

Material Safety Data Sheet

Reagent Alcohol



Section 1. Product and Company Identification

Product name : Reagent Alcohol
Product code : AX0442
Synonym : Ethyl Alcohol
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM
Validation date : 7/19/2007.
Print date : 7/19/2007.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Liquid.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : DANGER!
POISON!
HARMFUL IF INHALED OR ABSORBED THROUGH SKIN.
VAPOR HARMFUL.
MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.
CANNOT BE MADE NONPOISONOUS.
CAUSES SEVERE EYE IRRITATION.
CAUSES RESPIRATORY TRACT AND SKIN IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
BLOOD, REPRODUCTIVE SYSTEM, LIVER, GASTROINTESTINAL TRACT,
RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR
CORNEA.
FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.
Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist.
Keep away from heat, sparks and flame. Keep container closed. Use only with
adequate ventilation. Wash thoroughly after handling.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Eyes : Severely irritating to eyes.
Skin : Toxic in contact with skin. Irritating to skin.
Inhalation : Toxic by inhalation. Irritating to respiratory system.
Ingestion : Very toxic if swallowed.
Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

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Section 2. Hazards Identification

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

Section 3. Composition/Information on Ingredients

United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Ethanol	64-17-5	82 - 86
Water	7732-18-5	7 - 8
Isopropyl Alcohol	67-63-0	4 - 6
Methanol	67-56-1	3.5 - 5.5

Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire Fighting Measures

- Flammability of the product** : Flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- Products of combustion** : These products are carbon oxides (CO, CO₂).
- Extinguishing media**
- Suitable** : Use dry chemical, CO₂, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Not available.

Section 5. Fire Fighting Measures

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special remarks on fire hazards** : Vapor may travel a considerable distance to source of ignition and flash back. (Isopropyl Alcohol)

Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

- Handling** : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- 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).

Section 8. Exposure Controls/Personal Protection

Product name

Exposure limits

United States

Ethanol

ACGIH TLV (United States, 1/2005). Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.

TWA: 1880 mg/m³ 8 hour/hours. Form: All forms

TWA: 1000 ppm 8 hour/hours. Form: All forms

NIOSH REL (United States, 12/2001).

TWA: 1900 mg/m³ 10 hour/hours. Form: All forms

TWA: 1000 ppm 10 hour/hours. Form: All forms

OSHA PEL (United States, 8/1997).

TWA: 1900 mg/m³ 8 hour/hours. Form: All forms

TWA: 1000 ppm 8 hour/hours. Form: All forms

OSHA PEL 1989 (United States, 3/1989).

TWA: 1900 mg/m³ 8 hour/hours. Form: All forms

TWA: 1000 ppm 8 hour/hours. Form: All forms

Isopropyl Alcohol

ACGIH TLV (United States, 1/2006). Notes: Refers to Appendix A -- Carcinogens. ACGIH 2003 Adoption

STEL: 400 ppm 15 minute/minutes. Form: All forms

TWA: 200 ppm 8 hour/hours. Form: All forms

NIOSH REL (United States, 12/2001).

STEL: 1225 mg/m³ 15 minute/minutes. Form: All forms

STEL: 500 ppm 15 minute/minutes. Form: All forms

TWA: 980 mg/m³ 10 hour/hours. Form: All forms

TWA: 400 ppm 10 hour/hours. Form: All forms

OSHA PEL (United States, 8/1997).

TWA: 980 mg/m³ 8 hour/hours. Form: All forms

TWA: 400 ppm 8 hour/hours. Form: All forms

Section 8. Exposure Controls/Personal Protection

Methanol

OSHA PEL 1989 (United States, 3/1989).STEL: 1225 mg/m³ 15 minute/minutes. Form: All forms

STEL: 500 ppm 15 minute/minutes. Form: All forms

TWA: 980 mg/m³ 8 hour/hours. Form: All forms

TWA: 400 ppm 8 hour/hours. Form: All forms

ACGIH (United States, 1994). SkinTWA: 262 mg/m³STEL: 328 mg/m³**OSHA (United States, 1989). Skin**TWA: 260 mg/m³STEL: 325 mg/m³**NIOSH REL (United States, 12/2001). Skin**STEL: 325 mg/m³ 15 minute/minutes. Form: All forms

STEL: 250 ppm 15 minute/minutes. Form: All forms

TWA: 260 mg/m³ 10 hour/hours. Form: All forms

TWA: 200 ppm 10 hour/hours. Form: All forms

OSHA PEL (United States, 8/1997).TWA: 260 mg/m³ 8 hour/hours. Form: All forms

TWA: 200 ppm 8 hour/hours. Form: All forms

OSHA PEL 1989 (United States, 3/1989). SkinSTEL: 325 mg/m³ 15 minute/minutes. Form: All forms

STEL: 250 ppm 15 minute/minutes. Form: All forms

TWA: 260 mg/m³ 8 hour/hours. Form: All forms

TWA: 200 ppm 8 hour/hours. Form: All forms

ACGIH TLV (United States, 1/2005). Skin Notes: Substances for which there is a Biological Exposure Index or IndicesSTEL: 328 mg/m³ 15 minute/minutes. Form: All forms

STEL: 250 ppm 15 minute/minutes. Form: All forms

TWA: 262 mg/m³ 8 hour/hours. Form: All forms

TWA: 200 ppm 8 hour/hours. Form: All forms

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Body: Recommended: lab coat
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: neoprene
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

Physical state	: Liquid.
Flash point	: Closed cup: 16.667°C (62°F).
Auto-ignition temperature	: The lowest known value is 398.85°C (749.9°F) (Ethanol).
Flammable limits	: Lower: 3% Upper: 19%
Color	: Colorless.
Boiling/condensation point	: The lowest known value is 64.5°C (148.1°F) (Methanol). Weighted average: 79.54°C (175.2°F)
Melting/freezing point	: May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -103.48°C (-154.3°F)
Relative density	: Weighted average: 0.79 (Water = 1)
Vapor pressure	: The highest known value is 12.9 kPa (97 mm Hg) (at 20°C) (Methanol).
Vapor density	: The highest known value is 2.07 (Air = 1) (Isopropyl Alcohol). Weighted average: 1.6 (Air = 1)
Odor threshold	: The lowest known value is 100 ppm (Methanol)
Evaporation rate	: The highest known value is 2.1 (Methanol) Weighted average: 1.72 compared with Butyl acetate.

Section 10. Stability and Reactivity

Stability and reactivity	: The product is stable.
Incompatibility with various substances	: Highly reactive or incompatible with the following materials: oxidizing materials. Reactive or incompatible with the following materials: metals and acids.
Hazardous polymerization	: Will not occur.
Conditions of reactivity	: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts and oxidizing materials. Highly explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts and oxidizing materials.

Section 11. Toxicological Information

Toxicity data

United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Ethanol	LD50	7060 mg/kg	Oral	Rat
	LD50	6300 mg/kg	Oral	Rabbit
	LD50	3450 mg/kg	Oral	Mouse
	LDLo	1400 mg/kg	Oral	human
	LDLo	5500 mg/kg	Oral	Dog
Isopropyl Alcohol	LD50	5000 mg/kg	Oral	Rat
	LD50	5045 mg/kg	Oral	Rat
	LD50	6410 mg/kg	Oral	Rabbit
	LD50	12800 mg/kg	Dermal	Rabbit
	LDLo	1537 mg/kg	Oral	Dog
	LDLo	3570 mg/kg	Oral	human
	LDLo	5272 mg/kg	Oral	man
	LD50	5628 mg/kg	Oral	Rat
Methanol	LD50	14200 mg/kg	Oral	Rabbit
	LD50	7300 mg/kg	Oral	Mouse
	LD50	15800 mg/kg	Dermal	Rabbit
	LDLo	143 mg/kg	Oral	human
	LDLo	428 mg/kg	Oral	human
	LDLo	6422 mg/kg	Oral	man
	LDLo	393 mg/kg	Dermal	Monkey.
	LC50	64000 ppm (4	Inhalation	Rat

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Section 11. Toxicological Information

hour/hours)

Chronic effects on humans : **CARCINOGENIC EFFECTS** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Ethanol]. Classified None. by NIOSH [Isopropyl Alcohol]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Isopropyl Alcohol].

Contains material which causes damage to the following organs: blood, the reproductive system, liver, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : Extremely hazardous in case of ingestion.
Very hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of inhalation (lung irritant).

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : Irritating to respiratory system.

Eyes : Severely irritating to eyes.

Skin : Irritating to skin.

Section 12. Ecological Information

Ecotoxicity data

United States

Product/ingredient name

Species

Period

Result

Ethanol	Daphnia magna (EC50)	48 hour/hours	2 mg/l
	Daphnia magna (EC50)	48 hour/hours	9.3 mg/l
	Daphnia magna (EC50)	48 hour/hours	>100 mg/l
	Daphnia magna (LC50)	96 hour/hours	>100 mg/l
	Pimephales promelas (LC50)	96 hour/hours	>100 mg/l
Isopropyl Alcohol	Oncorhynchus mykiss (LC50)	96 hour/hours	13000 mg/l
	Pimephales promelas (EC50)	48 hour/hours	10000 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	>1400 mg/l
	Pimephales promelas (LC50)	96 hour/hours	6550 mg/l
	Pimephales promelas (LC50)	96 hour/hours	9640 mg/l
	Pimephales promelas (LC50)	96 hour/hours	10400 mg/l
	Pimephales promelas (LC50)	96 hour/hours	11130 mg/l
Methanol	Daphnia magna (EC50)	48 hour/hours	>10000 mg/l
	Oncorhynchus mykiss (EC50)	48 hour/hours	13200 mg/l
	Lepomis macrochirus (EC50)	48 hour/hours	16000 mg/l
	Daphnia magna (LC50)	96 hour/hours	>100 mg/l
	Pimephales promelas (LC50)	96 hour/hours	>100 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	15400 mg/l

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides (CO, CO₂) and water.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1987	ALCOHOLS, N.O.S. (CONTAINS ETHANOL AND ISOPROPYL ALCOHOL)	3	II		Not available.

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Flammable liquid
Highly toxic material
Irritating material
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Ethanol; Isopropyl Alcohol ; Methanol

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Ethanol:

Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Isopropyl Alcohol : Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Methanol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

Product name

CAS number

Concentration

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Section 15. Regulatory Information

Form R - Reporting requirements	Isopropyl Alcohol	67-63-0	4 - 6
	Methanol	67-56-1	3.5 - 5.5
Supplier notification	Isopropyl Alcohol	67-63-0	4 - 6
	Methanol	67-56-1	3.5 - 5.5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: Ethanol: (generic environmental hazard); Isopropyl Alcohol : (environmental hazard, generic environmental hazard); Methanol: (environmental hazard, generic environmental hazard)
Massachusetts RTK: Ethanol; Isopropyl Alcohol ; Methanol
New Jersey: Ethanol; Isopropyl Alcohol ; Water; Methanol

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA DSL/CEPA NDSL : CEPA DSL: Ethanol; Isopropyl Alcohol ; Water; Methanol

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols :



Risk phrases : R11- Highly flammable.
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R68/20/21/22- Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.

Safety phrases : S2- Keep out of the reach of children.
S36/37- Wear suitable protective clothing and gloves.
S46- If swallowed, seek medical advice immediately and show this container or label.

International regulations

International lists : Australia (NICNAS): Ethanol; Isopropyl Alcohol ; Water; Methanol
China: Ethanol; Isopropyl Alcohol ; Methanol
Germany water class: Ethanol; Isopropyl Alcohol ; Methanol
Japan (METI): Ethanol; Isopropyl Alcohol ; Water; Methanol
Japan (MOL): Isopropyl Alcohol
Korea (TCCL): Ethanol; Isopropyl Alcohol ; Water; Methanol
Philippines (RA6969): Ethanol; Isopropyl Alcohol ; Water; Methanol

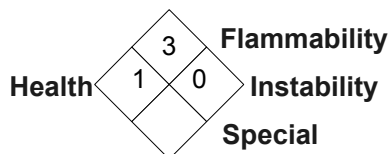
Section 16. Other Information

Label requirements : DANGER!
POISON!

Section 16. Other Information

HARMFUL IF INHALED OR ABSORBED THROUGH SKIN.
VAPOR HARMFUL.
MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.
CANNOT BE MADE NONPOISONOUS.
CAUSES SEVERE EYE IRRITATION.
CAUSES RESPIRATORY TRACT AND SKIN IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
BLOOD, REPRODUCTIVE SYSTEM, LIVER, GASTROINTESTINAL TRACT,
RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR
CORNEA.
FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.

National Fire Protection :
Association (U.S.A.)



Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.