NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Ethanol Vehicle and Infrastructure Codes and Standards Chart

Many standards development organizations (SDOs) are working to develop codes and standards needed for the utilization of alternative fuel vehicle technologies. This chart shows the SDOs responsible for leading the support and development of key codes and standards for ethanol.

Vehicles

CONTROLLING AUTHORITIES:
DOT/NHTS (crashworthiness)
EPA (emissions)

Engine Testing:
SAE

Fuel Systems:
SAE

Fuel Lubricants:
SAE

Powertrain Systems:
SAE

Dispensing

CONTROLLING AUTHORITIES:
State and Local Government
(zoning, building permits)

Containers:
ASME UL

Dispensing Operations:
NFPA

Dispensing Components:
UL CSA STANDARDS

Storage

CONTROLLING AUTHORITIES:
State and Local Government
(zoning, building permits)

Containers:
ASME API NFPA

Transfer Operations:
NFPA

Container Components:
ASME UL

Container Siting:
NFPA

Infrastructure

CONTROLLING AUTHORITIES:
DOT/PHMSA (over-road transport, pipeline safety)

Test Methods and Specifications for Fuels:
ASTM INTERNATIONAL

Pipeline and Piping Infrastructure:
ASME NFPA

Building and Fire Code Requirements:
ICC INTERNATIONAL CODE COUNCIL NFPA

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Key for Standards Development Organizations (SDOs)

This key provides the acronyms, names, and standards development areas that correspond with the standards development organization logos in the chart above.

Organization Name			*Standards Development Areas*
AGA	AGA	American Gas Association	Materials testing standards
energy API	API	American Petroleum Institute	Equipment standards for petroleum production, storage and handling
ASHRAE	ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers	Promoting sustainability through research, standards writing, publishing, and education
ASME	ASME	American Society of Mechanical Engineers	Mechanical and multidisciplinary engineering, design codes and standards
ASTM	ASTM	American Society for Testing and Materials	Technical test standards for materials, products, systems
CGA	CGA	Compressed Gas Association	Equipment design and performance standards for compressed gas systems and components
CSA STANDARDS	CSA	CSA Standards	US and Canadian equipment standards
DOT	DOT	Department of Transportation	Federal transportation regulatory agency
FERC	FERC	Federal Energy Regulatory Commission	Regulates interstate transmission of electricity, gas, and oil
gti	GTI	Gas Technology Institute	Supplies technical support and training for the energy industry
ICC	ICC	International Code Council	Family of model building codes, including the International Fire Code
IEEE	IEEE	Institute of Electrical and Electronics Engineers	Electrical standards
NERC	NERC	North American Electric Reliability Corporation	Produces standards for electric grid operation
NFPA	NFPA	National Fire Protection Association	Model codes and standards, including the National Electric Code
NIST	NIST	National Institute of Standards and Technology	Measurement standards
SAE	SAE	Society of Automotive Engineers	Vehicle standards
	NARUC	National Association of Regulatory Utility Commissioners	Represents state public service commissions
UL	UL	Underwriters Laboratory	Equipment and performance testing standards

National Renewable Energy Laboratory
1617 Cole Boulevard, Golden, Colorado 80401
303-275-3000 • www.nrel.gov

NREL is a national laboratory of the U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Operated by the Alliance for Sustainable Energy, LLC

NREL/FS-5600-48606 • Revised February 2011

Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 10% post consumer waste.