# wheels: grippiness and durometer

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## At Sin City Skates, we get a lot of questions about durometer. So we ASK a lot of questions to the manufacturers and we keep asking until the often seemingly contradictory things they tell us start to agree – or at least make sense.

Here's kind of a summary of some of what I've figured out from Radar, Sure Grip, Atom, my own experience, talking to girls all day long about wheels and research on the internet.

### DUROMETER – what the hell is it?

Durometer is a measure of the hardness of urethane in wheels and it's only ONE factor in how grippy wheels might be. An actual *durometer* is a handheld meter with a tiny retractable metal tip on the end and a gauge on the other end. You can roll the tip over a sheet of cured urethane and the gauge tells you the durometer reading of that place in that slab of urethane. It's easy to screw that up, though, because it's a handheld gauge and you can make your reading inaccurate by too much or too little pressure. It's even harder to get an accurate reading on a wheel shape because it is round, so the curve of the wheel and the grooves can make it even harder to get right.

And there are many other factors that determine wheel performance, especially grip, including:

1. The **formula** of the urethane they are made of. For track skating purposes, most "experts" – and skaters, who are the real experts – seem to agree that Poly BD urethane wheels perform best. Other urethane formulas include TDI, MDI and outdoor formulas, all with different properties and characteristics that make them suitable for some things better than others. There are also clay, wood and wheels made of pretty much any other material you can get round... but I have never tried any of those, so I'm going to stick to talking about urethane here.

2. The **hub material and shape**. Some skaters swear by aluminum hubs, others by nylon. Nylon hubs have flex to them when you're rolling and pushing – so that flex translates into more traction if you were to put the exact same urethane in the exact same shape on the same size/shape hub (one nylon, one aluminum), as well. I prefer nylon for that reason. Nylon hubs with holes might be even more flexible than solid – not sure on that one but it seems logical to me. Hollow core wheels are certainly lighter but I believe most hollow core wheels are purposefully designed to be stiff. I believe the point is to make the hollow core perform with the stiffness (i.e. quickness and less traction) of aluminum without the additional weight. If there's a difference it's probably negligible, though. Aluminum hubs are supposed to be lighter, but what they mean by lighter is lighter than other aluminum hubs. Again, there are more factors in the metal hubs that have to be considered to be definitive, but generally, nylon hubs are the lightest.

3. **Wheel/urethane shape and ratio of urethane to hub**. Another factor in shape is how much urethane there is to how much hub. There are a lot of new shapes available these days over the former standard 62 x 44 mm wheels – and we'll talk about that in more detail in a future article.

4. **The universe**. Meaning – the weather. The humidity. How dirty your floor is. What type of floor your venue has – etc., etc. All the obvious stuff. So a girl skating in a humid, hot wooden rink with a grippy urethane coating in the south in the summer without A/C is going to HATE super grippy wheels and will prefer something firm. But a team, outside at night in the cold dry air of winter in the desert on a slippery cement outdoor track that's usually coated in dust, will be physically unable to hold corners in wheels the Southern girl loves. Meaning what's right for someone else isn't necessarily right for you. So before you ask on a message board about what wheels are best, ask the veterans on your team! The girls who've tried different wheels on your floor will probably be a lot more helpful than anyone else. Then take their opinion with a grain of salt – or ask around to see if anyone has old wheels you can try. Nothing substitutes for your own experience.

So what is the deal with DUROMETER, then? It's theoretically a measure of how soft the wheels are and how much give they have. But what is painted on the wheel may not be the actual durometer of that particular wheel on your skate. Wheels are

poured in big batches so the true durometer of a batch can actually be a range of +/- up to 4 points.

Here's an example: take pink Fugitives, which Sure Grip told us are about 94 durometer. What that means is that the pinks are in the 93-95 range and usually measure about a 94. But there are so many factors in what makes a batch of urethane measure a certain durometer (humidity, temperature, amount of dust in the air on the day they were poured, etc.) that the closest the factory can say is that they're aiming for 94 durometer for the pinks and every wheel in that batch will be close to it. Even things like the color dye (formula of the chemicals) they use can be a factor in the durometer, which is one reason that some manufacturers use colors to differentiate between durometer/grippiness ratings on the same models of wheels.

So what's the real difference between a wheel that says it's 92s vs. 95s? What's the difference between, say, blue fugitives – the grippiest, and reds – the firmest fugitives? That will depend on the +/- factor for that particular wheel (like maybe your blue fugitives that you think are 92s are actually 91 or 93 – and the red fugitives you're comparing that are supposed to be 95s are actually 93s also), and all kinds of factors in your venue as well, like temperature, humidity, dirtiness of the floor, your skill as a skater, etc.

That's why wheel manufacturers are reluctant to be nailed down to a particular durometer because it's more like a target they aim for than a set measurement of that particular wheel. We have to trick them into telling us what it is half the time, which is why you probably have seen conflicting info about durometers for the same wheel on different sites. Sure Grip qualifies their durometer listing with the +/- explanation and Radar is opting out entirely lately, using terms like "tite" to describe their wheels and not letting us pin them down with durometers at all.

So factor in all that... and the smart skater will basically use the durometer as ONE way to compare wheels, rather than as a set measurement of which one will be grippier than another.

An example of how durometer can be an unreliable comparison (if taken totally out of context): 95A red Fugitives vs. 95A Radar Cayman wheels. Both wheels are on nylon hubs, similar size and shape. But the fugitives are Poly BD – and the Caymans are either TDI or MDI (not sure which). So the same durometer of wheels is the same but in actuality, the red Fugitives are much grippier.

Which means, if you think that one step further, durometer ratings are a good way to compare wheels of the SAME MODEL. A lower durometer rating will be grippier than a higher durometer when you're talking about Fugitives – usually (taking into account the +/-). But if you're comparing Washington apples to Granny Smiths – say Poly BD or Fugitives to Tuners, for example, it's a good benchmark, but not gospel. And if you're comparing apples to cumquats, like V-Drives to Flat Outs... well, then durometer is even less reliable because there are so many other factors to take into consideration.

## SO WHAT DUROMETER DO YOU NEED?

People almost always start by wanting the grippiest. Do you need that? You might! Maybe you're a new skater and need as much traction as possible while you're learning. Maybe you have the world's slipperiest floor.

Grippier is becoming universally accepted as better in our growing subculture, but that's not really always the case either, in my opinion. For example, I prefer firmer wheels for practice. The main reason is that practicing on firm wheels makes my grippy wheels feel grippier when I need them. And practicing on slippery wheels forces you to learn better form and grip with your thighs and stride rather than relying on wheels. Firm wheels also tend to be more durable. Softer wheels wear faster. So I save them for games!

But ultimately, skaters call us all the time to ask for grippy wheels that won't slow them down. Well, the truth is that grippy wheels are bound to be slower in a sense – they're gripping, after all. But what are you trying to achieve? If you slip on every push, can you get going as fast? If you slide out on turns or have to coast to hang on, you are probably slowing your overall lap speed. On the other hand, when I first switched to blue Fugitives, I got a lap and a half less than usual on a timed 5-minute sprint. I was pissed. And I was more tired because I was pushing harder – the grippiness slowed me down. BUT – the next week I was back up to where I was because I was accustomed to the grippiness and pushed accordingly and probably got a little stronger just from sheer stubborness and a refusal to get less laps than I was shooting for. And in a PACK situation, I loved the Fugitives right away because I could bob and weave without sliding, taking harder hits, etc. – so even though I might have been a hair slower, I was getting through the pack faster. And that's what really counts, for me.