



Importance of Specifying ANSI Safety Standards for CNG Components

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The various ANSI (American National Standards Institute) safety standards for CNG components have been developed expressly for the severe service conditions of CNG vehicles in North America. These standards differ in significant ways from more general ISO (International Organization for Standardization) component standards that are intended for less demanding global market conditions. The ANSI standards are also maintained on a frequent revision cycle driven by advancing technology as well as experience with field failures and reported problems. CVEF recommends that all purchase specifications for CNG vehicles and conversions require CNG components certified as conforming to the most current ANSI standard wherever applicable.

Examples of the need for the assurance provided by these standards are:

ANSI NGV3.1-2014 Fuel system components for compressed natural gas powered vehicles and *ANSI PRD 1-2013 Pressure relief devices for natural gas vehicle (NGV) fuel containers* contain new requirements for corrosion durability of PRDs valves, fittings, regulators and other fuel-bearing CNG components. The older versions required only a relatively short salt fog test, far less demanding than the common OEM vehicle requirements that have made severe damage due to road salt a thing of the past. The new ANSI requirements mimic the severe OEM requirements for components whose failure due to corrosion could release the entire contents of the CNG fuel tank. Lesser requirements apply for components that can be isolated from the fuel tank. NGV3.1–2014 also has special corrosion durability requirements for solenoid valves as a result a recall due to corrosion of the electrical portion of a solenoid valve. Older versions of NGV3.1 and the ISO global standards do not have corrosion durability requirements tailored to the severity of the US coastal and deicing salt environments.

NGV3.1-2014 also now includes requirements for hoses that are based on vehicle service conditions.

ANSI NGV2-2007 *Compressed Natural Gas Vehicle Fuel Containers* has been strengthened through several revisions since the original 1992 edition and remains the most comprehensive standard for CNG cylinders. It contains controls against chemical attack and chloride stress corrosion cracking that are omitted from the ISO 11439 global standard and NGV2 is also far more comprehensive than the US Federal Motor Vehicle Safety Standard FMVSS 304 *Compressed Natural Gas Fuel Container Integrity*. FMVSS 304 has not been updated to address susceptibility to battery acid and drop impacts. NGV2 was updated in 1998 as a result of several cylinder ruptures in service that resulted from either acid exposure or impact. Certification to FMVSS 304 is the legal requirement for all US CNG cylinders but it is not a wholly adequate safety standard at this time. A number of importers and manufacturers are now supplying cylinders into the US market that are labeled as only conforming to FMVSS 304. CVEF recommends that all purchase specifications for CNG cylinders also require certification and labeling in accordance with the latest edition of NGV2. CVEF is encouraging the National Highway Transportation Safety Administration to update FMVSS 304 but at this time NGV2 is a necessary safety requirement.

The current editions on the ANSI standard should always be used. These standards do not have an explicit effectivity date for new editions and customers must therefore always specify the standard and the revision. The NGV2 and NGV1 (American National Standard/ CSA Standard for Compressed Natural Gas Vehicle (NGV) Fueling Connection Devices) revisions now in development will include corrosion tests similar to those that are in PRD1 and NGV3.1.

ISO and older ANSI component standards also used some contradictory pressure rating terms for valves and fittings that were different from the term used for cylinders. CVEF has received multiple reports of components certified to the ISO standards for use on 3,000-psi (200 bar) systems being misapplied to our higher pressure (3,600 psi) systems. Specifying the current ANSI standards eliminates this potential inadequacy because harmonized pressure rating terms are now used for all ANSI standards.

ANSI standards for CNG vehicle system components can be purchased at:

www. <http://webstore.ansi.org> or <http://shop.csa.ca/en/canada/page/home>

If you have questions about this bulletin contact John Dimmick at JDimmick@cleanvehicle.org

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