

# [ ■ ] TECH STOP

## MORE ON TRACTION: VHT, DRY TRACK, & RACE TIRE HARDNESS

by Robert Szabo

**VHT & METHANOL:** Regarding the use of racetrack surface treatments, methanol is a common thinning additive or carrier. It is used by many to spread the treatment out. Many racetracks developed recipes of track surface treatment and methanol mixtures for various racetrack conditions. Royce Miller, Maryland International Raceway, commonly uses 80% VHT and 20% methanol.

**VHT AMOUNT & CONTAMINATION:** Jim Weinert reports heavier amounts of VHT are used on cooler track surfaces. Lighter amounts are used for hot days with racetrack temperatures over 100 deg. The supplier of VHT, P. J. Harvey, reports the content of VHT has not changed in years. The racetrack surface does vary with location, temperature, and dew point. However Weinert also said chemical studies did reveal a major problem in some cases when VHT was mixed with methanol. Methanol was often contaminated with water. Methanol contaminated with water also contaminates the VHT. That leaves a gooey surface not proper for traction. It was so prevalent that Jim now recommends in seminars to IHRA racetracks not to use methanol or any other solvent as a thinning agent. He recommends only straight VHT.

**TRACK PREPARATION ENTITLEMENT:** Keep in mind the variability of a racetrack surface from VHT recipes coupled with dew point & humidity, and the track preparation task can become complex. The staff members at IHRA and experienced sanctioned racetrack personnel now handle most of that and minimize the influence on the racetrack surface. Several racers have commented about the superior track surface at a national event compared to local events. Thank you IHRA and the track and keep up the hard work. I know from experience that racetrack preparation is a lot of work and it is appreciated. We are now a long ways away from full track tire smoke from the 50's and 60's.

**HIDDEN SOURCE OF WATER ON THE RACETRACK:** Over the winter, I walked onto a racetrack surface right after a week of heavy rain. The weather that day was sunny and warm. Unfortunately, ground water had collected under this racetrack surface.

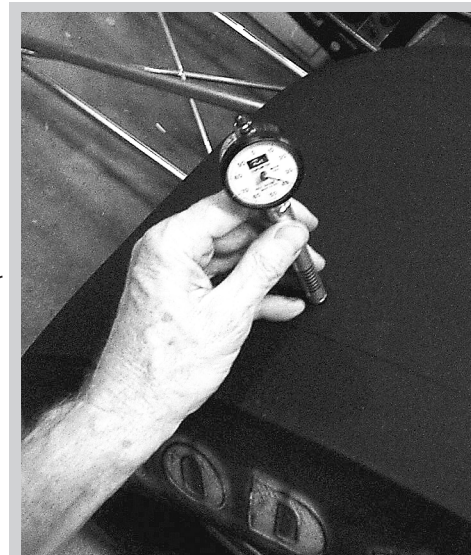


It was seeping out of cracks on the track surface and continued seeping out all day. If this were a racing event, water on the track from this source would have to be mopped up repeatedly to keep the track surface dry. This problem is more prevalent in some tracks than others. It is one reason to walk the racetrack during down time to see idiosyncrasies such as this. It is caused by a lot of rainwater and the drainage characteristics of the racetrack. One racetrack worker reported the staff dug up around the track and put appropriate drainage both under the track surface as well as along the sides of the track to eliminate this problem. Drainage is one of those problems racers are unaware of. It is an important characteristic of any track with rainy weather.

**RACE TIRE HARDNESS:** Drag racers use two types of tires for drag racing traction. (1) Many local bracket and grudge racers use street tires. They are usually hard rubber for wear resistance. (2) Others, as well as most racecars in competition, use drag slicks. They are much softer for more friction on the pavement surface. New racing tires I used seem to work well for about three months and then the traction seemed to be reduced. After about six months, they were worse. With reduced traction, my car was more prone to tire shake. I watched the Junior Dragsters measuring tire hardness, so I purchased a durometer and started measuring my tire hardness.

**THE DUROMETER** has a small pointed end from the gage that is imbedded into the tire surface. Depending on the hardness of the rubber, the probe is deflected into the durometer housing. That amount of deflection is controlled by a calibrated spring and measured by a gage.

**TIRE HARDNESS:** I found that new tires from Goodyear and Hoosier, for my blown alcohol bracket car, measured a durometer reading of about 35 to 38. The variation was from the outside temperature. Hotter weather made softer tires and lower numbers. At this hardness range and a setup for one-second 60-foot times, the tires do not chuck or ball up. They hook up well and bracket and match racing is reliable with new tires. Beyond that time, tuning was more of a challenge. After about three months, the tires harden to a durometer reading of about 40 to 43. After one year, they are 45 to 50. After one year, they are a durometer reading of 50 to 54. New tires from Mickey Thompson, for a friend's Top Alcohol racecar, had slightly higher durometer readings that were around 40 when they were new. However, they did not harden as fast. The racer reported his setup with MT's was a bit more "soft" on the launch, but he was happy with the life. Most new tires I have measured were in the 30's for durometer readings. Some of the softer tires for the bracket classes were in the low 30's.



**SIDEWALL:** In the higher-powered racecars, the condition of the sidewall is important in addition to hardness of the racing slick surface. Many race tires suffer reduced performance from sidewall weakening long before the surface gets too hard. A worn sidewall can result in (a) insufficient tire tread support and (b) more twist flex causing a reduction in reaction time during the launch.

**DUROMETER RANGE AS WELL AS SIDEWALL:** One national competitor commented he has to change tires after a certain number of runs because of sidewall flex. He said reaction time is reduced in his 8-second bracket dragster after 30 to 40 runs. The durability of a drag slick sidewall varies for various tire manufacturers, power levels, and chassis and gearing. Some of the Pro Street cars run 10.5 inch wide tires in a racing class with that limit. Those that run in the 7's and 8's are reported to have tire sidewall life of about 10 runs. That is a narrow tire for that power level in a full bodied racecar. Top Fuelers report as little as one run up to about 5 runs on a set of race tires at the power levels they are running. Other racecars that run 5, 6, and 7-second quarter mile times have sidewall as well as tire surface wear limits. Some racers record the number of runs with paint pencil, crayon, or chalk marks on each tire.

**JR. DRAGSTERS:** Junior dragster tuners use various methods for tire softening. Various tire treatments are on the market. Some need to be applied the day before. Others can be applied an hour before. Some teams use mineral spirits while others use kerosene. A tire engineer once said that many solvents or light oils soften the rubber surface. Both the Junior Dragster teams and the Go Kart field often use methods to soften their tires. One owner said he softens the tires to a durometer reading of 22: that is very soft. He said that improved eighth mile times a tenth of a second over untreated tires.

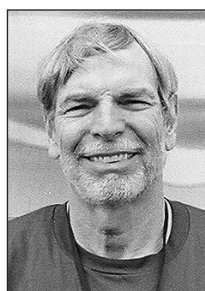
The tire engineer did say that while you can soften tires with solvents, what is done to the rubber is untested and an unknown especially if a home brew is used. It may present a safety problem. As a result, he said that is why most tire manufacturers recommend extreme care and even avoidance in the use of solvents or any other fluids for tire hardness control or stickiness. For those who do use tire softeners, the use of a commercial brand from a reputable supplier with a history and application instructions is an alternative.

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**About the Author**

Bob Szabo is an owner / driver of a blown alcohol drag racecar and author of the technical book: "Fuel Injection Racing Secrets." A six second tire and drive-line setup for a bracket racing altered or Funnycar are detailed in this book. The author's next book is on methanol racing fuel that will be out shortly. Check the DRM Yellow Pages for Szabo Publishing or look on the Internet at <http://www.racecarbook.com> or call (707) 446 2917. If you have any comments about this article or any previous articles by the author, feel free to e-mail directly to the author at [bob@racecarbook.com](mailto:bob@racecarbook.com) or to the DRM staff: [pjm@ihra.com](mailto:pjm@ihra.com) or [mperry@ihra.com](mailto:mperry@ihra.com). NOTE: If you have spam controls and you Email any of us & want a response, please enter our Email address to clear your spam blocker. Time may not permit us to register to your spam blocker.