

Material Safety Data Sheet

Bouin Fixation Fluid, HARLECO ®



Section 1. Product and Company Identification

Product name : Bouin Fixation Fluid, HARLECO ®
Product code : 7831
Synonym : None.
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 : **2/1/2007.**
Print date : 2/4/2007.
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.
Odor : Strong.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : DANGER!
MAY BE FATAL IF SWALLOWED.
CAUSES EYE AND SKIN BURNS.
CANCER HAZARD.
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
HARMFUL IF INHALED OR ABSORBED THROUGH SKIN.
CAUSES RESPIRATORY TRACT IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
MUCOUS MEMBRANES, GASTROINTESTINAL TRACT, RESPIRATORY TRACT,
SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA, TEETH.
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.
Do not ingest. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Eyes : Corrosive to eyes.
Skin : Toxic in contact with skin. Corrosive to the skin.
Inhalation : Toxic by inhalation. Irritating to respiratory system.
Ingestion : Very toxic if swallowed. May cause burns to mouth, throat and stomach.
Carcinogenic effects : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
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>
Water	7732-18-5	80 - 85
Formaldehyde	50-00-0	9 - 10
Acetic Acid	64-19-7	5
Methanol	67-56-1	2 - 3
Picric Acid	88-89-1	0 - 1

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. Chemical burns must be treated promptly by a physician. 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. Chemical burns must be treated promptly by a physician. 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. Wash contaminated clothing thoroughly with water before removing or wear gloves.

Section 5. Fire Fighting Measures

Flammability of the product : No specific hazard.

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- 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.

Section 6. Accidental Release Measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

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), scoop up material and place in a sealable, liquid-proof 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. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Product name

United States

Formaldehyde

Exposure limits

ACGIH TLV (United States, 1/2005). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. Refers to Appendix A -- Carcinogens. 2000 Adoption.

CEIL: 0.37 mg/m³ Form: All forms

CEIL: 0.3 ppm Form: All forms

NIOSH REL (United States, 12/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen

CEIL: 0.1 ppm 15 minute/minutes. Form: All forms

TWA: 0.016 ppm 10 hour/hours. Form: All forms

OSHA PEL (United States, 8/1997).

STEL: 2 ppm 15 minute/minutes. Form: All forms

TWA: 0.75 ppm 8 hour/hours. Form: All forms

OSHA PEL 1989 (United States, 3/1989). Notes: See Table Z-2 for operations or sectors excluded from section 1910.1048 or for which limit(s) is(are) stayed. Sec. 1910.1048 Formaldehyde.

STEL: 2 ppm 15 minute/minutes. Form: All forms

TWA: 0.75 ppm 8 hour/hours. Form: All forms

OSHA PEL Z2 (United States, 8/1997). Notes: Sec. 1910.1048 Formaldehyde.

STEL: 2 ppm 15 minute/minutes. Form: All forms

TWA: 0.75 ppm 8 hour/hours. Form: All forms

ACGIH TLV (United States, 1/2006).

STEL: 37 mg/m³ 15 minute/minutes. Form: All forms

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

TWA: 25 mg/m³ 8 hour/hours. Form: All forms

TWA: 10 ppm 8 hour/hours. Form: All forms

NIOSH REL (United States, 12/2001).

STEL: 37 mg/m³ 15 minute/minutes. Form: All forms

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

TWA: 25 mg/m³ 10 hour/hours. Form: All forms

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

OSHA PEL (United States, 8/1997).

TWA: 25 mg/m³ 8 hour/hours. Form: All forms

Acetic Acid

Section 8. Exposure Controls/Personal Protection

Methanol

TWA: 10 ppm 8 hour/hours. Form: All forms

OSHA PEL 1989 (United States, 3/1989).TWA: 25 mg/m³ 8 hour/hours. Form: All forms

TWA: 10 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.

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 , face shield
- 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: safety apron
- 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.
- 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.
Color	: Yellow.
Odor	: Strong.
Boiling/condensation point	: The lowest known value is 64.5°C (148.1°F) (Methanol). Weighted average: 99.63°C (211.3°F)
Melting/freezing point	: May start to solidify at 16.67°C (62°F) based on data for: Acetic Acid . Weighted average: -10.49°C (13.1°F)
Relative density	: Weighted average: 1.02 (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 2.1 (Air = 1) (Acetic Acid) . Weighted average: 1.36 (Air = 1)
Odor threshold	: The lowest known value is 0.05 ppm (Formaldehyde) Weighted average: 15.03 ppm
Evaporation rate	: The highest known value is 2.1 (Methanol) Weighted average: 1.59 compared with Butyl acetate.

Section 10. Stability and Reactivity

Stability and reactivity	: The product is stable.
Conditions of instability	: Container explosion may occur under fire conditions or when heated. (Picric Acid)
Incompatibility with various substances	: Highly reactive or incompatible with the following materials: oxidizing materials. Reactive or incompatible with the following materials: metals, acids and alkalis.
Hazardous decomposition products	: carbon oxides (CO, CO ₂)
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>
Formaldehyde	LD50	100 mg/kg	Oral	Rat
	LD50	42 mg/kg	Oral	Mouse
	LD50	260 mg/kg	Oral	Guinea pig
	LDLo	108 mg/kg	Oral	woman
	LDLo	108 mg/kg	Oral	woman
Acetic Acid	LD50	3310 mg/kg	Oral	Rat
	LD50	4960 mg/kg	Oral	Mammal
	LD50	1060 mg/kg	Dermal	Mammal
	LDLo	600 mg/kg	Oral	Rabbit
	LDLo	600 mg/kg	Oral	Rabbit
	LC50	5620 ppm (1 hour/hours)	Inhalation	Muskrat
Methanol	LD50	5628 mg/kg	Oral	Rat
	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.	

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Section 11. Toxicological Information

LC50 64000 ppm (4 Inhalation Rat
hour/hours)

Chronic effects on humans : **CARCINOGENIC EFFECTS** Classified 1 (Proven for humans.) by IARC, + (Proven.) by OSHA [Formaldehyde]. Classified 3 (Possible for humans.) by European Union [Formaldehyde]. Classified A2 (Suspected for humans.) by ACGIH, 2 (Reasonably anticipated to be human carcinogens.) by NTP [Formaldehyde]. Classified None. by NIOSH [Picric Acid].

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

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

Special remarks on other toxic effects on humans : May cause permanent bluish discoloration of the skin. (Picric Acid)

Specific effects

Carcinogenic effects : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenic effects : No known significant effects or critical hazards.

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

Sensitization

Ingestion : May cause burns to mouth, throat and stomach.

Inhalation : Irritating to respiratory system.

Eyes : Corrosive to eyes.

Skin : Corrosive to the skin.

Section 12. Ecological Information

Ecotoxicity data

United States

Product/ingredient name

<u>Product/ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Formaldehyde	Daphnia pulex (EC50)	48 hour/hours	5.8 mg/l
	Daphnia magna (EC50)	48 hour/hours	14 mg/l
	Daphnia magna (EC50)	48 hour/hours	14.6 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	1.41 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	1.51 mg/l
Acetic Acid	Lepomis macrochirus (LC50)	96 hour/hours	1.79 mg/l
	Daphnia magna (EC50)	48 hour/hours	65 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	75 mg/l
	Pimephales promelas (LC50)	96 hour/hours	79 mg/l
Methanol	Pimephales promelas (LC50)	96 hour/hours	88 mg/l
	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	Not available.	Not available.	Not available.	-		Not available.

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Highly toxic material
Corrosive material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed
SARA 302/304/311/312 extremely hazardous substances: Formaldehyde
SARA 302/304 emergency planning and notification: Formaldehyde
SARA 302/304/311/312 hazardous chemicals: Acetic Acid ; Formaldehyde; Methanol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Acetic Acid : Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard;
Formaldehyde: 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: Picric Acid
Clean Water Act (CWA) 311: Acetic Acid ; Formaldehyde
Clean Air Act (CAA) 112 accidental release prevention: Formaldehyde
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: Formaldehyde

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Formaldehyde Methanol	50-00-0 67-56-1	9 - 10 2 - 3

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Section 15. Regulatory Information

Supplier notification : Formaldehyde 50-00-0 9 - 10
Methanol 67-56-1 2 - 3

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: Acetic Acid : (environmental hazard, generic environmental hazard); Formaldehyde: (special hazard, environmental hazard, generic environmental hazard); Methanol: (environmental hazard, generic environmental hazard); Picric Acid: (environmental hazard, generic environmental hazard)
Massachusetts RTK: Acetic Acid ; Formaldehyde; Methanol; Picric Acid
New Jersey: Acetic Acid ; Water; Formaldehyde; Methanol; Picric Acid
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Formaldehyde	Yes.	No.	Yes.	No.

Canada

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

CEPA DSL/CEPA NDSL : CEPA DSL: Acetic Acid ; Water; Formaldehyde; 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 : R40- Limited evidence of a carcinogenic effect.
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.
R43- May cause sensitization by skin contact.

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.

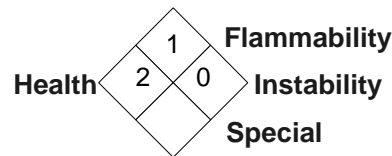
International regulations

International lists : Australia (NICNAS): Acetic Acid ; Water; Formaldehyde; Methanol; Picric Acid
China: Acetic Acid ; Formaldehyde; Methanol; Picric Acid
Germany water class: Acetic Acid ; Formaldehyde; Methanol; Picric Acid
Japan (METI): Acetic Acid ; Water; Formaldehyde; Methanol; Picric Acid
Japan (MOL): Formaldehyde
Korea (TCCL): Acetic Acid ; Water; Formaldehyde; Methanol; Picric Acid
Philippines (RA6969): Acetic Acid ; Water; Formaldehyde; Methanol; Picric Acid

Section 16. Other Information

Label requirements : DANGER!
 MAY BE FATAL IF SWALLOWED.
 CAUSES EYE AND SKIN BURNS.
 CANCER HAZARD.
 CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
 HARMFUL IF INHALED OR ABSORBED THROUGH SKIN.
 CAUSES RESPIRATORY TRACT IRRITATION.
 CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
 MUCOUS MEMBRANES, GASTROINTESTINAL TRACT, RESPIRATORY TRACT,
 SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA, TEETH.
 WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

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.