-alloys	•
BrazeTec D 5600	56	22	17	-	-	5 Sn	620 – 655	650	Ag 156	AG 102	any steel, copper-Ni and Ni-alloys	•
BrazeTec D 4900	49	16	23	7.5	4.5	-	680 – 705	690	Ag 449	AG 502	cemented carbides	•

The silver based BrazeTec brazing pastes can be used to braze any steel, copper, nickel, and copper alloy. They can be applied with a dispenser or

by screen printing. There is a risk of crevice-corrosion when brazing stainless steels if the braze contains zinc. The brazing pastes shown below

are available on a standard basis, and depending on the application, contain flux or are flux free. Additional alloys are available upon request.



## BrazeTec Copper Based Brazing Paste Systems M

Name	Composition by Weight %					Melting Range in °C	Optimal Brazing Temp. in °C	ISO 17672	DIN EN 1044	Atmosphere <sup>1)</sup>				Notes on Application	Available Forms 
	Cu	Sn	Ni	P	Ag					A	B	C	D		
BrazeTec D 801	100	-	-	-	-	1085	1.120	Cu 110	CU 101	•	•	•	•	any steel, Ni and Ni alloys	•
BrazeTec D 807	80	-	-	5	15	645-800	720	CuP 284	CP 102	•	-	•	•	Ni and Ni alloys	•
BrazeTec D 810	92	-	-	8	-	710-770	750	CuP 182	CP 201	•	•	•	-	copper and copper alloys	•
<b>Brazing paste systems for the CuproBraz® process</b>															
BrazeTec CST 600 TD	76	15	4	5	-	590-610	650	-	-	•	-	•	-	Paste for preliminary brazing of tubes by means of spray application for the CuproBraz® process	•
BrazeTec CSF 600 TD	76	15	4	5	-	590-610	650	-	-	•	-	•	-	Paste for preliminary brazing of fin tips by means of roller application for the CuproBraz® process	•
BrazeTec CSH 610 TD	78.5	9.3	5.7	6.5	-	595-620	650	-	-	•	-	•	-	Paste for preliminary brazing of connection plates in the CuproBraz® process, 2% flux proportion	•
BrazeTec CSO 610.2 TD	78.5	9.3	5.7	6.5	-	595-620	650	-	-	•	-	•	-	Paste for brazing of junction boxes by means of dispenser in the CuproBraz® process, 2% flux proportion	•

<sup>1)</sup> A = dry hydrogen    B = vacuum    C = H<sub>2</sub>N<sub>2</sub>-gas atmospheres (dew point -30 °C)    D = Exogas

The CuproBraz®-Process was developed especially for the flux free brazing of copper-brass radiators in protective gas furnaces. The brazing material used in this process is a phosphorous containing copper alloy. The radiators are produced in a manner that

displays high resistance with high working temperatures as well. In addition the entire CuproBraz®-Process is also notable for its low costs. The different solvent based pastes can be applied by spraying onto the tubes (BrazeTec CST 600 TD) or through special

roller-coating onto the fins (BrazeTec CSF 600 TD). BrazeTec CSH 610 TD is used for the brazing of header plates to the tubes. These pastes can also be used for Cu-Cu-Brazing.



## BrazeTec Active Brazing Paste N

Name	Composition by Weight %			Melting Range in °C	Optimal Brazing Temperature in °C	Notes on Application	Available Forms 
	Ag	Cu	Ti				
BrazeTec CB 10	64.8	25.2	10	780-805	850-950	ceramic, ceramic/metal-connections, graphite, sapphire, ruby	•
BrazeTec CB 11	90	-	10	970	1,000-1,050		•


BrazeTec active brazing pastes contain a metal content of approximately 85% and are suitable for dispenser application and

screen printing. Materials with different Ti-contents are also available on request.

# Solders & Soft Solder Fluxes



## 0 BrazeTec Soft Solders for Plumbing Technology

Name	Composition by Weight %			Melting Range in °C	Alloys according to DIN EN ISO 9453	Flux according to DIN EN 29454-1	To be used together with	Available Forms 
	Sn	Ag	Cu					
BrazeTec Degufit® 3000 <sup>1)</sup>	97	-	3	227 - 310	402	3.1.1.	BrazeTec 3 <sup>1)</sup>	•
BrazeTec Degufit® 4000 <sup>1)</sup>	97	3	-	221 - 224	702	3.1.1.	BrazeTec 4 <sup>1)</sup>	•

<sup>1)</sup>  German Institute for Quality Assurance and Labeling  German Technical and Scientific Association for Gas and Water



The soft brazing pastes BrazeTec Degufit 3000 and BrazeTec Degufit 4000 are a mixture of soft solder powder, flux and a binder. They are applied as flux,

and contribute to a high filling level of the soldering gap and thus to greater strength. They also prevent overheating of the pipes and fittings, as reaching the soldering

temperature is clearly visible, the application of additional soft solder may be necessary.

## P BrazeTec Soft Soldering Pastes for Plumbing Technology



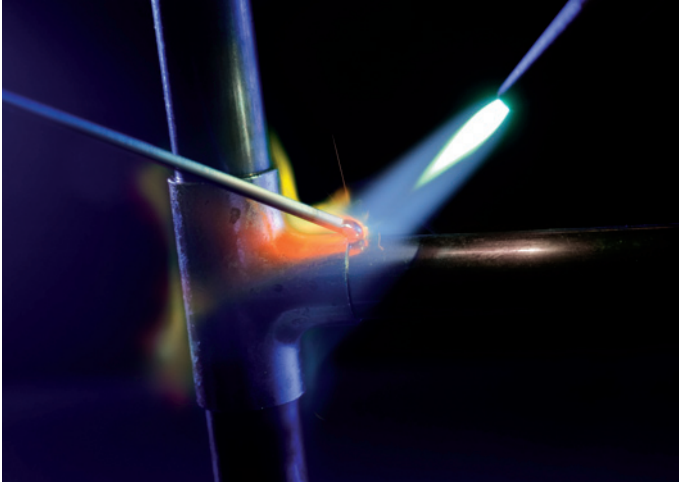
Name	Composition by Weight %			Melting Range in °C	Nomination according to DIN EN ISO 9453	Suitable for Soft Soldering in Plumbing Technology		Alternative Processing with Flux DIN EN 29454-1 3.1.1./ Soft Solder Paste	Available Forms  	
	Sn	Ag	Cu			Tube Material	Fitting Material		•	-
BrazeTec 3 <sup>1)</sup>	97	-	3	227 - 310	402	copper	copper, brass	BrazeTec Soldaflux® 7000 <sup>1)</sup>	•	-
							red brass			
BrazeTec 4 <sup>1)</sup>	97	3	-	221 - 224	702	copper	copper, brass	BrazeTec Soldaflux® 7000 <sup>1)</sup>	•	-
							red brass			
BrazeTec Darifix 3 <sup>2)</sup>	97	-	3	227 - 310	402	soft soldering of copper in construction plumbing (gutters, downpipes, etc.)		BrazeTec Soldaflux® 7000 <sup>1)</sup>	-	•

<sup>1)</sup>  German Institute for Quality Assurance and Labeling  German Technical and Scientific Association for Gas and Water

<sup>2)</sup> Delivery form: Rods 12 x 12 x 400 mm

The soft solder materials BrazeTec 3 and BrazeTec 4 are approved for copper tube installation according to DVGW. They are sup-

plied in a handy 250 g coil. BrazeTec Darifix 3 is used mainly in building plumbing.



## BrazeTec Soldamoll® Special-Soft Solders Q

Name	Composition by Weight %				Melting Range in °C	Density in g/cm <sup>3</sup>	Shear Strength in Mpa			Electrical Conductivity in m/Ωmm <sup>2</sup>	Nomination according to DIN EN ISO 9453	Notes on Application	Available Forms			
	Sn	Ag	Cu	Sb			Cu	Ms	S 235							
BrazeTec Soldamoll® 220	96.5	3.5	-	-	221	7.3	30	20	25	7.5	703	exceptional wetting, Water installations	•	•	•	•
BrazeTec Soldamoll® 230	97	-	3	-	227-310	7.3	30	20	25	7.5	402	-	•	-	•	-
BrazeTec Soldamoll® 235	95	-	-	5	235-240	7.2	30	20	30	6.2	201	-	•	•	-	-

BrazeTec's Soldamoll® special soft solders can be used in many application areas. They can be used for the soldering of brass, steel and copper components amongst other things.

## BrazeTec Soldaflux® Soft Solder Fluxes R

Name	Effective Temperature Range in °C	Type of Residue	Residue soluble in	Labeling to DIN EN 29454-1	Notes on Application	Available Forms 
BrazeTec Soldaflux® 7000 <sup>1)</sup>	150 - 400	limited corrosive	water	3.1.1.A	carbon steel, non-ferrous-metals, copper tube installation	•
BrazeTec Slodaflux® A	200 - 400	not corrosive	-	1.1.2.A	copper and copper alloys	•
BrazeTec Soldaflux® K	150 - 450	highly corrosive	water	3.1.1.A	carbon steel, non-ferrous-metals	•
BrazeTec Soldaflux® K15	200 - 450	highly corrosive	water	3.1.1.A	carbon steel, non-ferrous-metals	•
BrazeTec Soldaflux® Z	150 - 450	highly corrosive	water	3.1.1.A	stainless and scale resistant steels	•
BrazeTec Soldaflux® Z30	150 - 450	highly corrosive	water	3.1.1.A	steel, non-ferrous-metals	•

<sup>1)</sup> German Institute for Quality Assurance and Labeling German Technical and Scientific Association for Gas and Water

Some BrazeTec Soldaflux soft solder fluxes are corrosive. For this reason, all flux residues must be removed from the component with water following soldering.



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