Soft Ferrite Loading Powders

FSCP materials from MMG.

A range of fully sintered soft magnetic powders.

MMG now offer a new range of Soft Ferrite loading powders, suitable for compounding with a variety of materials such as plastics, resins, or rubbers. The fully sintered FSCP loading powders have specific advantage where, for reasons of application, the component will not be sintered after forming.

FSCP materials are generally supplied as fine, loose powders for customers' own compounding preferences – the possibility also exists for supply as nylon/ferrite injection moulding granule on special request.

Forming with the aid of a plastic carrier can achieve complex shapes not possible with conventional pressing operations. Possible forming methods employed include injection moulding, extrusion, and casting.

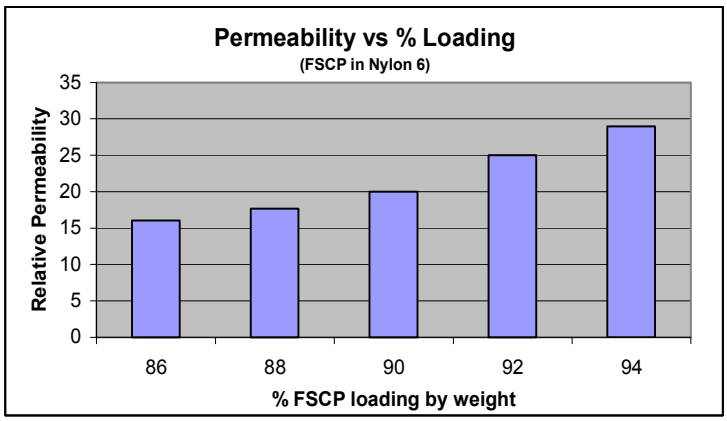
The special processing of FSCP materials from MMG gives superior density and magnetic performance compared to spray dried powders. The low surface area is suitable for high loading (typically to 92wt%).

When compounded FSCP materials can be used in applications where there is a need for intricate shapes, impact strength, dimensional accuracy, or tolerance to operating environments which would be hostile to conventional magnetic materials.

Compounds with FSCP materials are:

- Mouldable into complex shapes
- Strong, with resistance to chipping impact.
- Capable of holding tight dimensional tolerances
- Dimensionally stable
- Capable of being machined
- Resistant to corrosion.
- Lighter in weight per unit volume (a 86% loaded material weighs only 70% of the weight of conventional ferrite)

FSCP materials in injection moulding granules with moulded parts



Magnetically useful properties are retained with

- High relative permeability (up to 30μ_o),
- Low losses (tan δ/μ)
- High Q (>200 at 1MHz)
- Extended frequency range.
- High resistivity (can wind directly onto core)

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MMG **A Subsidiary of TT electronics plc**

FSCP Specifications

	93-FSCP-44	93-FSCPC36
PHYSICAL		
Sieve max.	1% max >300 micron	0.5% max >250 micron
Sieve mean	60-100 micron typical	130-180 micron typical
Tap density	2.4g/cm^3 min	2.7g/cm^3 min
Bulk density	1.8-2.5g/cm^3	2.3-2.8g/cm^3
Specific Surface Area	0.2-0.7m^2/g	0.2-0.7m^2/g
ELECTRICAL*		
Initial permeability B<0.1mT 10kHz 25ºC	1900+/-20%	5000+/-20%
Saturation Flux Density (H=796A/m = 10Oe) 25ºC	500mT Typical	460mT Typical
Curie Temperature B<0.1mT	230ºC minimum	170ºC minimum

Materials F44 (-44) and F9C (C36) are shown. Other grades from the MMG range may be available on request

* The magnetic characteristics are based on the Ferrite material grade as a fully sintered ceramic ring core before any size reduction to powder.

Other grades of Sintered Soft Ferrite Powders also available

FSCP application examples:

- ***Coin Validation Sensors/Proximity Detection***

  Complex-shape parts are formed by injection moulding. Close dimensional tolerances of FSCP mouldings give precise pole faces and winding slots for repeatable positioning of coils. Winding directly onto a high resistivity component surface can be a requirement.

- ***Packaging - inductive heat sealing***

  Soft Ferrite Loading Powders are moulded around induction coils to act as a “flux concentrator”, ensuring maximum current is delivered to the point of sealing.

- ***Steel Tube & Pipe manufacture - inductive welding with NeoGlas product.***

  Ferrite rods contained in glass-fibre tubes are used to “impede” current flow in wasteful directions and focus maximum induced current at the point of weld. For small pipes, the glass fibre has been impregnated with FSCP material to improve coupling with the magnetising coil and increase plant efficiency.

- ***Sport - Tennis balls / line sensing***

  Very fine special loading powders have been used in compound with rubber as part of the line-sensing systems in some world major tennis tournaments

- ***Automotive HT ignition cables***

  FSCP materials, compounded with rubber and extruded to form the centre core of High Tension Ignition Cables, have been used to improve “under-the-hood” RFI suppression.

- ***Other applications for which loading powders are being evaluated include***

  Wall panels for auditorium shielding

  Casing/Enclosure- shields

  Spray shielding/encapsulation of circuits

  Gap fillers and formers to reduce flux fringing.

  ...And many others

For price, availability, and advice on FSCP materials please contact your local MMG sales office.

Contact: