

# FYI

## Construction Techniques:

Forging (including SSF which is a true forging) results in a much stronger wheel. The wheel can therefore be made lighter than a cast wheel, while still maintaining superior strength. Multi-piece forged wheels have forged centers and spun rims. Sometimes the rims are spun from forged metal, sometimes they are not. Be sure to ask the wheel manufacturer which technique they use to make their rim sections.

Casting can be done in a number of ways. The most prevalent are gravity casting (pour the metal into a mold), vacuum/counter-pressure casting (suck the metal up into a mold) and low-pressure casting.

Relative wheel strengths are as follows: 1-piece forged, multi-piece forged, die (high-pressure) cast, vacuum cast, low pressure cast and gravity cast. The strengths are only relative because weight (or actual mass) affects a wheel's strength, as does the actual design. Vacuum (counter-pressure) casting is used almost exclusively by BBS for most of their wheels. Revolution wheels are an example of low-pressure casting designs.

## Offsets:

You generally want to stay at the same offset as your stock wheels. Changing offsets can result in a change in scrub radius and torque steer (FWD and AWD only).

1. When changing diameters and offsets, your number one concern is to make sure the wheel will fit with your current suspension and bodywork. Every car is different, so check with other people who have your same car to determine what will fit with your brakes, suspension drop, body work, etc.
2. When going to a smaller offset wheel, toe-in must be increased (same as decreasing toe-out) to compensate.
3. Going to a smaller offset wheel will change the scrub radius. The only way to bring it back to stock is to increase the overall diameter of the wheel/tire assembly. This has nothing to do with wheel diameter, but everything to do with the rolling diameter of the tires.
4. Different offsets will cause the same wheel to weigh more or less. The general rule is that the lower the offset (less positive), the higher the weight because the hub face is thicker.

## Tire Weights:

Tire weights are just as, if not more, important than wheel weights. Tires are further from the axis of rotation and therefore have a larger effect on steering feel, suspension movement, acceleration and braking. The lightest tires that are commonly available that I know of are the Toyo T1S. The Pirelli Pzero Nero are also light, but not as light as the Toyos. Tire companies will have their weight information, but you will have to get transferred around a few times before finding someone who knows usually. Some heavier tires are Falken Azenises and Bridgestone Potenza S-03s. Also remember that larger diameter tires weigh more than smaller diameter tires. Something to think about when going with plus-sized wheels.

## Performance:

The general rule of thumb is that for every pound of weight that you add in wheel/tire combo, it's equivalent to adding 2x that amount of weight anywhere else in the car. This only applies to straight line accelerating and braking.

Weight also plays a large role in turning (gyroscopic effect) and in handling due to your suspension having to damp all of the road forces. When it comes to wheels and cars, lighter is always better for performance.

\*\* If you would like to reproduce my wheel weights table on your page, please email me first. I would appreciate being given credit for the table since I did the work. Otherwise, please contact my webmaster at: [Gomakeyourowntable@everyoneknowsyourippeditofffrommysite.com](mailto:Gomakeyourowntable@everyoneknowsyourippeditofffrommysite.com)