



-TECHNICAL DATA SHEET-

Product : HiCo 2750 Oe water based magnetic slurry

References : **MAH2111**

(black opaque versions are available upon request)

Application :

* water based magnetic slurry for striping magnetic tickets, complies to iso 7811/5 norms (motorway tickets, railways tickets,...).

Printing process :

* Stripping process :gravure roll coating head, (smoothing system is highly recommended in order to erase transferred pattern from the gravure), slot die, extrusion nozzle, knife coating,...

Usually magnetic output level is 50 to 100% higher than solvent based magnetic ink,

Substrate : Stripping can be done either on cardboard, on surface treated PET substrates, or on thermal board (either on back side or on thermal one).

Description :

Magnetism : Hard magnetic range, High Coercivity material

Colour : dark red brown,

Solvent : water

Dry content : 50% - 54%

Technical advices:

thinner : (tap) water

low drying diluent : (tap) water

fast drying diluent: isopropanol/water mixture (50/50), never use more than 15% based on ink quantity,

before coating : 1-high speed stirring for at least 15 mn. Until ink gets homogeneous and smooth aspect, and until no pigment deposit remains at bottom of the drum.

2-adding water to thin down viscosity to suitable value (for gravure printing and wet ink surface smoothing, add some 0 to 7% of water) and provide additional high speed mixing for at least 5 mn.

Filtration : Purpose is only to stop and remove from ink some dried skins or agglomerates coming back from coating head.

(usually, 200 micron porosity monofilament filtration bags or metallic screen cartridges work well, porosity of filters should be always greater than 150 micron)

Coating process : coating can be perform using various well known techniques in printing or coating industries using liquid inks, (flexography, rotogravure, slot die, extrusion nozzle,...).

However, closed coating head systems are more suitable with this generation of products.

When using gravure roll or Anilox roll, it is highly advisable to use a smoothing device to erase resulting pattern of gravure at the top surface of printings.

For any magnetic application top surface should be smooth enough in order to get a close contact between magnetic coating and magnetic heads.

Other system not providing such surface aspect do not need this.

Surface finishing could be achieved with help of calendering.

Magnetic orientation :

before drying, wet magnetic layer has to be submitted to a magnetic field in order to influence particle orientation . Lines of the magnetic field would be preferably parallel to the substrate and magnetic field intensity would be at least 0,75 time the coercivity of the material.

Smoothing device (if necessary) :

It could be “mechanical”, using PET strips for wet rubbing , or “magnetic”.

cleaning : water, detergent solution in water, industrial cleaner.

In order to achieve efficient deep cleaning of gravure and anilox roll, a mixture of 90/10 propylene glycol and water could be useful.

Drying oven : Length would be at least 30 m, but it depends on line velocity which is necessary for productivity .

Hot air temperature should be in the range of 55 to 100°C depending on length of oven and line velocity ,

Hot air flux from last part of oven is commonly partially or totally recycled to first part of oven, (water vapours are not flammable or explosive !)

Procedure to calibrate printing process :

+ depending of coating head system, first reduce dry coating thickness to 7 to 10 microns (0,40 mil) and roughness (Rt / Rz , “pick to valley”) below 7 microns . Acting on coating head system parameters.

Resulting magnetic response will be in the range of 100% to 150 %.

+then if necessary, thin viscosity using small amounts of water in such a way that magnetic answer will be closer to 110 %, and dry coating thickness close to 7-8 microns (0,31 mil) .

- last step is to adjust drying air temperature in such a way that paper will not have any distortion into oven or before winding step.

Notice : usually a free paper piece will show distortion if taken immediately, there will not be remaining any distortion after 24 hours (as humidity is now homogeneously distributed within the paper).

Calendering : between rewinding station and oven, it is highly suitable to calender magnetic stripes using at least one nip calender built from two hard cylinders (chromium plated surface, or ceramics with very low roughness).

One heated cylinder facing to magnetic stripe side is recommended too. Temperature at cylinder surface would be 50°C, and it would be adjust depending on drying level of magnetic coating (temperature as low as such no oxide deposit /shedding accumulates at cylinder surface)