

RECO-COOL

TECHNICAL BULLETIN 0008/12

ON-SITE TESTING OF COOLANT FLUIDS

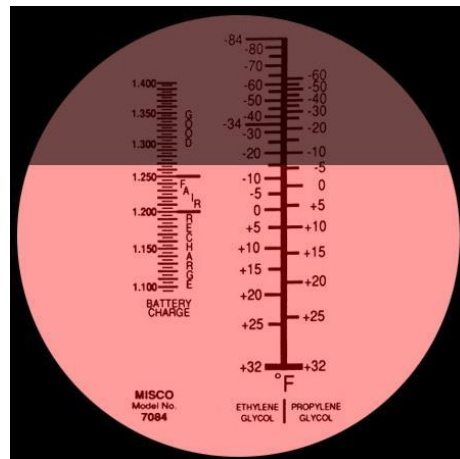
ON-SITE TESTING OF COOLANT FLUIDS

Some simple tests are available for the on-site technician which can be used to quickly evaluate the health of the coolant fluid and cooling system.

REFRACTOMETRY

A refractometer is an instrument which can be used to determine the percentage of glycol and water in a coolant fluid mixture. Typically, coolants are used at 33% to 50% glycol concentrates in water, and so in a healthy coolant we should expect to see between 33% and 50% glycol.

The refractometer, if calibrated and used correctly, can very quickly (in minutes) give an accurate analysis of the percentage presence of glycol in the coolant fluid. The refractometer measures the refractive index of light as it travels through the fluid (as measure by the speed of light through various materials versus a vacuum as the reference), and this varies considerably with different concentrations of glycol in the fluid mixture. Refractive Index is temperature dependent, and therefore the instrument should be calibrated with fluids at similar temperatures to the test sample prior to obtaining a reading.



A skilled user can undertake a refractive index analysis of a coolant mixture, and determine the glycol percentage of the fluid, within minutes. Glycol refractometers include a scale which converts the Refractive Index automatically to a glycol percentage.

The refractometer is a small hand-held instrument that easily fits into a pocket or briefcase and costs anywhere from USD\$100 to USD\$400.



TEST STRIPS

Test strips are paper coupons which provide (through chemical reaction) a colour conversion chart indicating the appropriate presence of cooling inhibitor compounds.

Test strips come in a wide variety of types and typically indicate the presence of traditional inorganic inhibitor materials, such as Nitrites and Molybdates. Some test strips can also indicate Glycol concentration (although this is not as accurate as refractometry), and also pH.

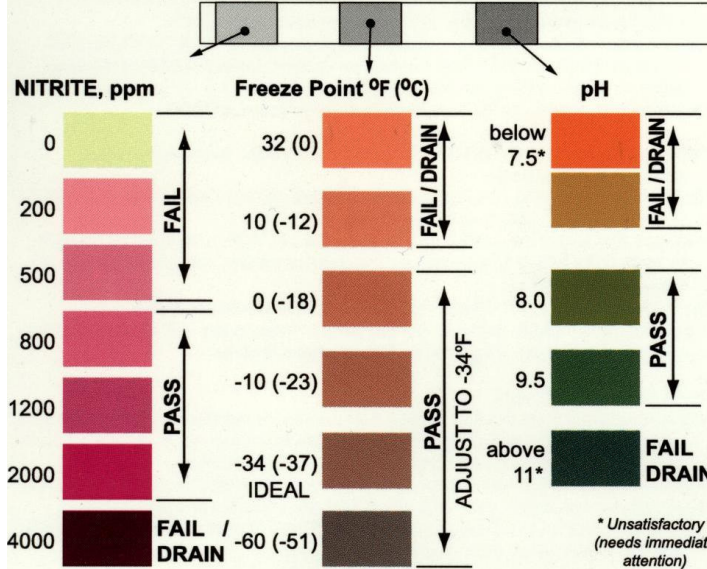
Test strips are simple litmus-like strips of paper, typically coming in boxes of 100 or more such strips, and provide an indication whether the presence of Nitrites, Molybdates or others is in the 'Suitable' or 'Unsuitable' (i.e. low) range for continued service.

Test strips provide a very simple onsite tool which quickly indicates to the service technician whether the coolant fluid requires changing or boosting with SCAs. Many modern OAT type coolants are unsuitable to be tested using standard inorganic monitoring test strips, as these products are formulated without Nitrites or Molybdates anyway, and fluid pH can be considerably different to standard traditional coolants. Much R&D activity is being undertaken to develop appropriate test strip products for the monitoring of OAT type coolants.



In summary, while Test Strips can provide very quick and simple monitoring of the presence of traditional coolant inhibitors, many modern day coolants used advanced OAT type inhibitor compounds, and the use of traditional test strips in these fluids is inappropriate.

TEST PROCEDURE: Dip one test strip into coolant sample that is below 110°F for 2 seconds, remove, and shake excess liquid off strip. After 25 seconds match color for Freeze Point and for pH. After 1 minute match color for Nitrite (end pad) and follow maintenance recommendation.



Test Strip Example – Instructions and Comparison Chart

