Painting and Finishing Techniques

- Finishing order for HPR and MR
- Primers and Paints
- Thinners
- Fillets and Fillers
- Sandpaper
- Ruggedizing Tubes
- Launch lugs
- Building up nosecone bases
- Painting

HPR Finishing order

- After fillets applied, remove (sand, grind, blast) all epoxy gobs from rocket (Better yet, wipe them off when they're wet; don't let them dry in place!)
- Fillets should be close to final shape, sand where necessary to knock down high spots
- Lightly sand rocket with 150 grit to clean off all loose material, then wipe with alcohol or lacquer thinner
- Apply glass
  - Glass goes over fillets
  - Pre-wet cloth and tube, then wrap glass, working it in with paper towels
- Sanding – 150 grit
  - Sand airframe ends smooth
  - Sand hump where cloth overlaps
  - Lightly sand everywhere else
- Next apply coat of Zinsser primer, work it into cloth
- Wait 30 minutes and apply 2nd coat
- Fill the weave
  - Lots of primer …OR…
  - Thinned FNF
- Thin coat of FNF to get fillets just right
  - Use wet finger

HPR Finishing order (cont'd)

- Sand down FNF with 220 grit
- Go over any uneven spots with more FNF and/or thinned FNF, let dry, then sand again with 220
- Primer with automotive primer, spray-on
- Sand with 320 grit
- If looks good, paint. Otherwise, re-prime, sand against with 320 grit, then paint

Huh?

- Filler over primer?
  - Yes, FNF works great over shellac
  - When sanding filled areas, surrounding primer prevents over-sanding – the fuzzies. It helps to stabilize the material

MR Finishing order

- Apply yellow glue fillets to fins - structural
- Lightly sand rocket with 150 grit to abrade all surfaces
- Apply coat of Zinnser primer, work it into cloth
- Wait 30 minutes and apply 2nd coat
- Lightly sand with 150 grit
- Apply FNF fillets to fins – aero and cosmetic. Work in with wet finger, can get them nearly perfect this way.
- Large fillets prone to cracking, will need covering. On MRs, can use tissue with thinned FNF – ***DO NOT USE DOPE*** – it will soften the FNF (voice of experience)
- Must carefully work tissue and thinned FNF into the root to ensure it doesn't lift as the thinned FNF dries
  - Can use this on HPR, too
  - Like drywall tape, this prevents cosmetic cracks from forming
- Alternatively, can go over fillets with strips of ½-2 oz glass. When dry, feather edges, then apply FNF/wet finger followed by brushed on thinned FNF
- Once fillets/roots (LL, too) are satisfactory, lightly sand them, then apply thinned FNF to fins and spirals
- Let dry, then sand down FNF with 220 grit
- Go over any rough spots with more FNF and/or thinned FNF

MR Finishing order (cont'd)

- Let dry, then sand down FNF with 220 grit
- Primer with automotive primer, spray-on
- Sand with 320 grit
- If necessary, re-prime, then sand again with 320 grit
- Paint

Masking

- ¼" and ½" masking tape at Turner's Hardware in Farmer's Branch
- ¾" masking tape at Wal-Mart
- Burnish edge of tape with thumbnail to ensure a good seal
- 1/8" and ¼" vinyl masking tape at Mike's Hobbies in Carrollton, et al
- Use plastic bags for covering large sections
- Newspaper with masking tape applied to edge also suitable to for large areas
- Remove mask while paint is wet

Primers and Paints

- Primers
  - Zinsser brush-on for early coats
  - ***Automotive*** spray on for later coats
  - Dope can be used – dries fast but can cut into underlying FNF and/or primer
  - Do not use enamel/slow drying primers unless you have days to wait

- Paint
  - RustOleum, Boyds – great!
  - Krylon, Dupli-Color, Plasti-Kote, Painter's Touch, Testors – all prone to blushing, esp. Krylon and Testors
  - Brush-on – Testors brushes on very nicely, self levels

Gliders

- Need light weight finish
- Use RIT fabric dye – mix a teaspoonful with a couple ounces of ethanol
- Apply with foam brush
- Dries fast thus avoiding warping

- Blushing – caused by high humidity (high dew point). When solvents evaporate, the surrounding area is cooled by the evaporation process. The cooling can result in condensation which dulls the finish turning gloss into satin.

Thinners

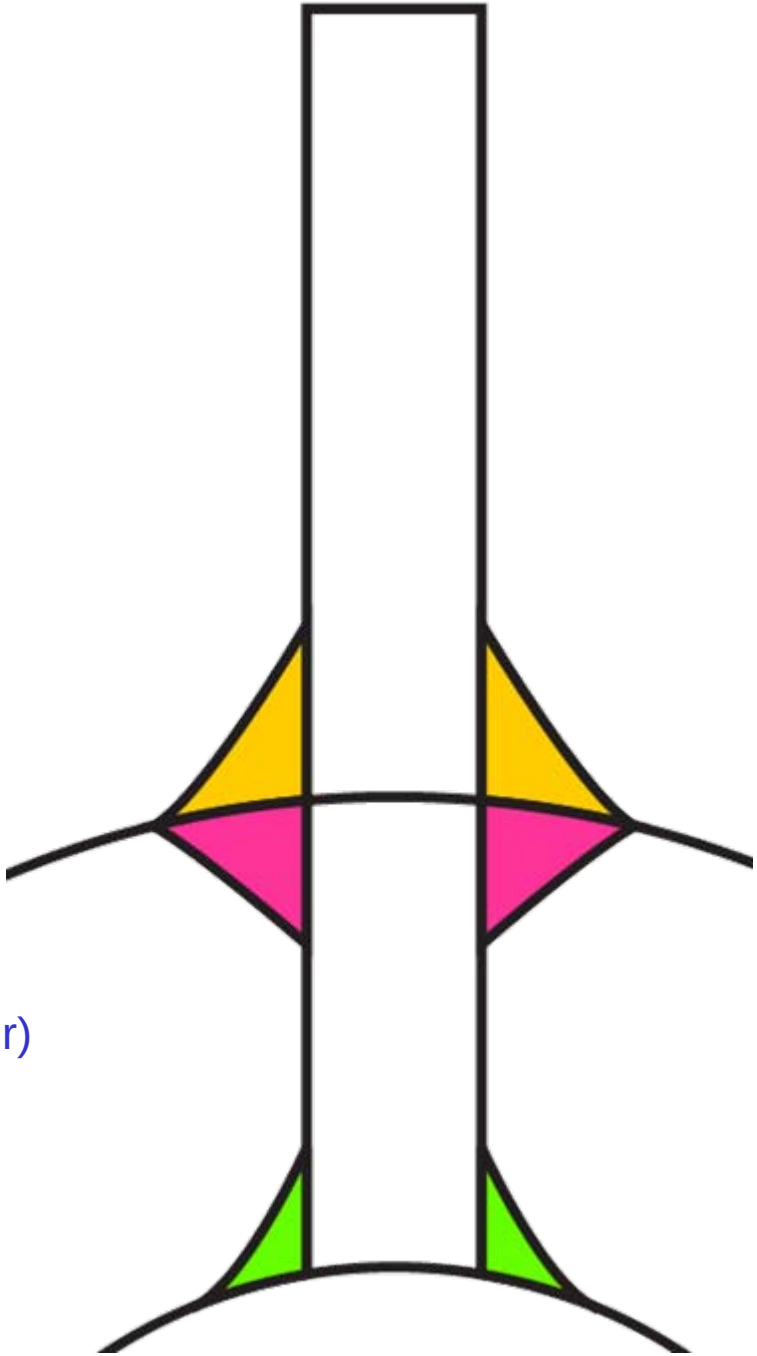
- Turpentine/Mineral Spirits
  - Thins and cleans enamel
  - Also cuts adhesive
  - Leaves oily residue
    - Clean off with alcohol
- Alcohol (denatured ethanol)
  - Cuts/cleans shellac/Zinnser
  - Won't harm plastic
  - Will mar some hot enamels such as Krylon, Testors
- Lacquer thinner
  - Cleans up most any paint, even when long cured
  - Will cut plastic – be careful
  - Cuts clear dope but not color butyrate dope
- Acetone – thins pyrogen
- Dope thinner
  - Cuts / cleans butyrate dope

Fillets and Fillers

- FNF on MRs
- For HPR, FNF or Epoxy with fillers (microballoons, wood flour)
- On large fillets, cover with tissue or glass

- Strength, Aero, Cosmetic
  - With TTW, external fillets largely cosmetic/aero
  - Fillets inside airframe not needed
  - With TTW, fillets on MMT most important

- Fillers
  - FNF
  - Epoxy with solid fillers (micro balloons, wood flour)
  - Bondo
  - Body filler (red putty, glazing compound)



Sandpaper

- 80 or 100 is most aggressive needed
- 150 for early work
- 220 for pre-prime
- 320 or 400 after primer
- Anything finer is superfluous

- Norton brand very good, get on-line

Ruggedizing Tubes

- Soak CA into ends of tubes anywhere separation occurs – payloads bays, nosecones, stages
  - Sand smooth with 150 or 220

- Soak couplers with CA, then sand smooth

- Do MMTs, too

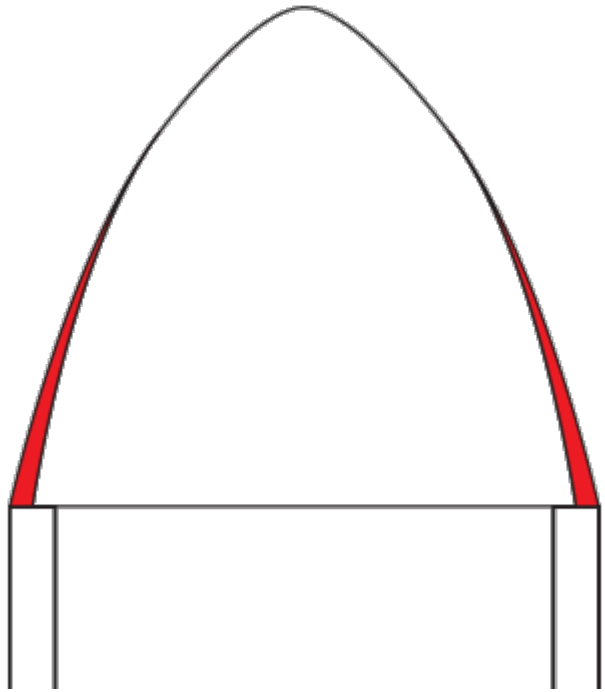
- Helps tubes
  - to resist dinging
  - to withstand removing tape from couplers
  - from getting fuzzy

Launch lugs

- Bevel fore and aft ends
- FNF down the sides
  - For HPR, add glass layer, then FNF
- Soak CA into ends, then sand
- Keep them cleaned out during filling and priming process. After each step, remove excess. Best done wet with a Q-tip.

Building up nosecone bases

- Thoroughly scuff up nosecone with 150 grit, or maybe 100. Make sure seams are completely scuffed
- With masking tape, apply wraps to base until it fits very snugly into primed (and glassed) tube
- Apply filler – FNF or bondo – to fill in space around tube, screed off with bondo spreader of putty knife or finger
- Slowly twist nosecone to remove from airframe
- Clean off excess from airframe ***IMMEDIATELY***
- Once dry, re-insert into airframe, then sand until NC flush with BT



Painting

- Need < 50% RH for hot solvent paints – lacquers and hot enamels such as Testors and Krylon
- Need <60% RH for RustOleum, lower for black
- Wear respirator
- After sanding, remove all dust with tack cloth
- Get in tight – too far back causes rough, dry finish
- Keep moving, never dwell or will get runs
- 4-6” is my preferred distance, but move fast
- 1st coat is light, tack coat – does not cover all. Let sit for 5 minutes for hot paints, 10 for RustOleum
- 2nd coat is heavier
- Let sit 10-15 minutes
- Apply 3rd coat – only if necessary
- Remove masking while paint still wet
- Use paint sticks to hold rocket
- Hang rocket upside down to counter runs
- Spray in overlapping strips, keep wet
- Hit ends and corners first, then rest of rocket