


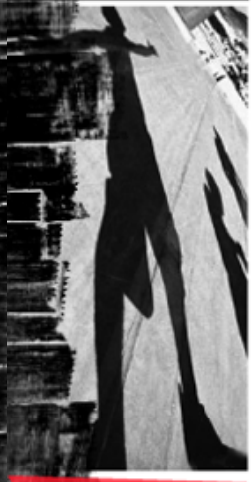

Wheels 101

A Basic Guide.

WHEELS

Wheel Categories

Track/Jam/Speed = Wide track and tall (62MM) indoor hardness, 90A to 98A
Art = Narrow width (57MM-Freestyle and 62MM - Dance & Figures) Hard, 96A - 101A.
Rhythm = Narrow width (52MM, 57MM, 62MM) Very Hard, 101A
Outdoor = Narrow & Tall (62MM & 65MM) soft, 78A to 88A

Materials

TDI Technology = Under $100 Skates
This is an inexpensive and easier way to process material compared to MDI Technology. TDI wheels tend to slip and "Bog" down. These wheels tend to wear down faster. Better skaters will use wheels with MDI Technology.

MDI Technology = Over $100 Skates
MDI wheels grip better, roll faster, last longer and have a much higher resilience rating and tensile strength. These wheels offer a better "feel" to the skater that they expect from better wheel companies. MDI wheels do not pick up dirt like the cheaper material wheels.

Most wheels are made from Urethane. Urethane was developed in the 20th century as a replacement for rubber due to shortages during the world wars. Petroleum was readily available and chemicals produced from oil were used to produce several plastics and then urethane. Urethane was first introduced as a wheel for skating via the skateboard wheels in the 60's replacing wooden, hard rubber or clay wheels that would "chunk" or slide out from under even the lightest skateboarder. The first urethane wheels for roller skates were used for outdoor skating and then harder formulas were produced for top end speed skaters and indoor artistic skaters. Today there are several different methods of processing urethane for roller skate wheels and literally thousands of formulas to produce many different varieties or properties. RADAR selects the very best formula for their wheels in each category to offer the greatest value to the skater and their own skating style.

Size

Wheels are measured in Milimeters & marked with a "MM" notation. The smaller the MM number, the smaller the circumference of the wheel. Smaller wheels (52MM) are used for rhythm skaters and for juvenile skates. Standard wheels (57MM) are used for most traditional skates and artistic skates.

Tall wheels (62MM) are used for track skating, jamskating and speed skating. Oversized wheels (70MM) are specific to some track skating. Wheel size used is determined category and by skater preference.

Hardness

Wheel hardness is determined by an "A" scale rating, the higher the number, the harder the wheel. Softer wheels are used for outdoor skating (78A or 84A). Outdoor wheels are softer to provide a better rebound for skating on uneven surfaces. Rebound allows for the wheel to "roll" over the uneven surfaces rather then "bouncing" over them like the harder wheels. Hard wheels (90A to 101A) are used for indoor skating with the softer indoor wheels offering a better grip than the harder indoor wheels.

Hubs

Soft wheels below 84A need a hub to reinforce the bearing seat in the wheel. Under

normal conditions, an 84A wheel will hold the bearings, but not under extreme conditions. Hubs are used on harder wheels only to lower the weight of larger wheels. Usually nylon or aluminum hubs are much lighter than the urethane they replace. Metal hubs are preferred over nylon hubs to produce a much "stiffer" wheel and provide a better feel to the top end skaters. Nylon hubs tend to "flex" while skating.

Shape

Narrow wheels are standard with Juvenile skates, artistic skates, outdoor skates and most rhythm skates. The narrow shape makes the wheels lighter and much easier to maneuver when skating. Wide track wheels are used for most jam skates, track skates and speed skates because the wider surface provides more grip when cornering, especially at high speeds. RADAR wheels also feature Speed Groove Technology, a groove down the middle of the wide track wheels allowing the wheel to flex at the groove, causing even more grip.

Colors

Wheels are offered in an endless array of color; however, different urethanes will produce different colors or hues due to the original or natural color of the chemicals. Wheels are cast with powdered pigments to change the urethane color. Wheel color helps the skater know what hardness or grip the wheel is and allows the skater to have a different look.

WHY DO MY WHEELS HAVE HOLES IN THEM? WHAT DO THEY MEAN?

Top end wheels for jam skating, speed skating or track skating are made from a material called POLY-BD. This very specific material has exceptional grip while providing excellent rebound yet remains stiff enough to deliver a quality roll. The POLY-BD also has a very high viscosity which means it pours very slowly when cast and as it cures, tiny air bubbles are caught inside the wheels. These tiny air bubbles show up as "holes" in the wheel when the running surface is trimmed, as well as, when the wheels wear down and more "holes" come to the surface.

Do not fear the "holes", these bubbles do not affect the performance of the wheels and in fact, they prove that the material is truly POLY-BD which enhances the performance of the wheels on skating surfaces. Enjoy your new wheels knowing all those tiny "bubbles" are there for a reason and it means you are skating on the most advanced wheel formula.

BEARINGS

Bearings sit in the wheel hubs and are what allow the wheels to roll in the skates. Most bearings are rated using the ABEC rating system. The higher the bearing rating, the better the bearing is. The ABEC rating has nothing to do with bearing quality, it is only a rating system.

What is ABEC?

ABEC stands for Annular Bearing Engineers' Committee. It is NOT a brand of bearing. This committee works to determine the standards for bearings for the Anti-Friction Bearing Manufacturers Association
(AFBMA).

The ABEC scale classifies different accuracy and tolerance ranges for bearings. There are five ratings in the ABEC scale:

- ABEC-1
- ABEC-3
- ABEC-5
- ABEC-7
- ABEC-9

The ABEC rating of a bearing is determined by the following (for a 608 size bearing):

- How close the bore is to 8mm in microns
- How close the outer diameter is to 22 in microns
- How close the width is to 7mm in microns
- The rotating accuracy in microns

Does ABEC affect the speed of your skates?

No. Not unless you are skating at 330 mph. That's based on a 608 bearing limiting speed of 32,000 rpm. Only in extremely high speed applications like ultra high speed

motors and precision measuring instruments can bearings above ABEC 1 affect performance. Regardless of how fast you plan to go, speed is affected first and foremost by the choice of lubricant.

If we're going to talk about tolerances, the fit of your wheels and axles have a much greater effect on performance than ABEC rating. Wheels and axles for inline skates have extremely loose fits that allow you to press the bearings into the wheel by hand. This masks the benefits of a higher precision bearing by allowing it to slip on the axle or in the wheel. Slippage between the mating parts results in energy loss. Lost energy is lost speed.

Remember how fast you go is up to you and your ability. Higher rated bearings will not make you go faster, but you do have more ROLL OUT. Another way to put this is how long it takes for the wheel to stop spinning, higher rated bearings will spin longer after you stop pushing.

The real qualities of the bearings are the components. Bearings consist of Races, Balls, Cages & Shields. Chrome steel races are far superior to cheaper carbon steel races and this is the basic difference between good quality bearings for roller skates and cheap
imitations. The carbon steel bearings will roll freely if there is no pressure on them, but after a few times on the skates, they tend to slow the bearings considerably.

Lubricant ...What is it?

The two most common lubricants are grease and oil. Grease is basically oil with a thickener or soap. The thickener acts like a sponge to soak up the oil when not in use.

What does it do?

Keeps metal parts from wearing against one another keeps dirt away from the sensitive inner workings. Grease Oil helps keep dirt out prevents material wear can suspend contaminants requires frequent servicing prevents material wear has low torque requires little servicing does not last as long increases torque lasts a long time. From the above you can see that a greased bearing requires little servicing yet cannot run as fast as an oiled bearing. An oiled bearing is susceptible to dust and contamination so it needs to be serviced more often. As grease is thicker, it acts as a seal against dirt, but at
the same time it can increase torque and slow down the bearing. A bearing lubricant or cleaner is recommended vs. using any household chemicals to lubricate or clean them. Household cleaners may seem like they are doing the job, but in reality, they are slowing the bearings down

RADAR WHEELS™