

# FUEL ANALYZER KIT FOR SPECIFIC GRAVITY

★ FOR FUEL INJECTION OR CARBS

★ LAB GRADE HYDROMETERS

★ FOR GAS, ALKY, NITRO

## UNDERSTANDING SPECIFIC GRAVITY (sp gr)

The sp gr of any substance is its weight compared to an equal volume of water. Since water is used as the reference, it was given a sp gr of 1.0 At 68 deg F (20 deg C) water weighs 8.330 pounds per gallon; 62.32 pounds per cubic foot.

Examples:

1. Gasoline with a sp gr of .740 is 74% of the density of water.
2. What is the weight of a gallon of gasoline with .740 sp gr at 68 deg F?  $.740 \times 8.330 = 6.16$  pounds
3. What is the weight of a gallon of methanol with .792 sp gr at 68 deg F?  $.792 \times 8.330 = 6.60$  pounds

The second and third example above are valid at about room temperature, but keep in mind that as any substance is heated it expands, so the specific gravity of any liquid decreases (weighs less per gallon) as its temperature increases. Because of this, sp gr must always be referenced to some standard temperature. Each of our hydrometer kits contains a temperature correction table so you can read the sp gr of your fuel at any temperature, then correct it to any standard temperature you want to use; we like 70 deg F. If you are measuring sp gr at about room temperature, using that reading will usually be close enough, but if it is ten or twenty degrees hotter or cooler, you might want to use the correction tables.

## WHY CHECK THE FUEL

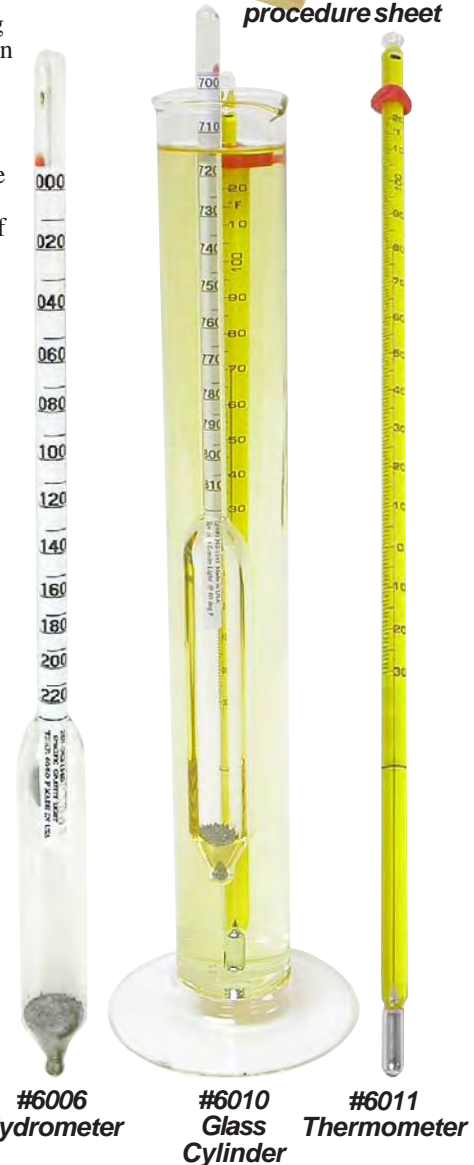
Engines perform best in a narrow band of air-fuel ratios, determined by the weight of the air and fuel. Since all fuel injection systems and carburetors meter fuel by volume, a jet change must be made if the sp gr of the fuel changes significantly. This change is to adjust the volume to keep the weight of the fuel going to the engine the same. Example: if the sp gr of the fuel increases 4%, then the volume injected must be decreased 4% to keep the weight going to the engine the same.

Many race tracks and sanctioning bodies use our Fuel Analyzer Kit to spot-check the sp gr of the racers' fuel, to see if it is consistent with the fuel that is legal at that track.

- 6014 COMPLETE FUEL ANALYZER KIT, consists of:  
 Two hydrometers (two of the same or two different...) specify which: #6003, #6004, #6005, #6006, #6007  
 One #6010 glass cylinder  
 One #6011 thermometer  
 One #6013 polished wood carrying case with foam liner, two plastic vials, and instructions
- 6015 COMPLETE FUEL ANALYZER KIT WITH KINSLER AIR DENSITY GAUGE: Same as #6014, plus #6016 Kinsler air density gauge and #6017 qualification and calibration of gauge (see pg #190)
- 6003 Hydrometer, lightest gas (aviation gasoline), .640-.710 (sp gr), 12" overall length, 5" scale at 0.0005 sp gr divisions
- 6004 Hydrometer, most pump gas and straight methanol (alcohol), .700-.810 (sp gr), 12" overall length, 5" scale at 0.001 sp gr divisions
- 6005 Hydrometer, 0-60% nitromethane, .650-1.000 (sp gr), 12" overall length, 4" scale at 0.005 sp gr divisions
- 6006 Hydrometer, 60-100% nitromethane, 1.000-1.220 (sp gr), 12" overall length, 5 1/2" scale at 0.002 sp gr divisions
- 6007 Hydrometer, 15-60% nitromethane, .840-1.00 (sp gr), 12" overall length, 5" scale at 0.001 sp gr divisions
- 6010 Cylinder, glass, 250cc, for use with hydrometer and thermometer
- 6011 Thermometer, -30 degrees F to 120 degrees F, laboratory grade, 12" overall length, 7" scale at 1 degree F divisions
- 6013 Case only, for fuel analyzer kit, polished wood with foam insert
- 6027 Foam insert, replacement in #6013 fuel analyzer case



#6015 Complete kit plus air density gauge. Has easy procedure sheet



#6006 Hydrometer

#6010 Glass Cylinder

#6011 Thermometer

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