# Sinter Braze 21

## For a uniform braze

Sinter brazing allows you to save time and reduce costs when producing complex parts through simultaneously sintering and bonding components.

Sinter Braze 21 is an easy solution that facilitates a better brazed joint which is generally as strong, or stronger, than the base materials being joined.

This sinter braze material offers more efficient brazing compared to conventional braze materials. In addition to less sinter braze material needed, Sinter Braze 21 delivers stable mass production of components with improved joint quality and consequently fewer rejected components. In mass production the braze amount has been reduced by up to 20%.

### Main product benefits

- Uniform braze quality
- Improved brazing efficiency
- Less sinter braze consumption
- Less residue
- Robust

**For more information on Sinter Braze 21 and other Höganäs products, please contact your local sales representative.**

## The opportunities of uniform braze quality

Sinter Braze 21 gives optimal flow in the braze gap direction with limited infiltration into the base material. This makes the material less sensitive to density variations resulting in better infiltration control and a more uniform braze quality.

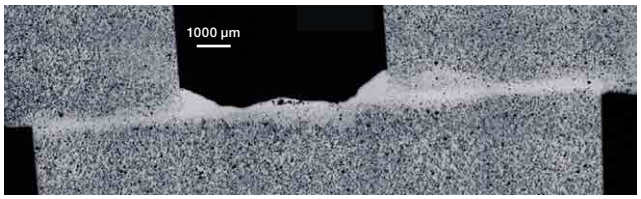
It also shows good anti-oxidation properties with limited braze residue remaining. As there is much better infiltration control and less residue, the braze material amount can be reduced by 10-20% compared to conventional braze material.

Sinter Braze 21 can be directly used within the current brazing processes. It offers a high robustness to sintering atmosphere variations, and it is suitable for $N_2/H_2$ and endogas with or without RBO. It is also suitable for "open" and "blind" tablet hole designs. The joint is good even for densities down to as low as 6.55 g/cm$^3$, which is impossible with traditional sintered brazed joints that normally require > 6.7 g/cm$^3$. The robustness to density variations significantly contributes to a stable production process and improved quality.

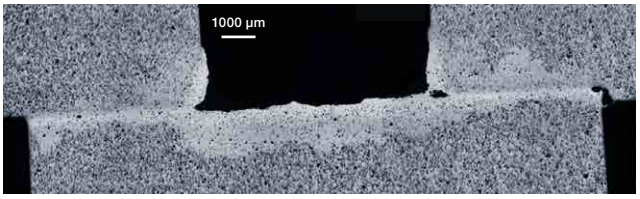
As the powder is fully pre-alloyed, there is no segregation. Compared to conventional sinter braze materials the amout of flux can be significantly reduced or in some cases completely removed, which is good for the working environment as well as for compacting and braze quality. The flux acts as both anti-oxidation agent and lubricant.

### Sinter brazed joints comparison

Below are two pictures showing sinter brazed joints of Fe-Cu-C base material. The joint of Sinter Braze 21 shows a more uniform braze with limited braze infiltration.




*Sinter Braze 21*




*Conventional braze*

## Basic product characteristics

Sinter Braze 21 press ready mix for tablet usage.

### Nominal Chemistry

| | Ni | Cu | Mn | Si | B | Fe | Others |
|---|---|---|---|---|---|---|---|
| Content (wt-%) | 38.6 | 37.6 | 14.1 | 1.7 | 1.4 | 6.0 | <1 |

### Apparent density

2.05 g/cm$^3$

### Size distribution

-425/+75 micron

### Operating temperature

Solidus: 925°C

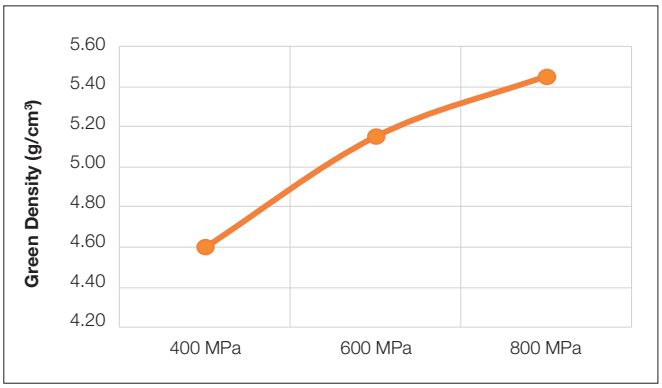
Liquidus: 1,045°C

### Process recomendation

Gap clearance: 0.05-0.15 mm

Minimum sinter brazing temperature: 1,100°C

### Compressibility




### Bonding strength for reference

| | Requirement (kN) | Rig test result, (kN) |
|---|---|---|
| Carrier 1 | 10 | 41 |
| Carrier 2 | 28 | 38 |
| Carrier 3 | 8 | 11 |
| Carrier 4 | 2.8 | 4 |

*The table shows measured tensile/twist breaking force from different types of Fe-Cu-C carriers in mass production. Since there is no standardized test method, the bonding strength for specific components needs to be tested individually.*