Tech Article - Glue and True Tyres Pt. 1

There are many ways to skin this possum, so if you are just learning, use this as a quick-start guide, not a Bible.

The reason we glue and true tyres - especially for wood racing, is not just to make them as perfectly round as we can, but also to eliminate deformation that occurs when the centrifugal force created by rotation. - Well some of it anyway.
Apart from Silicon tyres which aren't used much in NZ, all the urethane, Ultragrips Supergrips, Slot.it N22 and F series, ScaleAuto "soft" - are all some form of rubber for our purposes. But there is certainly a wide range in formulation, as some tyres need more care in glue used, especially the NSR tyres.

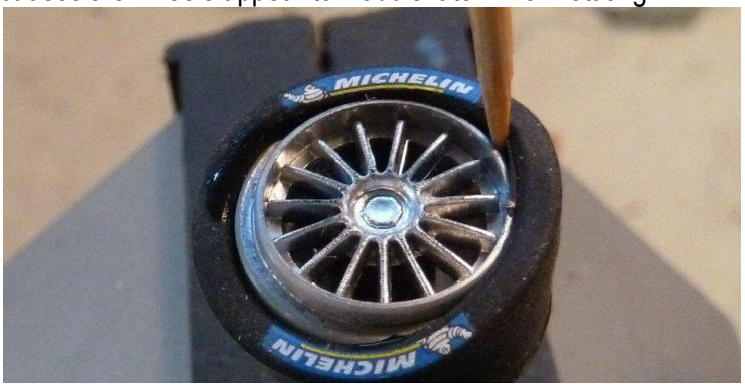
If you use a highly reactive quick set glue, tyres sometimes split; very often at the mold seam which is the most vulnerable point. Often people say the tyre was faulty, often, it is a glue that is not really suited to the formulation.
Cheap superglues from the $2 shop should be avoided, as should better quality runny superglues which give instant bond. There tend to be the ones which cause splitting - and they are harder to work with anyway.
I have used several **slow set "gel" superglues** and as a starter list, found these suitable on all kinds of tyres.
Alteco Gel - Mitre 10
UHU SUPERglue - Warehouse Stationery and others
Loctite control - Shop around for best price
IC2000 rubberised - From a couple of USA suppliers
Some racers use a rubberised sealant for windscreens.

The key thing is to have a glue that is not runny, is easy to apply with a toothpick or pin, and slow setting to spread, reposition and wipe if needed. I like to mount the wheel to be glued onto an axle, so it is easier to handle, and if you have a vise, to mount the axle, so both hands are free. OR, drill a small hole in a block of wood, so an axle just slides into it.

If I have a glue with a really fine nozzle like the Loctite or IC2000, I can apply it with good control directly from the bottle, but for small tubes which have wider nozzles, I dot a small amount of glue onto a piece of cardboard, then pick a bit from there with a toothpick or pin and apply it to the wheel surface.

Front wheels - yes, I glue and true them too. As these are usually a stiffer rubber, I can often peel back the outside edge to be glued first, and peel it back to sit inside out on the centre of the hub, so the entire outer shoulder of the hub is exposed. That enables me to apply a smear of glue around the entire circumference of the hub, then simply flip the tyre edge back over. Flipping the first bit causes the rest to follow suit and the whole thing goes into place on the shoulder of the hub.

With a slow set glue I can sometimes rotate the tyre on the hub before the glue catches. This helps both to spread the glue, and to ensure the tyre is sitting evenly, not off-centred which causes the wheels appear to wobble later when rotating.



I then leave it to sit a few minutes and repeat the process on the other hub/tyre. Once the glue has set I repeat the process on the inside edges. I don't bother trying to glue the centre of the hub for fronts, as they are stiff enough not to deform at normal rotating speeds.

Rear Wheels - As the rear rubber is much softer, the invert/peel doesn't work, so I simply fit the tyre to the hub, and check that it the outside edge appears to sit evenly all around

in relation to the outside edge of the hub. Note: Slot.it tyres have a narrow side and a wide side. The side with the identification letter has a wider shoulder. I always put this **wider shoulder to the INSIDE** so that the outer edge overlaps the edge of hub little, or not at all, as this is the real load bearing edge, and we want this outer tyre edge fully supported by the outer edge of the hub. See the comparison below

Left - wide shoulder inside **Right** - Wide shoulder overhanging

I then use the same glue application method as for fronts from a **fine nozzle, or with a pin,** lifting the tyre from the hub edge at one point, smearing the glue, and working my way around in several bites. I **always glue the outside edge first**. That makes it much quicker and easier to work around the less critical inside edge, so that if I spill a little on the side of the inside edge, it doesn't matter too much.
As soon as I have been all the way around, I try to **rotate the tyre on the hub** before the glue takes - sometimes I can, sometimes I can't I then **roll the hub** on the bench to help ensure the glue is spread evenly and there are no high spots.
Sometimes, despite every care, a tyre will split when glued. If this is just along the sides, I have had good success in repairing the damage, just by pushing a little glue inside the split with a pin, and holding it closed under pressure until the glue has taken. Then I can true them as normal, perhaps with a little light sand to the outer surface and the edge profile.

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