

EMPSAND™ ADDITIVE MATERIALS OFFERING
and MATERIAL SERVICES ::

MATERIALS FOR 3D PRINTING, PCB FABRICATION
BULK MOULDED PRODUCTS AND MORE.

EMARENA®

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MAXIMUM

Statement of the Problem and User Market:

In the industrial bid to improve electronics performance, industry has included iron in solder formulation. Market scope shows that high volume Aerospace, Medical, Automotive and Marine industries have the most to gain from integration of Empsand type products into product lines. Examples of target markets include frequency specific, high power, high current, disposable and recyclable electronics. An expected long term benefit is the reduction in cost with increased volumetric output and improved recycling of reclamation. Companies simply fighting loss through E Waste might integrate Empsand to find improved recycling of this silo-product. Industries encountering "product loss" as found in deep space satellite launch may benefit two fold; first from reduced consumption of rare earth elements and secondly through reduced loss of indexed commodity by way of removal from Earth. Emarena materials are expected to have a large upscale costs with long term cost reduction by way volumetric product fabrication.

EMPSAND Application:

Empsand material may be integrated into electronics components by way of physical, magnetic stencil or pattern. Empsand has shown success in thermal transfer by way of RF inductive heating of tin and silver lamination.

Starting Material and Suggested Research:

Products derived through Emarena's research initiative include copper clad stainless steel granules as layered composite. Empsand variants may be homogenized with tin and silver coatings for bulk volume joint fabrication, wire, cable, trace and PCB assemblies. Ferrous integration introduces reflow capacity as a function of micro and macro crystallization of alloys.

Magnetic Manipulation:

Empsand particulate can be manipulated below both the Neil and Curie points using magnetic impulse or field. In all instances below these points magnetic compaction of particulate below the slurry was accomplished within standard liquid 60:40 soldier. An organized particle matrix was formed with no optically visible air gap or defect. Cross section of the magnetically manipulated sections showed an organized particle matrix.

Zero Shelf Life Solutions:

Empsand particulate can oxidize as found with all electronic surface and getter materials where there is zero shelf life warning. While granular particulate is well above getter oxidation reaction chemistry, some micro and nano combinations result in zero shelf life warning. Emarena is capable of manufacturing microparticulate that allows for either transportation to, or, on site fabrication. Fabrication facilities may be upscaled for portable laboratory capabilities.

Service Charge Disclaimer:

Material product lines have mandatory peripheral service charge to recapture research costs. Allied Products and Services include commodity assessment, material charge, service charge in part.

Trademark:

EMPSAND is a registered trademark in the State of Illinois.



Figure: EMPSAND™ pre etched container for starting material.