FERROSVAMP ™ ADDITIVE MATERIALS OFFERING and MATERIAL SERVICES::

MATERIALS FOR 3D PRINTING, ALLOYING, WELDING BULK PRESS AND MORE.

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Statement of the Problem and User Market:
The availability of materials within the Additive Material sector was nonexistent while available materials are cost prohibitive as pertains to manufactured additive alloys relying upon a single starting material. Current 3D print materials are derived from Blast Furnace processing of ore bodies, extrusion, wire formation, nibbling and finally tumbling. Secondary plasma deposition require complex, high energy systems and are not optimized for bulk production. Such prefabricated material composition and cannot be decomposed or separated by elemental component.

Ferrosvamp Origin:
Ferrosvamp is currently derived from 50 micron ball milled red Iron Oxide powder. The material may be produced and separated from high grade Iron Ore, Hematite or fine powder. Ferrosvamp is a material that decreases with size and with full conversion, where a 5.24g/cm3 Oxide powder will reduce in size 1.5 times to 7.87 g/cm3 particle (or 50 micro to 33 micron) reduction. Emarena has long term objectives to derive Ferrosvamp from raw ore bodies containing 60% or more Iron Oxide, bypassing the blast furnace, however, current Iron Oxides are outsourced at cost.

What Ferrosvamp Is:
Ferrosvamp is Iron derived from thermal reduction of Iron Oxide in a Hydrogen rich environment. The final product is a powder that is highly refined as iron. This iron may be alloyed into any composition by way of numerous processes including additive manufacturing, weld processing. The reduced material must remain apart from oxygen or it will readily oxidize. Ferrosvamp may be described as a getter and used to absorb oxygen in a vacuum. During thermal processing the only byproduct is steam or condensed water. As Ferrosvamp is derived from Iron Oxide powder it may ball milled to size specificity prior to the reduction process. Ferrosvamp ranges from atomic to meso in size. The material may be used as a starting material for production of any type of steel or iron-based product, re-introducing flexibility back into material design.

Ferrosvamp Material and Suggested Use:
Ferrosvamp can be alloyed by way of additive manufacturing with rare earth minerals or compatible elements so as to create anything from “allergy free” alloys to “high strength” alloys typical of Medical or Automotive industries. Iron may be alloyed by the end user as required by adding Carbon to create anything from Carbon Steel to exotic Steel containing Cobalt, Tungsten and Vanadium. The material may be processed using Laser Welding, Arc Welding or Atomic Hydrogen Welding and does require post processing to Impose crystal structure typical of mechanical processing. At present third party research utilizing Electron beam scanning and welding has indicated successful production of microstructures. Emarena is engaged in Cane [Clay Body Process] production of multibody partially converted Ore body for fabrication of extruded crystal structure in a reduction environment. This with limited success.

Magnetic Manipulation:
Ferrosvamp particulate can be manipulated throughout the Neil and Curie parameters using magnetic impulse or field.

Zero Shelf Life Solutions:
Ferrosvamp particulate can oxidize resulting in zero shelf life label warnings. Emarena is capable of manufacturing microparticulate in batch form. Fabrication may occur within Emarena facilities or as portable laboratories.

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:
FERROSVAMP is a trademark of Emarena.

Warranty:: No Warranty or Claim of Warranty on Goods and Services.