



-TECHNICAL DATA SHEET-

Product : ECO friendly Hico 3650 Oe Water-based magnetic slurry,

Reference : **MAH-3211**

for HiCo stripes

Removable product from paper allowing recycling of paper, ("green product")
Fully biodegradable product (except stabilized barium ferrite pigment),
Resistance to water of the coating can be adjusted under request,

Application :

* water based magnetic slurry for striping magnetic tickets,

Stripping process :

- slot die, extrusion nozzle,
- knife coating,
- flexographic or gravure roll coating head, (smoothing system is highly recommended in order to erase pattern from the gravure), Usually magnetic output is 50 to 100% higher than solvent based magnetic ink, so that it could be necessary to use less deep .

Substrate : paper, cardboard, treated plastic. Thermal paper, unprotected thermal paper.

Characteristics :

Magnetism : Hard magnetic range, High Coercivity material (3650 Oe)

Storage conditions : Store above water freezing point and below 55°C

Colour : dark red brown,
Solvent : water

Dry content : 50% - 54%

Technical advice:

thinner : (tap) water,
never add ammonia , nor amines,

Non-magnetic thinner: **MAT220**, dispersion of mineral pigment in same formulation as magnetic ink itself.

low drying diluent : (tap) water

fast drying diluent: Isopropanol/ (tap) water mixture (50/50), 10% is a maximum,

Homogeneization before coating :

- high speed stirring for at least 15 minutes, until product recovers smooth and homogeneous aspect, and until no pigment deposit remains at bottom of the drum. (avoiding absorption of air)
- add 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 minutes.

Filtration : Filtration purpose is only to stop and remove some dried skins or agglomerates returning from coating head. Usually, 70 mesh metallic screen cartridges work well.

Never use filters (bags or cartridges) whose porosity is smaller than 200 microns,

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

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 stripes. For any magnetic coating, top surface should be smooth enough to allow a close contact between the coating and magnetic heads.

“Peak to valley” roughness should be less than 5 microns.

Magnetic orientation : Before drying, wet magnetic layer has to be submitted to a magnetic field in order to influence particle orientation.

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

Hot air temperature should be in the range of 50°C to 90°C depending on length of oven and line velocity.

Hot air from last part of oven would be partially or fully recycled into first zone of oven, (water vapours are not flammable or explosive)

Cleaning : detergent solution, or industrial cleaner. Dry slurry should be removed as soon as possible.

In case of striping Low magnetic flux tickets (old Amano norm),

- Due to high magnetic answer power of the ink, it is not always possible to print such a low thickness corresponding to magnetic requirements for Edmonson ticket.

In that case, the non magnetic thinner MAT220 could help. Adding some MAT220 thinner to MAH3211 magnetic ink will lead to a lower magnetic pigment loading of the mixture. MAT220 thinner having the same solid content as MAH3211 ink, water content will remain unchanged.

When dilution is increased, thickness to be printed for same magnetic response will increase too. Final result is that the wet thickness increases and makes the coating process easier.

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Calendering : in-line, before rewinding, it is highly advisable to calander magnetic stripes using at least one nip calander built of two hard cylinders (chromium or nickel plated surface, or ceramics with very low roughness).

Cylinder facing magnetic stripe would be more effective if heated. Temperature at top of cylinder surface would be at least 50°C, in fact it has to be adjusted depending on drying level of magnetic coating (temperature low enough to avoid oxide deposit /shedding at cylinder surface)

Finally, roughness ("peak to valley") should be less than 5 microns . Resulting magnetic response will be in the range of 100% to 130 %.

Note : if samples are taken immediately after the oven, the paper will show some distortion. If the roll is left to stand for 24 hours, humidity will be uniform and there will be no distortion.(humidity is now homogeneously distributed through the paper).
