Enduring Performance...

Stronger, with Castolin Eutectic

Powder Spray Fusing
## Simplified overview

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<th>Coating families</th>
<th>Coating material</th>
<th>Base material</th>
<th>Heating of work-piece</th>
<th>Max coating thickness mm</th>
<th>Coating surface size</th>
<th>Coating structure</th>
<th>Coating micro-porosity</th>
<th>Bonding</th>
<th>Deposition rate</th>
<th>Deposition yield</th>
<th>Energy</th>
<th>Equipment investment</th>
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<tr>
<td>Eutalloy</td>
<td>Powder Self-fluxing alloys</td>
<td>Steels, cast iron, (aluminium bronze) *</td>
<td>Medium to high</td>
<td>2 (10)*</td>
<td>Small &amp; precise</td>
<td>Homogeneous</td>
<td>Negligible</td>
<td>Very good. Diffusion</td>
<td>Medium</td>
<td>Medium</td>
<td>Combustion gases</td>
<td>Low</td>
</tr>
<tr>
<td>Eutalloy SF</td>
<td>Powder Self-fluxing alloys</td>
<td>Steels &amp; cast iron</td>
<td>High</td>
<td>2 (6)*</td>
<td>Medium to large</td>
<td>Homogeneous</td>
<td>Negligible</td>
<td>Very good. Diffusion</td>
<td>High</td>
<td>High</td>
<td>Combustion gases</td>
<td>Low</td>
</tr>
</tbody>
</table>

- **Best**
- **Second choice**

(...)* request special precaution or coating powder
Basic Principles of Eutalloy® process

Function
The powder is introduced into the torch flame and sprayed in a semi-molten state onto the preheated part, for fusion. Bonding is achieved by diffusion of the alloys into the base metal.

Advantages
Eutalloy® provides a wide range of benefits compared with conventional arc welding process and PTA processes:
- No dilution of the base material
- Best purity and performance of the coating alloy
- Homogeneous and pore free coatings
- Smooth surface for low post welding machining and also when compared with cold thermal spraying
- Higher bond strength
- Better shock resistance
- Thicker coatings capabilities

Applications
The Eutalloy® process is designed for protective coating of machine parts and tools subject to a variety of wear phenomena. Eutalloy®-type oxy acetylene torches are capable of delivering a wide range of alloys in powder form. The Eutalloy® system has a coating dimension range from 0.10 mm to thicknesses of several millimetres. The spraying followed by fusion method can fine-coat to 0.05 mm. The hardness of a deposit can vary from 15 to 65 HRC, depending on the alloy composition. Such deposits are perfectly homogeneous and dense.

Technical data
- Flame temperature: 3200 °C
- Particle velocity: not relevant
- Deposition rate: 2 to 6 kg/h
- Coating material: Self-fluxing Ni, Co or Fe base in powder form
- Coating thickness: 0.05 to 10 mm
- Coating density: 100%
- Noise level: 70 - 80 dB(A)
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<th>Designations</th>
<th>Product Type</th>
<th>Applications</th>
<th>Properties</th>
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<tbody>
<tr>
<td>Eutalloy® 10009</td>
<td>Alloy Ni-Cr-B-Si-Fe</td>
<td>Resurfacing cams, pushers, stops, guide wheels, filterpress cake stone remover for sugar mill, decanting screw, steam gate components. Coating elements subject to friction.</td>
<td>~63 HRC Low friction coefficient. Good resistance to corrosion, erosion and abrasion under light load.</td>
</tr>
<tr>
<td>Eutalloy® 10011</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>Coating elements of chains, transport screw, wiper segments, brick die frames, claw excavators, rock drill, brush cutter rake, debarking knives</td>
<td>~65 HRC 80% tungsten carbides. Excellent resistance to abrasion by fine to coarse sized abrasives.</td>
</tr>
<tr>
<td>Eutalloy® 10112</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>Coating of machine parts used in the transport, handling and processing of minerals: transport screws, clay mixers, dies, segments, wipers, turbine impeller, fan impeller, pump screw, etc.</td>
<td>~64 HRC 60% tungsten carbides. Excellent resistance to erosion and abrasion by fine to coarse sized abrasives.</td>
</tr>
<tr>
<td>Eutalloy® 10185</td>
<td>Alloy Ni-B-Si</td>
<td>Coating of cast iron and steel molds for plastic material and glass. Recoating shafts, eccentric, bearings Soldering tungsten carbide biscuits on drilling stabilizers, etc.</td>
<td>~390 HV30 Well suited for metal-to-metal friction. Excellent corrosion resistance. Machinable with cutting tool.</td>
</tr>
<tr>
<td>Eutalloy® 10224</td>
<td>Alloy Ni-B-Si</td>
<td>Repairing glass mold edges, gear teeth, exhaust manifolds, pump bodies, brakes on drawing tools. Bonding layer before welding with electrode on cast iron that is difficult to weld, etc.</td>
<td>~250 HV30 Appropriate for new or worn cast iron. Good resistance to corrosion. Machinable with cutting tool.</td>
</tr>
<tr>
<td>Eutalloy® 10611</td>
<td>Co-Ni-Cr-B-Si alloy and tungsten carbide</td>
<td>Resurfacing chemical transport screws, fan blades at cement works, augers, and extrusion screws. Blades and segments of mixers, etc.</td>
<td>~55 HRC 50% tungsten carbides. Excellent resistance to abrasion under pressure and to corrosion.</td>
</tr>
<tr>
<td>Eutalloy® 10680</td>
<td>Alloy Ni-B-Si</td>
<td>Repair of gears, cast iron valve seats, molds, keyways, bearing seating. Renewing drawing tools. Correction of machining errors, etc.</td>
<td>~240 HV30 Good resistance to shocks and oxidation while hot. Machinable with cutting tool.</td>
</tr>
<tr>
<td>Eutalloy® 15999</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>Coating of molds for ceramics, rasps. Distributor blades for fertilizer spreaders, cyclone blades, hopper for sand spreading machines, mouths of baggers, etc.</td>
<td>~65 HRC 15% tungsten carbides. Excellent resistance to erosion and abrasion by fine abrasives.</td>
</tr>
</tbody>
</table>
### Designations | Product Type | Applications | Properties |
<table>
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<tr>
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<tbody>
<tr>
<td><strong>Eutalloy® LT PE 8418</strong>&lt;br&gt;103399 4.5kg&lt;br&gt;103400 12.5kg</td>
<td>Self-fluxing, nickel base alloy</td>
<td>Repair of mould damage on the seams or edges. Easy to machine or file.</td>
<td>~ 240 HV30 (~18 HRC)  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Spot repairs.</td>
</tr>
<tr>
<td><strong>Eutalloy® LT PE 8422</strong>&lt;br&gt;103399 4.5kg&lt;br&gt;103400 12.5kg</td>
<td>Self-fluxing, nickel base alloy</td>
<td>Repair or protection of mould components: seams, blow heads, guide rings.</td>
<td>~ 270 HV30 (~22 HRC)  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Small to medium repairs.</td>
</tr>
<tr>
<td><strong>Eutalloy® LT PE 8426</strong>&lt;br&gt;103400 4.5kg&lt;br&gt;103405 12.5kg</td>
<td>Self-fluxing, nickel base alloy</td>
<td>Brazing of tungsten carbides on stabilizers. Extensive repairs and preventive coatings on seams, edges and guides.</td>
<td>~26 HRC (~300 HV30)  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Fast deposition.</td>
</tr>
<tr>
<td><strong>Eutalloy® LT PE 8431</strong>&lt;br&gt;103401 4.5kg&lt;br&gt;103407 12.5kg</td>
<td>Self-fluxing, nickel base alloy with addition of Cr and Mo</td>
<td>Fast repairs and extensive preventive coatings on mould edges and guides.</td>
<td>~31 HRC  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Good wetting properties and fast.</td>
</tr>
<tr>
<td><strong>Eutalloy® LT PE 8435</strong>&lt;br&gt;103402 4.5kg&lt;br&gt;103408 12.5kg</td>
<td>Self-fluxing, nickel base alloy with addition of Cr and Mo</td>
<td>Extensive repairs and preventive coatings on neck rings or blow head.</td>
<td>~35 HRC  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Enhanced fluidity and fast.</td>
</tr>
<tr>
<td><strong>Eutalloy® LT PE 8440</strong>&lt;br&gt;103403 4.5kg&lt;br&gt;103409 12.5kg</td>
<td>Self-fluxing, nickel base alloy with addition of Cr and Mo</td>
<td>Enhanced weldability at high hardness level on bottom plates, baffles and guide plates.</td>
<td>~40 HRC  &lt;br&gt;Grain size -106 µm.  &lt;br&gt;Low energy input for the fusion.  &lt;br&gt;Fast deposition with enhanced fluidity.</td>
</tr>
</tbody>
</table>
SuperJet-S-Eutalloy®

SuperJet-S-Eutalloy® is an oxy-acetylene thermal spray torch, which delivers very precise anti-wear protective coatings, thanks to its sensitive controls. Alloy powders are sprayed onto the part to be coated and are fused simultaneously. Diffusion bonding with the base metal ensures that it does not reach its melting point. The dense coating is not affected by dilution and retains all its designed properties. For thermal spraying of Eutalloy® powders.

Advantages
- Flexible, multi purpose and fast
- Rapid shut-off of acetylene and oxygen while maintaining setting
- Reliable and precise coatings
- Usable in all positions on a wide range of base metals, including steels, alloy steels, stainless steels and cast-iron

SuperJet-S- Eutalloy® Kit

Contents of the equipment case:
- 1 torch with heat shield
- 6 tip assemblies for different flame sizes to be used according to the size of the part or type of coating required (refer to operating pressure table, page 6)

Also included are Eutalloy® powders for a wide range of applications.
Alloy types: 10680 – 10009 – 10185 – 10112
Solution R 103 to protect the adjacent areas from undesirable overspray.

Accessories such as:
- adjustable spanner
- spark lighter
- welding goggles
- hose couplings
- set of nozzle cleaners *
- set of injector cleaners
- special screwdriver *
- cleaning rad *
- set of Teflon washers *
* packed in a plastic box.

KoolTip

Special water cooled tip assemblies called KoolTip® kits are recommended whenever the SuperJet-S-torch is subject to high duty cycle usage or prolonged thermal reflections.

C6 water-cooled tip assembly kit contents:
- assembly with cooling device
- set of connecting water hoses
- special heat shield

Accessories such as:
- spark lighter
- welding goggles
- nozzle cleaner *
- injector cleaner *
- set of Teflon washers *
* packed in a plastic box.
Refill Powder Container

An aluminium refill container may be mounted onto the torch when powder alloys need to be transferred from bulk packages. Refilling is easily executed via the lid without removing the container.

Nozzles

This nozzle is made out of highly Cu with structural hardening, a special wear resistant copper alloy which improves service life. It can be screwed on & off easily. Every standard kit is delivered with this nozzle type.

Heavy duty Nozzles

Reinforced with Tungsten–Carbide

This nozzle can be supplied as an option. Each type can be screwed easily onto the corresponding standard tips. It is recommended when using powders containing abrasive hard particles such as tungsten-carbides. This wear-resistant spray nozzle will help you in terms of longer service life or consistent quality coating. C6-3 is special nozzle with 3 holes for the powder outlet to coat large surfaces.

Compact heavy duty tip

Tungsten–Carbide brazed on the tube

This is the solution for all applications where access is a problem and visibility of the fusion bath is a must. It is recommended for Glass Works and all big users of powders containing hard particles. It is available as an option.

Compact heavy duty tube

Tungsten–Carbide brazed on the tube

Same as the compact heavy duty tip, however without the gas mixer. It is available as an option.
**Function**  
The Eutalloy® SF flame spraying process is designed to deposit a range of wear resistant powder coatings with high deposit efficiency. It uses the CastoDyn DS 8000 oxy-acetylene powder spray system equipped with an SF Lance to coat onto slowly moving or stationary even surfaces of massive steel parts in a one step spray & fuse operation.

The water cooled SF Lance robust design has been engineered to perform higher powder deposition spraying rates with simultaneous fusion capabilities. This creates wear resistant requisite coatings from 0.8 mm to 3 mm thickness with strong metallurgical diffusion bonds to the steel substrate.

**Advantages**
- High deposition yield
- No dilution of the base material
- Best purity and performance of the coating alloy
- Homogeneous and pore free coatings
- Smooth surface for low post machining
- High bond strength
- Good shock resistance
- Thick coatings capabilities

**Applications**
A range of self fluxing Eutalloy® SF powder alloys has been developed to meet the precise granulometry and morphology tolerances of the SF Lance system thus ensuring highest possible deposition rates combined with efficient yield, reliable deposit quality and ease of application. This comprehensive range of corrosion resistant nickel based Eutalloy® SF powder alloys is available to meet different hardness and machinability requirements when protecting industrial machine parts in service against wear by friction, abrasion, erosion, pressure etc.

**Technical data**
- Flame temperature: 3200 °C
- Particle velocity: not relevant
- Deposition rate: 2 to 10 kg/h
- Coating material: Self-fluxing Ni, Co or Fe base in powder form
- Coating thickness: 0.8 to 3 mm
- Coating density: 100%
- Noise level: 70 - 80 dB(A)
## Eutalloy® SF Powders

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<th>Designations</th>
<th>Product Type</th>
<th>Applications</th>
<th>Properties</th>
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</thead>
<tbody>
<tr>
<td><strong>Eutalloy® SF 15211</strong>&lt;br&gt;Part N° / Esc Code 202789 15211 4.5kg</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>All round powder for anti-abrasion.</td>
<td>~60 HRC&lt;br&gt;60% tungsten carbides&lt;br&gt;Excellent resistance to erosion and abrasion by fine to coarse sized abrasives.</td>
</tr>
<tr>
<td><strong>Eutalloy® SF PE 8213</strong>&lt;br&gt;202536 PE 8213 12.5kg&lt;br&gt;202537 PE 8213 4.5kg</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>For thick coatings. Stabilizer in oil and gas drilling industry.</td>
<td>~55 HRC&lt;br&gt;55% tungsten carbides.&lt;br&gt;Excellent crack resistance.&lt;br&gt;Abrasion and corrosion resistance.</td>
</tr>
<tr>
<td><strong>Eutalloy® SF PE 8215</strong>&lt;br&gt;202538 PE 8215 4.5kg</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>For smooth coatings and parts subject to severe abrasion such as agriculture parts, centrifugal screws.</td>
<td>~850 HV30&lt;br&gt;60% tungsten carbides.&lt;br&gt;Excellent abrasion resistance even by fine particles.</td>
</tr>
<tr>
<td><strong>Eutalloy® SF PE 8217</strong>&lt;br&gt;208951 PE 8217 12.5kg</td>
<td>Ni-Cr-B-Si-Fe alloy and tungsten carbide</td>
<td>For parts needing a rough surface and subject to severe abrasion such as scraper blades, drill heads, scraper parts.</td>
<td>~62 HRC&lt;br&gt;70% tungsten carbides&lt;br&gt;Best edge build-up capability.&lt;br&gt;Abrasion and corrosion resistance.</td>
</tr>
</tbody>
</table>
CastoDyn SF Lance

The CastoDyn SF Lance kit increases the already wide range of applications by allowing the CDS 8000 to perform spraying with simultaneous fusion.

Technical data

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<tr>
<th>Standard Spray Module</th>
<th>SSM 50</th>
<th>SSM 51</th>
<th>SSM 52 optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposition rate</td>
<td>4-9 kg/h</td>
<td>2-4 kg/h</td>
<td>1-2 kg/h</td>
</tr>
<tr>
<td>Typical Yield</td>
<td>&gt;90 %</td>
<td>&gt;90 %</td>
<td>&gt;90 %</td>
</tr>
<tr>
<td>Oxygen flow rate</td>
<td>2000 Ni/h</td>
<td>1000 Ni/h</td>
<td>500 Ni/h</td>
</tr>
<tr>
<td>Acetylene flow rate - Flame</td>
<td>1900 Nl/MN</td>
<td>950 Nl/MN</td>
<td>475 Nl/MN</td>
</tr>
<tr>
<td>Oxygen flow rate - Carrier gas</td>
<td>330 Nl/MN</td>
<td>240 Nl/MN</td>
<td>80 Nl/MN</td>
</tr>
<tr>
<td>Flame power</td>
<td>~ 28 KW</td>
<td>~ 14 KW</td>
<td>~ 7 KW</td>
</tr>
<tr>
<td>Deposit thickness (one pass)</td>
<td>1-3 mm</td>
<td>0,8-2,5 mm</td>
<td>0,8-2 mm</td>
</tr>
</tbody>
</table>

Advantages

- Increased energy output for highest deposition rate
- Advanced nozzle design delivers exceptional yield (>90%)
- Consumable: Eutalloy® SF powders

Schematic showing the assembly of SF Lance on CastoDyn DS 8000

Castolin Eutectic’s modular CDS 8000 torch performs more flame spraying processes, with more alloy powder types than any other comparable system. Its robust, water-cooled design permits sustained high-intensity spraying, and is ideal for both automated and manual applications.
**CastoDyn® SF Lance**

The kit’s two Standard Spray Modules (SSM 50 and SSM 51) offer different flame powers, so workplaces of any mass or thickness can be coated.

<table>
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<th>Part N° / Esc Code</th>
<th>Description</th>
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<tr>
<td>203766</td>
<td>CastoDyn SF Lance kit 500 mm</td>
</tr>
<tr>
<td>205527</td>
<td>CastoDyn SF Lance kit 450 mm</td>
</tr>
<tr>
<td>203784</td>
<td>CastoDyn SF Lance kit 350 mm</td>
</tr>
<tr>
<td>205530</td>
<td>CastoDyn SF Lance kit 250 mm</td>
</tr>
</tbody>
</table>

**CastoDyn® DS 8000**

The CastoDyn DS 8000 torch is delivered in a robust carrying and storage case. This CDS 8000 kit is ready to be used with an SF lance kit and contains no Standard Spray Module (SSM).

<table>
<thead>
<tr>
<th>Part N° / Esc Code</th>
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</thead>
<tbody>
<tr>
<td>203754</td>
<td>CDS 8000 kit without SSM</td>
</tr>
</tbody>
</table>

**CastoDyn® Extra-Flat SF Lance**

The CastoDyn Extra-Flat SF Lance is the solution where the access is a problem. A minimum free opening of 60 mm is enough to enable the Extra-Flat SF Lance to penetrate in the gap and to apply a coating. It is typically used to apply wear resistant coatings on decanter screws. The special Extra-Flat kit contains the SSM 51 and a SF Lance with a length of 380 mm.

<table>
<thead>
<tr>
<th>Part N° / Esc Code</th>
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<tbody>
<tr>
<td>203763</td>
<td>CastoDyn Extra-Flat SF Lance kit</td>
</tr>
</tbody>
</table>
Wear protection...

Stronger, with

Castolin Eutectic

Your resource for protection, repair and joining solutions

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