



**In-Depth Know-How**

## BRAZING SOLUTIONS FOR CAR ENGINE PRODUCTION

**In-Depth Know-How** – As a leading brand of soldering and brazing consumables, Fontargen Brazing offers proven solutions based on 50 years of industrial experience, tried and tested processes and methods. This In-Depth Know-How has made Fontargen Brazing an internationally preferred partner for every soldering and brazing task.

# JOINING COMPETENCE

## Copper and nickel-based brazing pastes for brazing applications in the automotive industry

### Take advantage of technical proven and customised products

Europe, Asian as well as North, Central and South America are the main markets for brazing. As a competent partner for brazing applications voestalpine Böhler Welding take care for customers from the automotive industry. The following Industry trends flow into product selection and development:

- » High-pressure direct fuel systems
- » Emission-reducing components with a high efficiency and economical fuel consumption in car engines
- » New EGR/AGR cooler systems for the reduction of emissions
- » Torque converter for modern transmissions
- » Soft solder and brazing pastes for battery and thermal-management components of electrical vehicles

### Our mission

voestalpine Böhler Welding is present worldwide taking part in numerous R&D projects and working closely together with OEMs in the automobile industry. Following our “customer first” philosophy, we are glad to share our knowledge and offer technical support in terms of brazing technology and process optimization. We technically accompany our customers and find solutions together.

Those solutions include the appropriate choice of brazing filler metal, design and brazing process. We help maintain a high technical level of your brazing personal, offering technical meetings and trainings.

As an example of development with one of our customers (one of the global big three Tier 1 automotive supplier), we can point out the brazing paste AP 21 CLP CS approved for brazing their high-pressure fuel rails for the injection systems.

|                    | Fontargen Designation | Standards         |                                |                 | Melting Range |               | Recom. Brazing Temperature |               | Characteristics  | Typical Application   |
|--------------------|-----------------------|-------------------|--------------------------------|-----------------|---------------|---------------|----------------------------|---------------|--|---|
|                    |                       | ISO 17672         | ISO 3677                       | AWS 5.8         | °C            | °F            | °C                         | °F            |  |   |
| Cu Alloys          | AP - CI Series        | Cu 141/<br>Cu 099 | B-Cu100(P)-1083<br>B-Cu99-1083 | BCU-1<br>Bcu-1a | 1083          | 1981          | 1100-<br>1150              | 2000-<br>2100 | high fluidity, hydrogen and nitrogen furnace brazing, induction brazing; vacuum brazing, high and low metal contend, slow or fast drying | alloyed steel tube constructions and high/low pressure injection rails, induction brazing of gasoline pipes, torque converter |
|                    | AP - AL Series        | Cu 110            | B-Cu100-1083                   | B-Cu1b          | 1083          | 1981          | 1100-<br>1150              | 2000-<br>2100 | use in coal atmosphere, Cu - Oxide containing, flux containing and wide gap brazing paste possible; slow or fast drying; medium fluidly  | unalloyed and alloyed steel; constructions; tungsten carbide  |
|                    | AP- GL series         |                   | B-CuSn-968/1060                |                 | 960-<br>1060  | 1760-<br>1940 | 1060-<br>1100              | 1940-<br>2012 | use in coal atmosphere, low or fast drying; good gap filling; low working temperature  | toque converter, brazing sintered parts to steel  |
| Nickel Base Alloys | HTL -2 Series         | Ni 620            | B-Ni82CrSiBFe-970/1000         | BNI-2           | 970-<br>1000  | 1780-<br>1830 | 1010-<br>1170              | 1850-<br>2140 | vacuum and shielding gas furnace brazing; induction brazing; screen printing; low or fast drying   | low temperature catalysts; EGR cooler   |
|                    | HTL-5M                |                   | B-Ni72CrSiP-971/1051           |                 | 971-<br>1051  | 1779-<br>1923 | 1060                       | 1940          | vacuum or shielding gas furnace brazing; low or fast drying  | low pressure EGR Cooler; fluid transport  |
|                    | HTL-5CR               |                   | B-Ni61CrSiP-1070/1090          |                 | 1070-<br>1090 | 1958-<br>1994 | 1100                       | 2000          | vacuum or shielding gas furnace brazing; low or fast drying, high corrosion resistance   | high temperature EGR Cooler, high temperature catalysts   |
|                    | HTL-7                 | Ni-710            |                                | BNI-7           | 890           | 1630          | 927-<br>1093               | 1700-<br>2000 | high fluidity, Boron free  | thin wall tube constructions  |