

# ***VITROBRAZE*** **VZ2255 brazing foil** **for CuproBraz**



# VAC´s VITROBRAZE VZ2255 brazing foil for the CuproBraze<sup>®</sup>-process

VACUUMSCHMELZE´s VZ2255 brazing foil with a homogeneous thickness in the range of 20-40 µm is 100 % dense and contains no binder or organic component. The absence of any organic component results in consistent high performance brazing joints.

## Benefits

Regarding the CuproBraze<sup>®</sup>-process the VZ2255 brazing foil offers some significant advantages

### **- Enhancing material efficiency by precise metering**

The brazing filler powder or paste is typically applied with a spraying process which leads to an overspray in the range of 30 - 50 % of the used amount of brazing powder. This overspray cannot be collected and reused.

Due to the uncontrolled overspray and lack of thickness control of the sprayed layer it is necessary to apply a surplus of brazing material on the surface which generates difficulties in maintaining close dimensional control during brazing operation.

The use of the organic binder free VZ2255 foil which shows a unique homogenous thickness which enables a precise metering of the brazing filler material and provides an optimal controlled brazing gap.

### **- Consistent brazing results**

The absence of any organic component in combination with the ideal homogeneous composition in the VZ2255 foil leads to an outstanding wetting and flowing behaviour which results in consistent high-performance brazing joints.

### **- Organic/Contaminant free**

Unlike the powder-binder composites the metallic glass foil is 100 % dense brazing filler metal. Joints shrinkage and contaminating residues resulting from the baking off of the organic binder are therefore avoided. Due to the absence of any contaminating organic components the brazing foil provides completely dense and optimum-strength joints.

**- Clean process**

The spraying of the brazing powder or paste is a dirty process, additionally an exhaust system is needed. Applying the foil is very clean process, furthermore no spraying or exhaust equipment is necessary.

**- No drying equipment necessary**

The sprayed powder/paste layer must be dried in big and costly drying furnaces at 100-120°C. Furthermore this drying process limits the overall speed of the manufacturing. By use of foil this drying equipment is not necessary.

**- Unlimited storage**

The brazing powder is very sensitive against oxidation due to its powder form, which causes a limited storage and life time of the powder/paste-material. The foil can be stored without any time limitation if you follow the recommended storage conditions.

**Brazing joints with VZ2255**

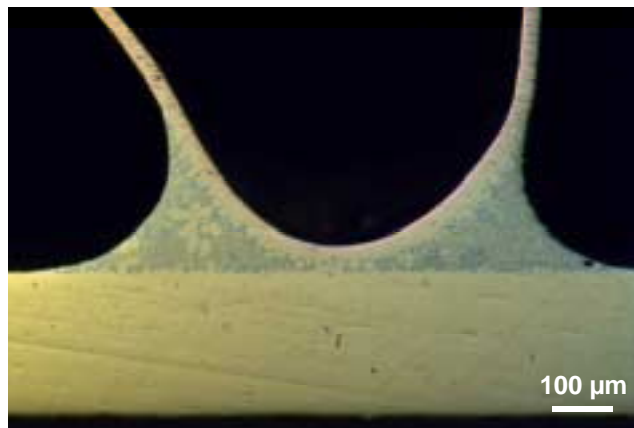


Fig. 1: Typical high quality tube-fin joint made with VZ2255 brazing foil

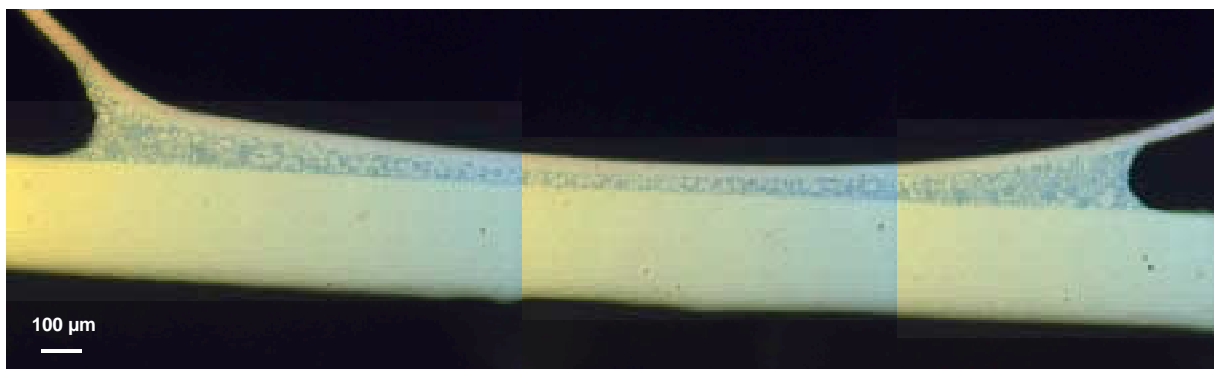


Fig. 2: Typical high quality in-tube joint made with VZ2255 brazing foil

⇒ **Excellent flowing and wetting behaviour of VZ2255**  
 ⇒ **Homogeneous, high quality brazing joints**

## Typical properties

<b>Main Composition</b>	<b>CuNiSnP</b>
<b>Metal content</b>	<b>100 %</b>
<b>Density</b>	<b>8,2 g/cm<sup>3</sup></b>
<b>Melting range</b>	<b>600 – 630°C</b>
<b>Recommended brazing temperature</b>	<b>640 – 660°C</b>

The brazing foil VZ2255 and the so far used OKC600 powder/paste have essentially the same composition and brazing temperature. Some brazing experiments of Outokumpu revealed the good brazing properties of the brazing foil for cooper/brass radiators [1]. **Furthermore foil and paste could be used together in one brazing procedure.**

### Literature

- [1] Tapper L., Sivesson P., Ainali M. Ignberg L.: New concept for brazing of copper and brass constructions, gives tool for new use of copper and brass, DVS-Bericht Band 212, 2001, S.151

## Brazing behaviour of VZ2255

VAC`s VZ2255 brazing foil shows an excellent wetting and flow behaviour without use of flux. Optimum wetting and flow behaviour will be reached in a temperature range between 650 and 660°C.

### **Optimum brazing conditions for VZ2255**

**Oxygen free parts**  
**Brazing gap clearance 20 – 100 µm**  
**Rapid heating and cooling**  
**Nitrogen atmosphere with an oxygen level < 20 ppm\***  
**Dew point < - 40°C\***

*\*best results will be achieved in a nitrogen atmosphere with an oxygen level less than 10 ppm and a dew point of -65 °C*

For optimum brazing results it is recommendable handling the foil with gloves not with bare hands.

Small traces of oxygen on the surface of the VZ2255 foil do not influence the brazing behaviour of the foil

# VAC's brazing foil VZ2255 for in-tube-brazing

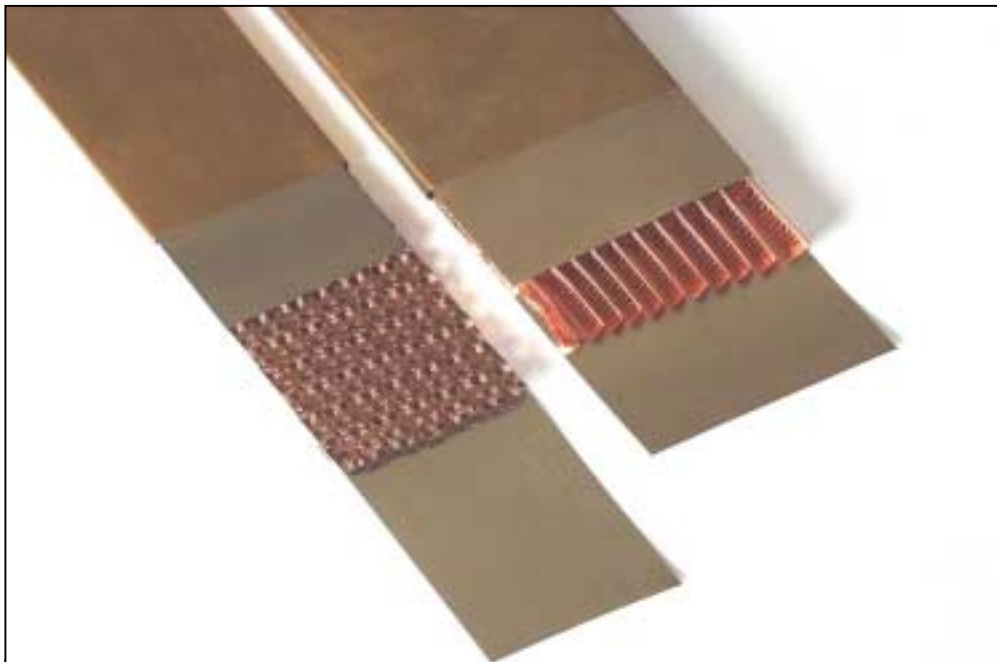
for charge air cooler and oil cooler tubes



**Tubes and internal fins**



**VZ2255 brazing foils**



⇒ **Ideal placement of brazing material  
for homogenous brazing joints and  
so on high pressure resistance**

## **Foil geometry**

### **Available foil geometry**

**Width**                    **15 – 110 mm**

**Thickness**            **20 – 40 µm**

## **Samples / Service**

For additional product information, or to request sample material for testing, technical assistance, applications techniques and brazing procedure, please contact

### **VACUUMSCHMELZE GmbH & Co. KG**

**Gruener Weg 37**

D-63450 Hanau

#### **Technical Service:**

**Dr.-Ing. Dieter Nützel**

Tel.: +49 6181 38-3041

Fax: +49 6181 38-83041

Email: Dieter.Nuetzel@vacuumschmelze.com

#### **Sales:**

**Jana Kamphausen**

Tel.: +49 6181 38-2127

Fax: +49 6181 38-82127

Email: Jana.Kamphausen@vacuumschmelze.com

[www.vitrobraz.com](http://www.vitrobraz.com)