

# HF- Welding *Impeder-Technologie*



# Impederkerne für induktives HF-Schweissen

## Impeder cores for inductive HF-Welding



Durch einen HF-Rohrschweisprozess wird aus einem Metallband durch einen kontinuierlichen Walzprozess ein Rohr geformt. Die beiden gegenüberliegenden Bandkanten werden durch hochfrequenten Wechselstrom bis zur Schmelztemperatur erwärmt und mechanisch zusammengefügt.

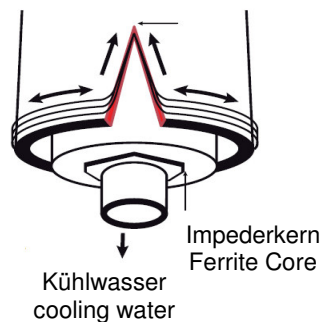
Durch den Einsatz eines Ferritkernes werden die Feldlinien im Bereich der Nahtstelle so gerichtet, dass nur ein kleiner Anteil des Bleches aufgeschmolzen wird. Der Wechselstrom wird durch Induktion über eine Spule erzeugt, welche eine Arbeitsfrequenz von 200 und 800 kHz aufweist.

By a HF-Tube welding process comes out of a metal tape by using a continuous rolling process a tube. The two adjacent band edges are heated to their liquid temperature by high-frequency current and are joined together mechanically.

The ferrite impeder core concentrates the field lines in the area of the joint and only a small part of the tape is melted. The alternating current is generated by an inductor which has a frequency working from 200 and 800 kHz.

Mit Impeder: Hitze wird auf **V-Kante** gerichtet

With impeder: heat concentrates at **V-edge**



Ohne Impeder: **Strom** fließt durch das Rohr

Without impeder: **current** return on inside of tube

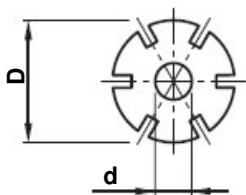
## Materialeigenschaften / Material properties

|                                                                      |                                        |
|----------------------------------------------------------------------|----------------------------------------|
| Permeabilität ( $\mu_i$ )<br>Initial permeability ( $\mu_i$ )        | $1800 \pm 25\%$ (23°)                  |
| Flussdichte B bei Feldstärke H<br>Flux density B at field strength H | 500 mT +/- 10%<br>(H=1200 A/m at 23°C) |
| Dichte<br>Density                                                    | 4.8 Mg m <sup>3</sup> (+/- 2%)         |
| Curie-Temperatur T <sub>c</sub><br>Curie temperature T <sub>c</sub>  | >210°C                                 |
| Spez. Widerstand<br>Resistivity                                      | 3 ohms.m                               |

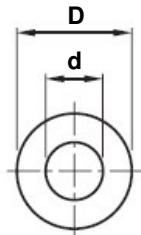
# Impeder Kernformen / Ferrites cores forms

- Runde Stabkerne/ Round ferrite (SWML)
- Abgeflachte Stabkerne / Flat ferrite(SWZL)
- Gefiederte Stabkerne/ Fluted ferrite (SWMR)
- Runde Hohlzylinderkerne / Hollow round ferrite (SWHL)
- Gefiederte Hohlzylinderkerne/ Hollow fluted ferrite (SWHR)

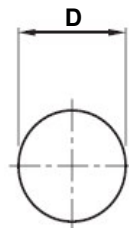
**SWHR**



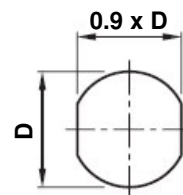
**SWHL**



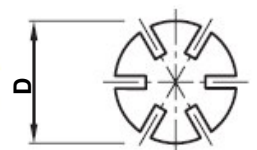
**SWML**



**SWZL**



**SWMR**



| D [mm]  | ± [mm] | d [mm] | ± [mm] | L [mm] | Impederhülse<br>Impeder Core |
|---------|--------|--------|--------|--------|------------------------------|
| 5       | 0.25   |        | 0.25   | 200    | D + 1 mm                     |
| 6 – 9   | 0.30   |        | 0.30   | 200    |                              |
| 10 – 12 | 0.35   |        | 0.35   | 200    |                              |
| 13 – 15 | 0.40   |        | 0.40   | 200    |                              |
| 16 – 19 | 0.50   |        | 0.40   | 200    |                              |
| 20 – 23 | 0.60   |        | 0.40   | 200    |                              |
| 24 – 26 | 0.65   |        | 0.40   | 200    |                              |
| 27 – 28 | 0.70   |        | 0.40   | 200    |                              |
| 29 – 30 | 0.75   |        | 0.60   | 200    |                              |
| 32 – 33 | 0.80   |        | 0.60   | 200    | D + 2 mm                     |
| 34 – 35 | 0.85   |        | 0.60   | 200    |                              |
| 36 – 37 | 0.90   |        | 0.60   | 200    |                              |
| 38 – 39 | 1.00   |        | 0.60   | 200    |                              |
| 40 – 42 | 1.15   |        | 0.70   | 200    |                              |
| 43 – 44 | 1.20   |        | 0.80   | 200    |                              |
| 45 – 46 | 1.25   |        | 0.80   | 200    |                              |
| 47 – 48 | 1.35   |        | 0.80   | 200    |                              |
| 49 – 50 | 1.45   |        | 0.90   | 200    |                              |
| 51 – 55 | 1.45   |        | 0.90   | 200    |                              |
| 56 – 58 | 1.45   |        | 1.10   | 200    |                              |
| 60      | 1.55   |        | 1.10   | 200    |                              |
| 65      | 1.65   |        | 1.10   | 200    |                              |
| 70      | 1.75   |        | 1.20   | 200    | D + 3 mm                     |
| 73      | 1.80   |        | 1.20   | 200    |                              |
| 80      | 2.00   |        | 1.30   | 200    |                              |

| D [mm]  | ± [mm] | L [mm] | Impederhülse<br>Impeder Core |
|---------|--------|--------|------------------------------|
| 2 – 4   | 0.20   | 200    | D + 1 mm                     |
| 5       | 0.25   | 200    |                              |
| 6 – 9   | 0.30   | 200    |                              |
| 10 – 12 | 0.35   | 200    |                              |
| 13 – 15 | 0.40   | 200    |                              |
| 16 – 19 | 0.5    | 200    |                              |
| 20 – 23 | 0.60   | 200    |                              |
| 24 – 26 | 0.65   | 200    |                              |
| 27 – 28 | 0.70   | 200    |                              |
| 29 – 30 | 0.75   | 200    |                              |
| 32 – 33 | 0.80   | 200    | D + 2 mm                     |
| 34 – 35 | 0.85   | 200    |                              |
| 36 – 37 | 0.90   | 200    |                              |
| 38 – 39 | 1.00   | 200    |                              |
| 40 – 42 | 1.15   | 200    |                              |
| 43 – 44 | 1.20   | 200    |                              |
| 45 – 46 | 1.25   | 200    |                              |
| 47 – 48 | 1.35   | 200    |                              |
| 49 – 50 | 1.45   | 200    |                              |

Länge / Length = L

**Längen Toleranz alle Typen und Größen: ± 3.0 mm / length tolerances all types and sizes: ± 3.0 mm**  
**Weitere Größen und andere Formen auf Anfrage / additional sizes and other forms after request**

## Impeder Schutzrohre / Impeder casing tubes



Schutzrohre passend zu allen Ferritkernen verfügbar in zwei Ausführungen:

- Silikon Glas
- Epoxid Glas

Casing for all ferrites cores forms available in two executions:

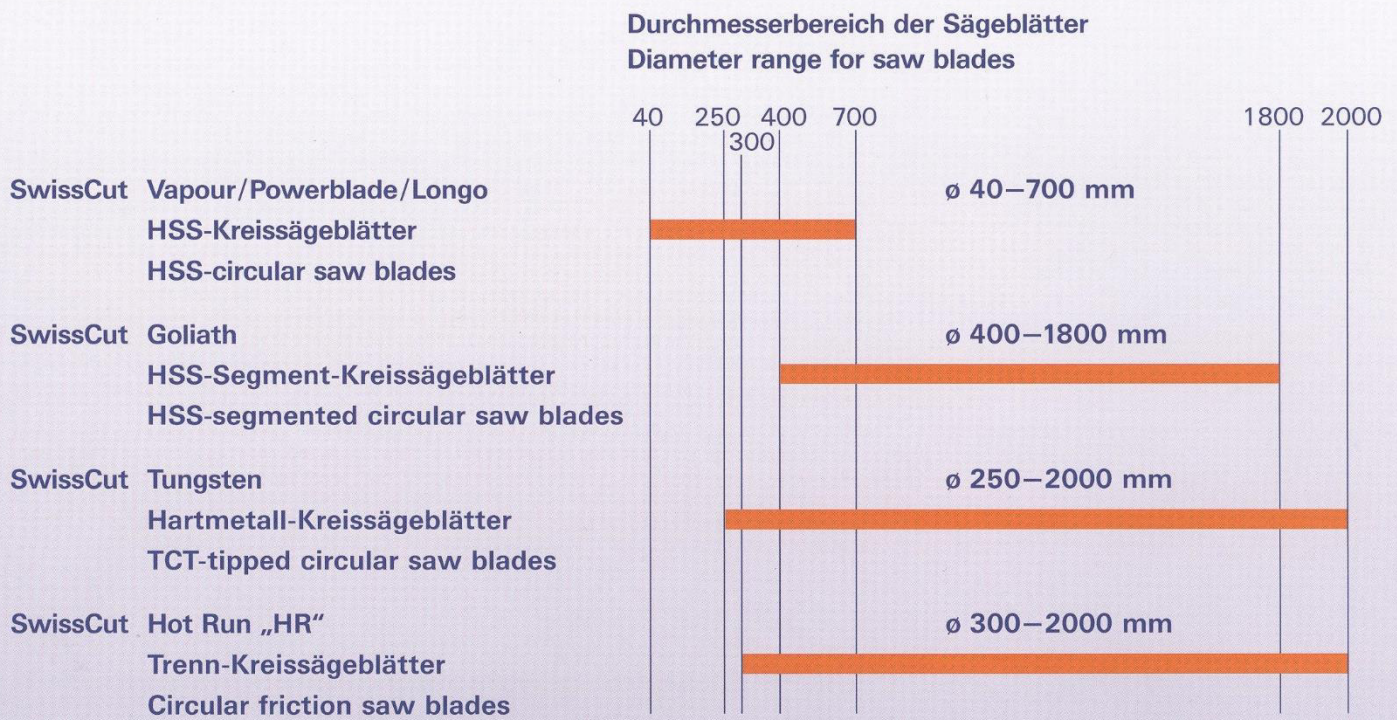
- Silicone glass
- Epoxy glass



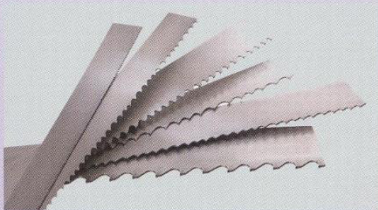
# Weitere Produkte aus dem Hause SW Wil

## Other products from the House SW Wil

### Kreissägeblätter aus HSS/HM Circular saw blades HSS/Carbide



### Sägebänder aus HSS/HM Band saw HSS/ Carbide



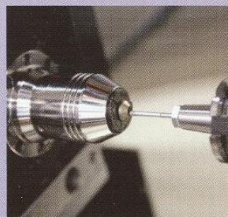
Abmessungen/Size

|           |           |           |           |
|-----------|-----------|-----------|-----------|
| 20 x 0.89 | 27 x 0.89 | 34 x 1.06 | 41 x 1.27 |
| 54 x 1.27 | 54 x 1.60 | 67 x 1.60 | 80 x 1.60 |

### Sonderwerkzeuge aus HSS/HM

Bohrer/Drills

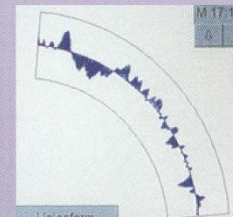
Fräser/End Mills



### Tailor made cutting tools HSS/Carbide

Einstechwerkzeug  
Grooving Tools

Mikro-Werkzeuge  
Micro-Tools



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