



Material Safety Data Sheet
Revision Date: 20110425

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: VALIDATE[®] TDM1 Calibration Verification Test Kit

Product number: 301ab, 301au, 301bc, 301db, 301ri and 301vt

VALIDATE[®] products are not known to be hazardous. However, the above listed VALIDATE[®] product contains greater than 1.0% Ethanol. Therefore, this MSDS sheet was specifically created to provide information pertaining solely to Ethanol.

Intended Use: VALIDATE[®] Calibration Verification / Linearity Test Kit solutions are intended for *in vitro* diagnostic use in the quantitative determination of linearity, calibration verification and verification of reportable range in automated, semi-automated and manual instrument systems.

Manufacturer: Maine Standards Company, LLC
Address: 765 Roosevelt Trail
Windham, ME 04062

Emergency Phone: 800-377-9684
207-892-1300

Fax: 207-892-2266

2. COMPOSITION / INFORMATION ON INGREDIENTS

Synonyms: Ethyl Alcohol 190 Proof

Formula: C₂H₅OH

Molecular Weight: 46.07 g/mol

IUPAC Name: Ethanol

Risk Phrases: R 11 Highly flammable.

Safety Phrases: S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

S 7 Keep container tightly closed.

S 9 Keep container in a well ventilated place.

Notes: Ethanol is not a known carcinogen. The lethal dose for humans is >0.4% (0.4 g/1000 mL blood).

Name	CAS-No.	EC-No.	Index-No.	% by Weight
Ethyl alcohol 200 Proof	64-17-5	200-578-6	603-002-00-5	95
Water	7732-18-5	231-791-2	-	5

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Flammable Liquid, Target Organ Effect, Irritant

Target Organs

Nerves, Liver, Heart

HMIS Classification

Health Hazard: 2
 Flammability: 3
 Physical Hazards: 0

NFPA Rating

Health Hazard: 2
 Fire: 3
 Reactivity Hazard: 0

Potential Health Effects

Inhalation	Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation.
Skin	Causes moderate skin irritation. May cause cyanosis of the extremities.
Eyes	Causes severe eye irritation. May cause painful sensitization to light. May cause chemical conjunctivitis and corneal damage.
Ingestion	May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

4. FIRST AID MEASURES**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

5. FIRE-FIGHTING MEASURES

Flammability of the Product: Flammable.

Auto-Ignition Temperature: The lowest known value is 363°C (685.4°F) (Ethyl alcohol 200 Proof).

Flash Points: CLOSED CUP: 18.5°C (65.3°F) (estimated).

Flammable Limits: The greatest known range is LOWER: 3.3% UPPER: 19% (Ethyl alcohol 200 Proof).

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames, sparks and heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks, of reducing materials, of combustible materials, of organic materials, of metals, of acids and of alkalis.

Explosion Hazards in Presence of Various Substances:

Slightly explosive in presence of open flames and sparks, of heat, of oxidizing materials and of acids.

Non-explosive in presence of shocks.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water.

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:

Containers should be grounded. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME. Vapor may travel considerable distance to source of ignition and flash back. May form explosive mixtures with air. Contact with Bromine pentafluoride is likely to cause fire or explosion. Ethanol ignites on contact with chromyl chloride. Ethanol ignites on contact with iodine heptafluoride gas. It ignites than explodes upon contact with nitrosyl perchlorate. Addition of platinum black catalyst caused ignition (Ethyl alcohol 200 Proof).

Special Remarks on Explosion Hazards:

Ethanol has an explosive reaction with the oxidized coating around potassium metal. Ethanol ignites and then explodes on contact with acetic anhydride + sodium hydrosulfate (ignites and may explode), disulfuric acid + nitric acid, phosphorous (III) oxide platinum and potassium-tert-butoxide+ acids. Ethanol forms explosive products in reaction with the following compounds: ammonia + silver nitrate (forms silver nitride and silver fulminate), iodine + phosphorus (forms ethane iodide), magnesium perchlorate (forms ethyl perchlorate), mercuric nitrate, nitric acid + silver (forms silver fulminate) silver nitrate (forms ethyl nitrate) silver(I) oxide + ammonia or hydrazine (forms silver nitride and silver fulminate) and sodium (evolves hydrogen gas). Sodium Hydrazide + alcohol can produce an explosion. Alcohols should not be mixed with mercuric nitrate, as explosive mercuric fulminate may be formed. May form explosive mixture with manganese perchlorate + 2,2-dimethoxypropane. Addition of alcohols to highly concentrate hydrogen peroxide forms powerful explosives. Explodes on contact with calcium hypochlorite. Vapor may explode if ignited in an enclosed area. Containers may explode when heated or involved in a fire (Ethyl alcohol 200 Proof).

6. ACCIDENTAL RELEASE MEASURES

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

7. HANDLING AND STORAGE

Precautions:

Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas fumes or vapor spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis and moisture.

Storage:

Store in a segregated and approved area. Keep container in a cool, well ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 23°C (73.4°F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved / certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Consult local authorities for acceptable exposure limits.

Ethyl alcohol 200 Proof

TWA: 1900 (mg/m³) from OSHA (PEL) [United States]

TWA: 1000 (ppm) from OSHA (PEL) [United States]

TWA: 1900 (mg/m³) from NIOSH [United States]

TWA: 1000 (ppm) from NIOSH [United States]

TWA: 1000 (ppm) [United Kingdom (UK)]

TWA: 1920 (mg/m³) [United Kingdom (UK)]

TWA: 1000 STEL: 1250 (ppm) [Canada]

Environmental

When released to the atmosphere, it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Liquid.

Odor:

Alcohol like. Mild to strong. Like wine or whiskey; Ethereal, vinous. Pleasant.

Taste: Burning. Pungent.

Molecular Weight: Not applicable.

Color: Clear Colorless.

pH (1% soln/water): Neutral.

Boiling Point: The lowest known value is 78.5°C (173.3°F) (Ethyl alcohol 200 Proof). Weighted average: 79.58°C (175.2°F).

Melting Point: May start to solidify at -114.1°C (-173.4°F) based on data for: Ethyl alcohol 200 Proof.

Critical Temperature: The lowest known value is 243°C (469.4°F) (Ethyl alcohol 200 Proof).

Specific Gravity: Weighted average: 0.8 (Water = 1).

Vapor Pressure: The highest known value is 5.7 kPa (@ 20°C) (Ethyl alcohol 200 Proof). Weighted average: 5.53 kPa (@ 20°C).

Vapor Density: The highest known value is 1.59 (Air = 1) (Ethyl alcohol 200 Proof). Weighted average: 1.54 (Air = 1).

Volatility: Not available.

Odor Threshold: 100 ppm.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether and acetone.

Solubility:

Easily soluble in cold water, hot water, methanol and diethyl ether. Soluble in acetone.

10. STABILITY AND REACTIVITY

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, heat and sources of ignition.

Incompatibility with various substances: Reactive with oxidizing agents, acids and alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Ethanol rapidly absorbs moisture from the air. Can react vigorously with oxidizers. The following oxidants have been demonstrated to undergo vigorous / explosive reaction with ethanol: barium perchlorate, bromine pentafluoride, calcium hypochlorite, chloryl perchlorate, chromium trioxide, chromyl chloride, dioxygen difluoride, disulfuryl difluoride, fluorine nitrate, hydrogen peroxide, iodine heptafluoride, nitric acid nitrosyl perchlorate, perchloric acid permanganic acid, peroxydisulfuric acid, potassium dioxide, potassium perchlorate, potassium permanganate, ruthenium(VIII) oxide, silver perchlorate, silver peroxide, uranium hexafluoride and uranyl perchlorate. Ethanol reacts violently / explodes with the following compounds: acetyl bromide (evolves hydrogen bromide) acetyl chloride, aluminum, sesquibromide ethylate, ammonium hydroxide & silver oxide, chlorate, chromic anhydride, cyanuric acid + water, dichloromethane + sulfuric acid + nitrate (or) nitrite, hydrogen peroxide + sulfuric acid, iodine + methanol + mercuric oxide, manganese perchlorate + 2,2-dimethoxy propane, perchlorates, permanganates + sulfuric acid, potassium superoxide, potassium tert-butoxide, silver & nitric acid, silver perchlorate, sodium hydrazide, sulfuric acid + sodium dichromate and tetrachlorosilane + water. Ethanol is also incompatible with platinum and sodium. No really safe conditions exist under which ethyl alcohol and chlorine oxides can be handled. Reacts vigorously with acetyl chloride (Ethyl alcohol 200 Proof).

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Absorbed through skin, eye contact, inhalation and ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 3632 mg/kg (mouse) (calculated value for the mixture).

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified PROVEN by State of California Proposition 65 [Ethyl alcohol 200 Proof]. Classified A4 (not classifiable for human or animal) by ACGIH [Ethyl alcohol 200 Proof]. **MUTAGENIC EFFECTS:** Mutagenic for mammalian somatic cells [Ethyl alcohol 200 Proof]. Mutagenic for bacteria and / or yeast [Ethyl alcohol 200 Proof]. **TERATOGENIC EFFECTS:** Classified PROVEN for human [Ethyl alcohol 200 Proof]. **DEVELOPMENTAL TOXICITY:** Classified Development toxin [PROVEN] [Ethyl alcohol 200 Proof]. Classified reproductive system / toxin / female; reproductive system / toxin / male [POSSIBLE] [Ethyl alcohol 200 Proof].

Other Toxic Effects on Humans:

Hazardous in case of skin contact (irritant) or of inhalation. Slightly hazardous in case of skin contact (permeator) or of ingestion.

Special Remarks on Toxicity to Animals:

Lowest Published Dose / Conc.:

LDL [Human] - Route: Oral; Dose: 1400 mg/kg.

LDL [Human child] - Route: Oral; Dose: 2000 mg/kg.

LDL [Rabbit] - Route: Skin; Dose: 20000 mg/kg (Ethyl alcohol 200 Proof).

Special Remarks on Chronic Effects on Humans:

May affect genetic material (mutagenic). Causes adverse reproductive effects and birth defects (teratogenic) based on moderate to heavy consumption. May cause cancer based on animal data. Human: passes through the placenta and excreted in maternal milk (Ethyl alcohol 200 Proof).

Special Remarks on other Toxic Effects on Humans:

Acute potential health effects:

Skin: causes skin irritation.

Eyes: causes eye irritation.

Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea, and alterations in gastric secretions. May affect behavior / central nervous system (central nervous system depression - amnesia, headache, muscular incoordination, excitation, mild euphoria, slurred speech, drowsiness, staggering gait, fatigue, changes in mood / personality, excessive talking, dizziness, ataxia, somnolence, coma / narcosis, hallucinations, distorted perceptions and general anesthetic), peripheral nervous system (spastic paralysis) and vision (diplopia). Moderately toxic and narcotic in high concentrations. May also affect metabolism, blood, liver, respiration (dyspnea), and endocrine system. May affect respiratory tract, cardiovascular (cardiac arrhythmias, hypotension) and urinary systems. Inhalation: May cause irritation of the respiratory tract and affect behavior / central nervous system with symptoms similar to ingestion. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may cause dermatitis or an allergic reaction. Ingestion: Prolonged or repeated ingestion will have similar effects as acute ingestion. It may also affect the brain (Ethyl alcohol 200 Proof).

12. ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. TRANSPORT INFORMATION

DOT Classification: CLASS 3: Flammable liquid.

Identification: Ethanol (Ethyl alcohol 200 Proof) UNNA: 1170 PG: II.

Special Provisions for Transport: Not available.

15. REGULATORY INFORMATION

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Ethyl alcohol 200 Proof (in alcoholic beverage).

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Ethyl alcohol 200 Proof (in alcoholic beverage).

Connecticut hazardous material survey: Ethyl alcohol 200 Proof.

Illinois toxic substances disclosure to employee act: Ethyl alcohol 200 Proof.

Rhode Island RTK hazardous substances: Ethyl alcohol 200 Proof.

Pennsylvania RTK: Ethyl alcohol 200 Proof.

Florida: Ethyl alcohol 200 Proof.

Minnesota: Ethyl alcohol 200 Proof.

Massachusetts RTK: Ethyl alcohol 200 Proof.

Massachusetts spill list: Ethyl alcohol 200 Proof.

New Jersey: Ethyl alcohol 200 Proof.

TSCA 8(b) inventory: Water; Ethyl alcohol 200 Proof.

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).

CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):

R11- Highly flammable.

S7- Keep container tightly closed.

S16- Keep away from sources of ignition – No smoking.

Protective Equipment:

Gloves.

Lab coat.

Vapor respirator. Be sure to use an approved / certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Maine Standards Company shall not be held liable for any damage resulting from handling or from contact with the above product.