TENMAT has developed innovative FEROBIDE wear protection for wet abrasion applications found in decanter centrifuges in order to resolve the major limitations of traditional wear protection materials.

Unlike traditional tungsten carbide, FEROBIDE uses a steel matrix to bond tungsten particles together. The unique forming process yields wet abrasion wear resistance better than most traditional tungsten carbides, whilst allowing tiles to be easily welded in place with no braze joint. This, combined with superior toughness, makes FEROBIDE the ideal choice for use in high speed and high wear applications typically found in centrifuges.

TENMAT is proud to be recipient of The Queen’s Award; 2012 for Innovation, 2013 for International Trade.

### Applications
- Decanter centrifuge flights
- Solids discharge plates
- Solids discharge ports
- Centrifuge screens - "dog bones"

### Key Features
- Weldable
- Very high impact strength
- Superior resistance to chipping
- Full protection to working parts
- Excellent wet abrasion properties, proven by 3rd party ASTM tests
- Durable and long-life
- Easy to weld with standard tools
- High bonding strength to scroll

<table>
<thead>
<tr>
<th></th>
<th>Bond Strength</th>
<th>Abrasion Resistance (ASTM G105)</th>
<th>Impact Resistance</th>
<th>Attachment to Steel</th>
<th>Delamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELDED FEROBIDE</td>
<td>370 MPa</td>
<td>0.04 mm$^3$ loss</td>
<td>High resistance to chipping</td>
<td>Welded with workshop tools</td>
<td>Weld is strong and durable</td>
</tr>
<tr>
<td>BRAZED TUNGSTEN CARBIDE</td>
<td>85 MPa (typical)</td>
<td>0.06 mm$^3$ loss</td>
<td>Low, readily chipped</td>
<td>Braze only with specialist tools</td>
<td>Braze can fail when welding support plate to scroll</td>
</tr>
</tbody>
</table>

www.FEROBIDE.com
T: +44 (0) 161 872 21 81  |  E: ferobide@tenmat.com
Traditional Tungsten Carbide Without the Limitations

Resistance to Abrasion

The abrasion resistance of **FEROBIDE** is many times higher than that of many popular wear protection materials. Together with an external 3rd party, Ferobide has been tested according to ASTM G105, experiencing a volume loss of only 0.04mm$^3$.

The wet abrasion resistance of **FEROBIDE** is:

- 200 times better than 4130 steel
- 40 times better than 440C steel
- 1.5 times better than tungsten carbide

![Volume Loss on Wet Abrasion (ASTM G105)](image)

**Graph to show the material volume loss (mm$^3$) observed when a sample of each material was subjected to the ASTM G105 wear test.**

Bond Strength

3rd party weld strength trials were conducted using stainless steel electrodes, proving that the weld joint of Ferobide to substrate exhibits a bonding strength of 360MPa on average. This is of a significantly higher strength than conventional braze joints, giving peace of mind in decanter centrifuge applications.

Welding Instructions

1. With full P.P.E., grind the weld surface flat
2. Stainless steel MIG or MMA wire/rod is typically used for heavier duty centrifuges. Mild steel electrodes can also be used in milder conditions.
3. Keep heat input low
4. Position tiles with a maximum overhang from the scroll that correlates to the thickness of the tile. A simple clamp can be used on the edge of the tile to allow for quick tile position.
5. With full P.P.E., tack weld tiles into position and follow this with a full weld of the bottom and back of tile
6. Allow welds to cool naturally

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