Sustainable protection for light alloy components

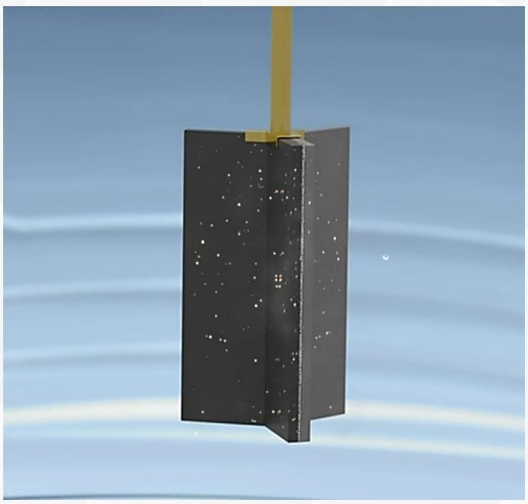
CIRRUS GUARDIAN™ PEO PRODUCT INFORMATION

Guardian™ PEO is an innovative anodising technology that offers a cost-effective way to protect light metal components using a single eco-safe bath formulation and reducing energy use by 5x vs. traditional PEO processes.

Cirrus Guardian™ PEO is an enhanced plasma electrolytic oxidation technology that offers a non-toxic, scalable, cost-effective process to coat light metals such as magnesium, aluminium and titanium using a single bath formulation.

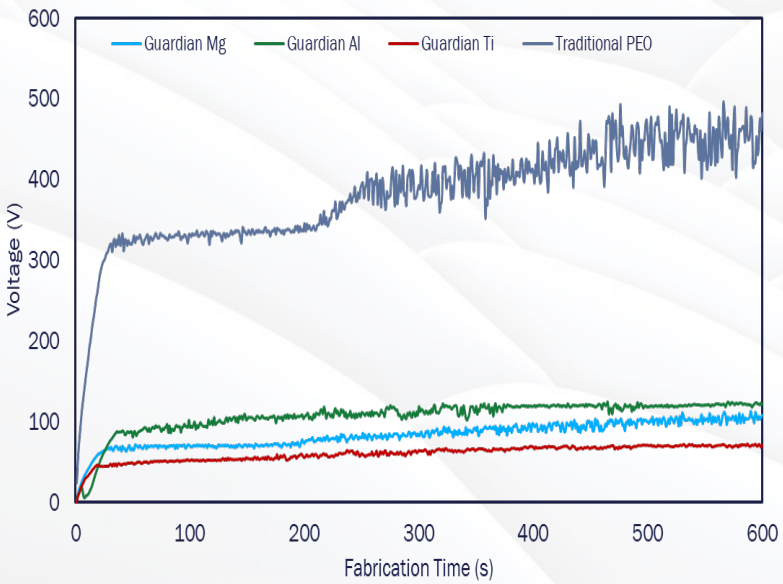
The Guardian™ PEO process consumes less than 12 W·h/micron/dm^2 to produce durable, corrosion-resistant coatings on Mg, Al, and Ti alloys. The electrolyte is composed of eco-safe benign chemicals with low waste management costs and minimal environmental impact.

Cirrus Guardian™ surface properties may include high hardness (>875 HV), superhydrophilicity (<5°contact angle), excellent corrosion and wear resistance, and a low coefficient of friction.



Cirrus Guardian™ conforms to complex shapes and can coat different light-alloys simultaneously.

ENERGY USE



ENVIROMENTAL BENEFITS

Cost savings
Ultra-low power;
room temperature process

Marketability
An exceptional one step process for coating light alloys.

Competitive advantage
Exclusive license enables access to the technology ahead of your competitors.

DEPLOYING PATENTED TECHNOLOGIES TO DELIVER CUSTOMER OUTCOMES THROUGH SUSTAINABLE COATINGS AND NANO-COMPOSITE MATERIALS

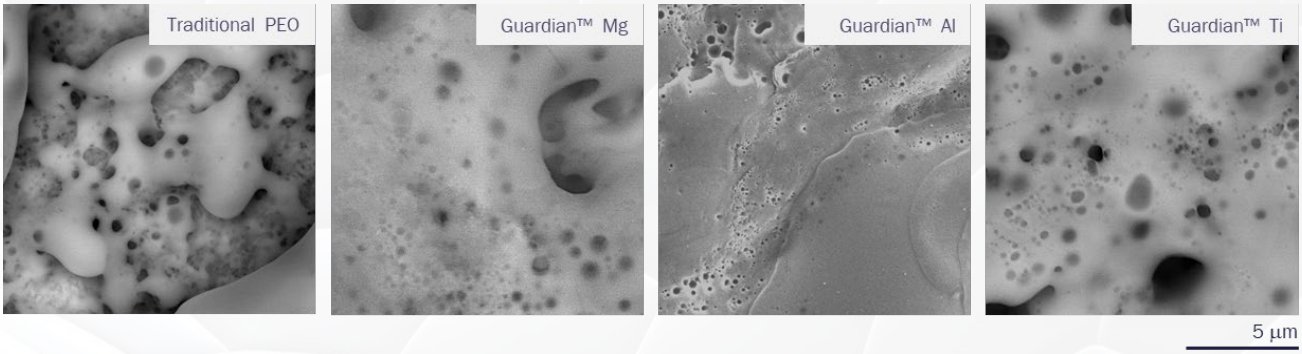
CIRRUS MATERIALS SCIENCE

Novel low energy PEO for light alloys

CIRRUS GUARDIAN™ PRODUCT INFORMATION

Compared to traditional PEO coatings, Guardian™ PEO offer a uniform, less porous surface that is free of micro cracks. Such surfaces smooth, durable, and corrosion resistant.

The exceptional corrosion resistance of Guardian™ PEO stems from the unique electrochemistry of the coating process. This innovation also enables incorporation of secondary-phase materials in the surface to further enhance durability, making coatings perfect for industries requiring robust, long-lasting performance from light-weight or 3d printed components.



The simplicity of the process and the unique, low-cost, non-toxic bath chemistry make Guardian™ PEO an eco-safe, scalable process. Adaptable to various industries and applications, Guardian™ PEO makes light weight alloys such as magnesium available for application in harsh environments such as marine and mesosphere. The non-toxic chemistry and conformal coating offers a safe surface material for medical devices and 3d printed components.

FEATURES

- **Light-alloy Sustainable Low Energy Treatment**
  One-step, high build rate (1-2 microns/minute) light alloy coating process using <5% of power requirements of traditional PEO.
- **Surface Modification**
  Cirrus Guardian™ carbide and nitride enhanced surfaces offer high hardness, super hydrophilicity and increased corrosion performance.
- **Cirrus Guardian™ Applications suitable for light metal alloy components**
  - Energy
  - Automotive
  - Bio-Medical Devices
  - Aerospace

CHRIS GOODE
Chief Technology Officer
chris.goode@cirrusmaterials.com
cirrusmaterials.com

DEPLOYING PATENTED TECHNOLOGIES TO DELIVER CUSTOMER OUTCOMES THROUGH SUSTAINABLE COATINGS AND NANO-COMPOSITE MATERIALS

CIRRUS MATERIALS SCIENCE