Engine Coolant Standards Adopted

British Standard References D15 Standards

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Work by the BTC Engine Coolants Technical Committee Leads to the Adoption of Several Standards from ASTM International Committee D15
In the summer, a car engine can get very hot. In the winter, a car engine can get very cold.

But no matter what the season or the temperature, an automotive engine fluid helps to keep a vehicle from being stopped in its tracks. That fluid — synonymously referred to as coolant or antifreeze — circulates around and through the engine and radiator to moderate the engine’s temperature.

And, to ensure that these engine fluids work well, ASTM International Committee D15 on Engine Coolants has developed a number of standards detailing the minimum requirements needed to make a quality coolant/antifreeze.

The use of D15 standards, already called out by U.S. regulators as a minimum for a quality product that will help protect an engine, has recently expanded further. The BTC Engine Coolants Technical Committee, part of the BTC Testing Advisory Group headquartered in Leicestershire, England, has adopted eight standards of D15’s standards. These standards, now referenced in British Standard 6580, Specification for Corrosion Inhibiting, Engine Coolant Concentrates, describe coolant attributes, from freezing point to boiling point and corrosion to foaming.

**Wide Standards Use**

With the adoption of the ASTM D15 standards in BS 6580, companies can use the same test data to demonstrate product compliance with both ASTM standards and British Standards. That’s according to Ken Nash, chairman of the BTC. Engine Coolants Technical Committee and technical manager for Petrochem Carless Ltd., Surrey, England. “Previously, differences in the procedures specified, in both the British Standards Institution and ASTM standards, meant that many parameters would have to be evaluated twice and often laboratories would need to have two pieces of similar equipment,” he says. “This is now no longer the case.”

The adoption has further benefits for those in the industry. “All of our antifreeze manufacturing companies in the U.S. manufacture for different parts of the world,” says René Wiebe, market development manager, Parker Hannifin Corp., Holly Springs, Miss., and D15 chairman. As a result, the method adoption simplifies the tests needed to meet requirements in different parts of the world.

“The BS 6580 standard is used widely outside of the U.K. as the benchmark for a minimum acceptable standard for coolants,” adds Nash. He cites that BS 6580 is used in Western and Eastern Europe, Scandinavia, the Middle East and Africa.

**The Standards and Their Adoption**

The process leading to the adoption of the D15 standards began in January 2005 when the BTC committee prepared to revise the 1992 version of BS 6580. The group determined that performance methodologies needed to be updated to reflect current laboratory practice, but revising the methods was outside the scope of the committee. BTC committee member Peter Woyciesjes, Ph.D., senior technical fellow and worldwide R&D manager, coolants, Honeywell, Danbury, Conn., a member of D15 and former member of the ASTM International board of directors, had a suggestion.

Woyciesjes informed the BTC committee that D15 had developed standard methods that could be referenced by the BS 6580 specification. He facilitated the choice of selecting methods that would fill the demands of an updated standard and introduced an additional needed method into the ASTM standards development system. The new method became D7437, Test Method for Temperature and Hard Water Stability of Engine Coolants.

The other standards are:
- D1120, Test Method for Boiling Point of Engine Coolants;
- D1177, Test Method for Freezing Point of Aqueous Engine Coolants;
- D1384, Test Method for Corrosion Test for Engine Coolants in Glassware;
- D1881, Test Method for Foaming Tendencies of Engine Coolants in Glassware;
- D3306, Specification for Glycol Base Engine Coolant for Automobile and Light-Duty Service;
- D4340, Test Method for Corrosion of Cast Aluminum Alloys in Engine Coolants Under Heat-Rejecting Conditions; and
- D7304, Test Method for Determination of Denatonium Ion in Engine Coolant by HPLC.

Wiebe explains that engine coolant/antifreeze standards address the challenge of a coolant formula that contains the right combination of additives and water; otherwise, the water — the best carrier of heat exchange — creates a corrosive situation between different metals and between the water and the metals itself. That same water also freezes at 32 degrees (0 degrees Celsius), and ethylene glycol or propylene glycol, both in the family of alcohols, prevents the water (and thus the engine, which could crack) from freezing.

Now, users can more easily check engine coolant/antifreeze properties with D15 standards. Nash says, “As a user of standards in a global business it is always good to see alignment in international standards as this reduces the amount of product testing and validation that has to be done to demonstrate product compliance with the requirements of markets in different regions.”