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Australian Castolin Eutectic

Consumables and Equipment range

Arc Spray Equipment and Consumables



Edition September 2014



YOUR RESOURCE FOR PROTECTION, REPAIR AND JOINING SOLUTIONS



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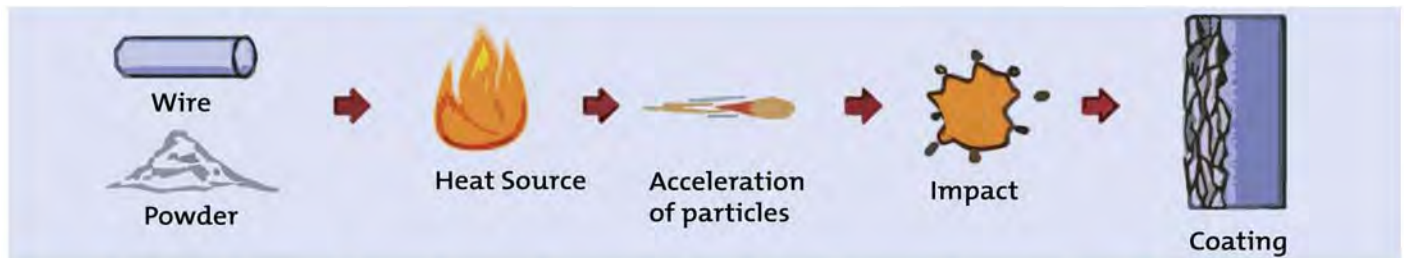


Thermal Spray Introduction

Coating overview

There are many different coating ways to protect against wear, repair and rebuild your parts, each with their respective advantages and constraints. Below you will find simplified overviews of the different coating processes, to get a quick initial choice for your application.

Simplified thermal spray



Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding		Deposition yield	Energy	Equipment investment	
RotoTec	Powder. Metals & polymer	All metals	Low	3 (10)*	Medium to large	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Medium to high	Medium to high	Combustion gases	Low
ProXon	Powder. Metals	All metals	Low	2 (5)*	Medium to large	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Medium	Medium to high	Combustion gases	Low
Meta-Ceram	Powder. Ceramic	All metals	Low	0,4 (1)*	Medium	Lamellar	5 to 15%	Good. Mechanical & micro-diffusion		Low	Medium	Combustion gases	Low
Eutalloy	Powder. Self-fluxing alloys	Steels, cast iron, (aluminium bronze) *	Medium to high	2 (10)*	Small & precise	Homogeneous	Negligible	Very good. Diffusion		Medium	Medium	Combustion gases	Low
Eutalloy SF	Powder. Self-fluxing alloys	Steels & cast iron	High	2 (6)*	Medium to large	Homogeneous	Negligible	Very good. Diffusion		High	High	Combustion gases	Low
Eutalloy RW	Powder. Self-fluxing alloys	Steels & cast iron	High	2 (6)*	Medium	Homogeneous	Negligible	Very good. Diffusion		Medium to high	Medium to high	Combustion gases	Low
EuTroLoy	Powder or wire. Metals	Steels, cast iron, (aluminium bronze) *	Medium to high	2 (20)*	Large	Homogeneous	Negligible	Excellent. Fusion		Medium to high	High	Electricity & shielding gas	Medium
EuTronic Arc	Wire. Metals	All metals	Low	1 (20)*	Very large	Lamellar	3 to 10%	Good. Mechanical & micro-diffusion		Very high	Medium	Electricity & compressed air	Medium

Simplified surfacing polymer overview

Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding	Deposition rate	Deposition yield	Energy	Equipment investment
MeCaTec	Paste or fluid. Polymer	All metals & others	None	10 (20)*	Large	Heterogeneous	Negligible	Good. Chemical	Medium	High	None	Negligible

■ Best
 ■ Second choice

(....) * request special precaution or coating material

EuTronic® Arc Wire spraying



Simplified overview

Coating families	Coating material	Base material	Heating of work-piece	Max coating thickness mm	Coating surface size	Coating structure	Coating micro-porosity	Bonding	Deposition rate	Deposition yield	Energy	Equipment investment
EuTronic Arc	Wire. Metals	All metals	Low	1 (20)*	Very large	Lamellar	3 to 10%	Good. Mechanical & micro-diffusion	Very high	Medium	Electricity & compressed air	Medium


Best
Second choice

(...) * request special precaution or coating material

Powder Cold Flame Spraying

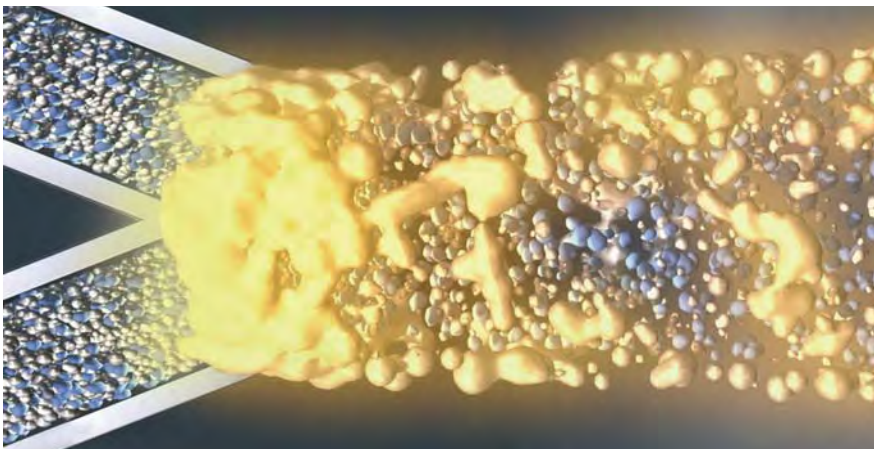
EuTronic® Arc Process

Function

EuTronic® Arc is the highest productivity thermal spraying process. EuTronic® Arc is an Arc Spray Process using a pair of wires which are melted by an electric arc. The arc has a temperature of 5 000 - 6 000°C that melts the wires continuously. Compressed gas - most often air - is used to atomise the molten wire tips and to propel the droplets towards the substrate at velocities exceeding 100 meters per second. This molten material is atomised by compressed gas and propelled towards the workpiece to form a coating. This combination of high temperature and high particle velocities gives arc sprayed coatings very good coating properties with high bond strengths and low porosity.

Arc spraying often produces large amounts of fume and high noise levels.

Arc spraying is a cold thermal spraying process where the temperature of the substrate is held below 150°C. Because of the low temperature, the work piece is not exposed to any metallurgical changes or distortion.



Arc Spraying



Structure of cold arc sprayed coating

Advantages

The arc spraying process is the thermal spraying process that has the highest spray rates and lowest running costs.

- Safe process
- No flammable gases used
- Cold spray process
- Not requiring the use of oxygen, kerosene or a combustible gas which means more economic coatings
- Operator can use two different wires during spraying to produce new suitable coatings.

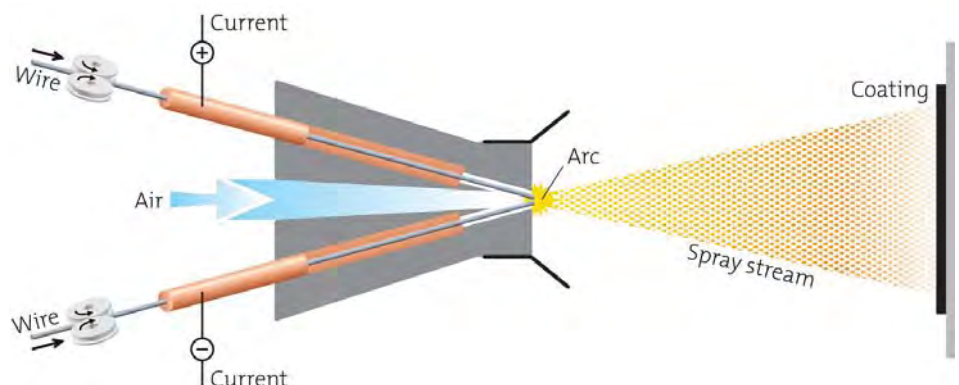
sprayed must be electrically conductive. The most common materials are metallic material or cored wires. Low running costs, high spray rates and efficiency make it a good tool for spraying extensive areas or a large number of parts.

Technical data

- Arc temperature: up to 6000°C
- Particle velocity: 150 - 300 m/s
- Deposition rate: 2.5 to 40 kg/h
- Coating material: Metals or metal alloys in solid and cored wires form
- Coating thickness: 0.1 to 20mm
- Coating density: 90 - 97%
- Noise level: 100 - 120 dB(A)

Applications

The main applications of the arc spray process are anti-corrosion coatings of zinc and aluminium and spraying work on large components. The material to be



Schematic of Arc Spray process

Powder Cold Flame Spraying

EuTronic® Arc Spray Wires



Product	Product Type	Applications / Features	Properties
EuTronic® Arc 502	Alloy Fe-Cr-Ti-Si-Mn	Cement cooler plates, boiler water wall protection, pulp production digesters, steam turbine casings, cracking installations, high temperature cyclone, fume extractors etc.	Hardness ~860 HV0.3 Self bonding alloy with enhanced surface wear resistance properties to combat erosion, thermal shock up to 650°C.
EuTronic® Arc 509	Alloy Fe-Cr-Al-Mo	Corrosion and erosion resistant protective coatings in boiler equipment up to 900°C. Self bonding alloy with enhanced surface wear resistance properties to combat corrosion, erosion up to 900°C and oxidation.	Hardness ~260 HV0.3
EuTronic® Arc 532	Alloy Fe-Ni-Cr-Si-Mn	Worn general engineering components, undersize external or internal diameters, bearing seats and faces, housings, shrink or force fit areas, flat surfaces etc. Hot gas corrosion protective coatings in heat exchangers, process piping, etc.	Hardness ~230 HV0.3 Self bonding alloy for thick or thin coatings with good corrosion resistance. Easy machinability, like machining solid mild steel.
EuTronic® Arc 595	Alloy Fe-Cr-B-Si-Mn-C	Exhaust fans, pump components, coal-fired boilers, super-heaters, economiser waterwalls, boiler tubes, boiler installations, lamella seals and «Füller» cooler plates in cement works etc. Self bonding alloy with enhanced surface wear resistance properties to slurry erosion, corrosion and low stress abrasion.	Hardness ~965 HV0.3 Withstands service environment up to 925°C.
Eutectic Arc 563	Alloy Fe-Ni-Al-Mo-Mn	Iron-nickel-aluminium cored wire, self bonding with exceptionally good machinability with standard tips. Good resistance to broad range of moderately corrosive environments. Diesel engine firedecks.	Macro Hardness ~90 HRb Micro hardness ~ 200 Vickers Service temp 649°C
Eutectic 10X	Aluminium Bronze	General metalizing work, bearing surfaces in contact with salt water corrosion.	Hardness ~55-60 HRb 7% Al, 0.5% Fe, Cu Bal
Eutectic 55X	18/5 Stainless steel	Low shrink, excellent resistance to corrosion with better machinability.	Hardness ~92-94 HRb 8 Mg, 5 Ni, 18 Cr, .08 Si, Fe Bal
Eutectic 60X	420 Stainless steel	General applications, 13% Chrome Steel, fair hardness	Hardness ~40-43 HRc 1 Mg, 1 Ni, 12/14 Cr, .08 Si, Fe Bal
Eutectic 75X	Ni, 5% Al Bond	Specialist Bond Wire with 9100-9750 psi bond strength.	Hardness ~55-80 HRb 95 Ni, 5 Al
Eutectic 95X	Iron Chrome Boron	Very hard abrasive and corrosion resistant coating with service temperature of up to 925°C	Hardness ~55 HRc (after load) 29 Cr, 1.6 Mg, 3.7 B, Fe Bal
Alcro	Iron Chrome Aluminium	High resistance to corrosive gases in boilers, also prevents oxidation and scaling of low alloy steels.	Hardness ~88 HRb 4-5.3 Al, 0.65 Si, <23.5 Cr, Fe Bal

Many more wire alloys are available upon request. Please ask your local Representative.

Wire Spraying

EuTronic® Arc Spray Equipment

EuTronic® Arc Spray 4 System

The EuTronic® Arc Spray 4 is robust, reliable and easy to use. The Arc Gun and the drive system are coupled to a 350 amp, switched voltage power source. This power source features sealed electronics for excellent reliability in the harshest spray environments. The wire feeder unit is neatly mounted on the power source, leaving it free to swivel and follow the operator whilst spraying. Other options include either floor or trolley mounting. There is no motor in the gun. Instead, the Gun 4 uses a patented 'Synchrodrive' system, where a single sealed motor with

a flexible drive arrangement, powers a reliable, positive drive push / pull up to a distance of 20 m. This results in a long reach and lightweight flexibility of the gun and supplies. For the operator, working conditions are more comfortable and productive.

- Sealed 350 amp power source for reliability.
- 1.6 mm wires standard. From 1.6 mm to 2.5 mm optional.
- Air cooled cables for low weight
- Excellent gun manoeuvrability
- 5m supplies packages standard
- Steel reinforced, PTFE lined wire conduits
- Easy to maintain for lower downtime costs
- Wire spool, coil and drum feeder option capabilities
- Soft start for smooth start ups

EuTronic® Arc Spray Supplies Setup



Standard Configuration (Push / Pull)

- Power source, push / pull drive & wire feeder.
- Arc Spray Gun.
- Drive unit position : On power source or floor.
- 5 m Push / Pull from Wire.
- Supplies package includes power and control cables, air hose, wire conduits and flexible drive.

Additional Products



Solution R104

Protective shielding/masking compound. Shields metal surfaces during powder metal spraying.

Description	Characteristics
Brush on liquid compound for masking metal parts during metal spraying. Suitable for SuperJet and RotoTec applications.	Non stick solution 400gram Pack
Cover all areas of part which may be exposed to powder metal overspray. After spraying is completed, wash or wire brush the protective compound. Unwanted metal particles adhering to the compound areas are removed when washed or wire brushed off, leaving clean, unsprayed surfaces.	

Extra Hands

Heat resistant material for insulating and positioning parts when welding/brazing.

Description	Characteristics
Easy to use, adheres to most surfaces	Reusable
Withstands elevated temperatures	1650°C (3000°F)
Packaging	2.27kg Pail
Easily holds or positions small and difficult-to-align parts for welding, brazing or soldering. Can be used as a heat sink to absorb heat and avoid surface discolouration on heat sensitive parts. Can also be used as a heat dam to prevent heat from travelling to areas that can be damaged by heat, such as seals, gaskets, glass and wiring. Prevents discolouration on metals such as stainless steel.	

Eutectic Instant Hardener #75

Case hardening compound

Description	Characteristics
Case hardening powder compound	
Easy to use and safe.	Cyanide free
Packaging	2.27 kg
Eutectic Instant Hardener #75 is a cyanide-free hardening compound for case hardening tools, harrowing & furrowing farm implements, and case hardening soft materials such as mild steel for improved wear performance.	

Eutectic SealTec

Low Temperature Wax sealer for cold spray coatings

Description	Characteristics
Easy to use and safe.	
Packaging	0.45 kg
A deeply penetrating, non-toxic wax sealer. Recommended for sealing thermal coatings when the service temperature is below 190°F.	

Bloc-It

Heat absorbing paste

Description	Characteristics
Easy to use and safe.	Non toxic
Packaging	0.283 kg (10 Oz)
Effectively absorbs surface heat and protects adjoining surfaces that may be damaged by excessive heat. Safe to use: non-toxic, no asbestos, harmless to skin, and odourless. Easy to clean: wipe off with cloth or wash with water. Leaves no stains. Key applications: protects rubber, plastic, distortion, painted, and finished surfaces during soldering, brazing or welding.	



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