DYEING TO KNOW YOU
THE ART OF PAINTING
North America
FIS Technical Delegate Update
Fall 2009
The Art of Paint

• Why paint?
• How to make paint
• When to paint
• Where to paint
• How to clean up
Why?

So everyone can be safe
Why

• Application of dye to delineate the course perimeter and terrain is a requirement at all levels of racing in Canada for Downhill and Super G.

• Dye is utilized to enhance the racer’s ability to identify course direction and terrain features.

• Also used in GS and now single pole slalom.
Dye Preparation

• Dye is prepared using a combination of water, windshield washer fluid and a dark blue colouring agent.
• The colouring agent most often cited is blue liquid food colouring, although other water soluble dye in liquid or powder form is also used.
• The colouring agent must be able to emulsify in both water and alcohol.
Formula

- A base mixture of water and glycol is used.
- Glycol percentage can range from 100% to 50%, weather dependant.
- On very cold days 100% glycol is required to ensure that the mixture does not freeze in the spray nozzle or the tubing mechanisms.
- On warmer days glycol should still be used as a base to ensure that the applied paint adheres to the snow surface and does not "crumble".
- Parsimonious ROC’s that encourage a water based mixture only are seeking a mediocre and ineffective result.
Mixture

- Industrial dye packs hold 12 – 15 liters of fluid. The full pack weighs close to 25Kg.
- If you use Chefmaster concentrated gel you will need 60% of a bottle for each dye pack.
- A good rule of thumb is that each bottle has 4 good squeezes to be almost empty.
- The residual from the four squeezes can be flushed with glycol for 1 additional measure. So each bottle yields 5 measures (4 squeezes and a flush).
- Two colours of Chefmaster colour can be used – Royal Blue and Violet. For sunny days use all Royal Blue. For overcast and snowy days use 2/3 Royal Blue and 1/3 Violet.
- It doesn’t matter what colour glycol is used. The mixture should be very dark in the tank.
Tools
When to Apply

• *Pre-Inspection*
• Dye is mixed and applied prior to course inspection. Initial application of dye pre-inspection can be limited to course perimeter and to horizontal cross hatch lines at jumps only. Care should be taken to prepare the dye line so that a uniform distance is maintained between lines on skiers right and left. It is essential that the majority of skilled athletes will ski within the marked perimeter.
Post-Inspection

- *Post-Inspection*
  - Final dye should be applied immediately following inspection and any pre-race course slipping. Course perimeter and cross hatching must be completed in advance of race start.
During the Race

• *During the Race*

• Dye should be reapplied during the race on an as-required basis as determined by the Jury and Jury Advisors. Application should be done between intervals in very short course section lengths. There is seldom any need to have a course maintenance hold solely for a dye program.
Outside Lines

- **Application of Outside Lines**
  - First application of outsides should be done in a medium speed snow plow where possible.
  - Try to keep a continuous and consistent flow to ensure a smooth line that rounds out each turn.
  - Keep the nozzle approximately 15 cm off the snow to generate a 25 cm wide line.
  - On extreme steeps use a slow speed side slip to generate a straight wide line.
Cross Hatches

• There are three types of cross hatches - partial, full, and double.
  
• Partial lines are most common and are used at turning gates from 5 m above the gate to 5 m below.
  
• The lines on the turning pole are 1 to 1.5 m in length. The outside gates are longer at 2 – 2.5 meters.
  
• This method leaves 5 – 6 m of clear snow on the race line. In awkward snow conditions (i.e. fresh snow) use “teeth” to provide a fuller visual for the racer that is outside line.
  
• Full lines are used on the pitches and are 5 m apart. Double lines mark jumps with one line at the jump and a second line 1 m uphill.
Speed
Speed with Teeth

Speed Dye Diagram - Teeth
Giant Slalom

Dye Diagram GS