Eng

Material Safety Data Sheet

Conforms to 93/112/EC and ISO 11014-1

Responsible Name **MSDS Administrator**

Section 1. Chemical Product and Company Identification

Product Name **0.67M Borate Buffer**

Product no. 1859833

Supplier

In USA:
Thermo Fisher Scientific
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723

In Europe:
Perbio Science
Industriezone III
Industrielaan 27
9320 Erembodegem-Aalst
Belgium
Tel:+32 53 83 44 04
Fax:+32 53 83 76 38

Manufacturer

Pierce
3747 N. Meridian Road
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723
(815)968-7316 fax
www.thermo.com

In case of emergency

CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887

Print date 7/6/2007

Validation date **7/6/2007**

MSDS# 7325

Use of the substance/preparation Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Section 2. Composition, Information on Ingredients

Substance/preparation : Preparation

Ingredient name	CAS number	%	EC number	Classification
Boric Acid Sodium Salt	1303-96-4	7 - 10	215-540-4	Repr. Cat. 2; R60, 61
Boric Acid	10043-35-3	5 - 7	233-139-2	Repr. Cat. 2; R60, 61

Section 3. Hazards identification

United States *Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.*

Emergency overview Warning!
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
KIDNEYS, REPRODUCTIVE SYSTEM, LIVER, RESPIRATORY TRACT, SKIN,
CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA, TESTES.
Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

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

Routes of entry Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes Irritating to eyes.

Skin Irritating to skin.

Inhalation Irritating to respiratory system.

Ingestion No known significant effects or critical hazards.

Potential chronic health effects

Carcinogenic effects **CARCINOGENIC EFFECTS**: Classified + (Proven.) by NIOSH [Boric Acid Sodium Salt]. Classified None. by OSHA, None. by NIOSH [Boric Acid]. Classified A4 (Not classifiable for human or animal.) by ACGIH [Boric Acid].
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. [Boric Acid].
TERATOGENIC EFFECTS: Classified POSSIBLE for human [Boric Acid].

Medical conditions aggravated by overexposure Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Continued on Next Page

Over-exposure signs/symptoms Not available.

Europe

Classification **Repr. Cat. 2; R60, 61**
Physical/chemical hazards Not applicable.
Human health hazards May impair fertility.
May cause harm to the unborn child.
Environmental hazards Not applicable.
See toxicological Information (section 11)

Section 4. First aid measures

Notice to reader **Get immediate medical attention.**
Effects and symptoms

Inhalation Slightly hazardous in case of inhalation (lung irritant).
Ingestion Not available.
Skin contact Sensitization of the product: Not available.
Slightly hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Eye contact Slightly hazardous in case of eye contact (irritant).
Aggravating conditions Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

First-Aid measures

Inhalation If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
Skin contact In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
Notes to physician Not available.
Protection of first-aiders Not available.

Section 5. Fire fighting measures

Flammability of the product Non-flammable.
Flash Points Not applicable.
Fire hazards in presence of various substances Not applicable.
Fire fighting media and instructions Use an extinguishing agent suitable for surrounding fires.
Protective clothing (fire) Not applicable.
Hazardous thermal decomposition products Not applicable.

Section 6. Accidental release measures

Personal precautions Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Environmental precautions and clean-up methods Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Continued on Next Page

Small spill and leak Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and storage

Handling Wash thoroughly after handling.

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

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Packaging materials
Suitable / Not suitable Use original container.

Section 8. Exposure Controls, Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits.

Exposure Limit Values

Ingredient Name	Occupational Exposure Limits
United States	
Boric Acid Sodium Salt	**ACGIH (United States).** **STEL: 6 mg/m³** **ACGIH TLV (United States).** **TWA: 2 mg/m³** **OSHA (United States, 0/1989).** **TWA: 10 mg/m³**
Boric Acid	**ACGIH TLV (United States).** **STEL: 6 mg/m³** **TWA: 2 mg/m³**
Denmark	
Boric Acid Sodium Salt	GV: 2 mg/m³
Norway	
Boric Acid Sodium Salt	AN: 5 mg/m³
France	
Boric Acid Sodium Salt	VME: 5 mg/m³
Netherlands	
Boric Acid Sodium Salt	MAC: 5 mg/m³ TGG: 5 mg/m³
United Kingdom (UK)	
Boric Acid Sodium Salt	STEL: 15 mg/m³ TWA: 5 mg/m³
Switzerland	
Boric Acid Sodium Salt	MAK: 5 mg/m³
Spain	
Boric Acid Sodium Salt	VLA-ED: 2 mg/m³
Ireland	
Boric Acid Sodium Salt	OELV: 5 mg/m³

Personal Protection

Eyes Splash goggles.
Body Lab coat.

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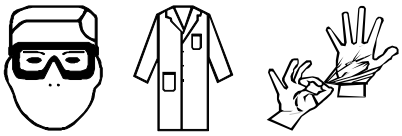
Hands Gloves.

Respiratory Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Protective Clothing (Pictograms)



Section 9. Physical and chemical properties

Physical State Liquid. (Clear sparkling liquid.)

Color Colorless.

Odor Odorless.

Molecular weight Not applicable.

Taste Not available.

pH 7 to 9 [Basic.]

Boiling/condensation point The lowest known value is 100°C (212°F) (water).

Melting/freezing point May start to solidify at 0°C (32°F) based on data for: water.

Critical temperature The lowest known value is 374.2°C (705.6°F) (water).

Specific Gravity Weighted average: 1.06 (Water = 1)

Vapor pressure The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (water).

Vapor density The highest known value is 0.62 (Air = 1) (water).

Evaporation rate 0.36 (water) compared to (n-BUTYL ACETATE=1)

Viscosity Dynamic: The highest known value is 1 cP (water)

Dispersion properties See solubility in water, methanol, acetone.

Solubility Easily soluble in cold water, hot water, methanol, acetone.

Section 10. Stability and reactivity

Stability and Reactivity The product is stable.

Conditions to avoid Not available.

Materials to avoid Slightly reactive to reactive with oxidizing agents, reducing agents.

Hazardous polymerization Will not occur.

Hazardous Decomposition Products Not available.

Section 11. Toxicological information

Toxicity to Animals

water:
ORAL (LD50): Acute: >90000 mg/kg [Rat].

Boric Acid Sodium Salt:
ORAL (LD50): Acute: 2000 mg/kg [Mouse]. 2660 mg/kg [Rat]. 5330 mg/kg [Guinea pig].

Boric Acid:
ORAL (LD50): Acute: 2660 mg/kg [Rat]. 3450 mg/kg [Mouse].

Chronic Effects on Humans

CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH [Boric Acid Sodium Salt]. Classified None. by OSHA, None. by NIOSH [Boric Acid]. Classified A4 (Not classifiable for human or animal.) by ACGIH [Boric Acid].
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. [Boric Acid].
TERATOGENIC EFFECTS: Classified POSSIBLE for human [Boric Acid].
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [POSSIBLE] [Boric Acid Sodium Salt]. Classified Reproductive system/toxin/female, Reproductive system/toxin/male [POSSIBLE] [Boric Acid].
Contains material which causes damage to the following organs: kidneys, the reproductive system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea, testes.

Continued on Next Page

Other Toxic Effects on Humans Slightly hazardous in case of eye contact (irritant), of inhalation (lung irritant).

Special Remarks on Toxicity to Animals Not available.

Special Remarks on Chronic Effects on Humans Exposure can cause stomach pains, vomiting and diarrhea. May cause convulsions. Can cause CNS depression. Laboratory experiments have shown mutagenic effects. Testicular damage in animal. (Boric Acid)

Special Remarks on Other Toxic Effects on Humans Exposure can cause nausea, headache and vomiting. May cause convulsions. Material is irritating to mucous membranes and upper respiratory tract. (Boric Acid)

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Reproductive toxicity Contains material which may cause birth defects based on animal data.

Over-exposure signs/symptoms

Inhalation No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Skin No known significant effects or critical hazards.

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

Section 12. Ecological information

Mobility Not available.

Persistence/degradability Not available.

Bioaccumulative potential Not available.

Ecotoxicity Not available.

Germany water class VCI WGK: No products were found.

Ecotoxicity data

Ingredient name	*Species*	*Period*	*Result*
Boric Acid Sodium Salt	Goldfish (LC50)	72 hour(s)	178 mg/l
	Trout (LC50)	576 hour(s)	150 mg/l
	Daphnia magna (EC50)	48 hour(s)	1085 to 1402 mg/l
	Algae (IC50)	96 hour(s)	158 mg/l
Boric Acid	daphnia magna (EC50)	48 hour(s)	115 mg/l
	Carassius auratus (LC50)	72 hour(s)	1020 mg/l

Other ecological information

Persistence/degradability

Ingredient name	*BOD_5*	*COD*

Ingredient name	*Aquatic half-life*	*Photolysis*

Bioaccumulative potential

Ingredient name	*$LogP_{ow}$*	*BCF*	
Boric Acid	0.175	-	low

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.

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Section 13. Disposal considerations

Waste Stream	Not available.
Methods of 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.
European waste catalogue (EWC)	Not available.
Hazardous waste	The classification of the product may meet the criteria for a hazardous waste
Denmark – Carcinogenic waste	Not available.
Denmark - Waste card number	Not available.
Denmark - Waste group	Not available.
Sweden - thermoset plastic waste	Not available.
Sweden - Waste group	Not available.
Austria - Waste catalogue	Not available.
Norway - Waste number	Not available.
Norway - Hazardous waste	The classification of the product may meet the criteria for a hazardous waste
Switzerland - Waste code	Not available.

Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.

Section 15. Regulatory information

Label Requirements (Europe)

R60- May impair fertility.
R61- May cause harm to the unborn child.
S53- Avoid exposure - obtain special instructions before use. S2- Keep out of the reach of children.

Toxic

HCS Classification

Irritating material
Target organ effects

U.S. Federal Regulations TSCA 8(b) inventory: 0.67M Borate Buffer

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: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.

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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.

State regulations Rhode Island RTK hazardous substances: Boric Acid Sodium Salt
Pennsylvania RTK: Boric Acid Sodium Salt: (generic environmental hazard)
Minnesota: Boric Acid Sodium Salt
Massachusetts RTK: Boric Acid Sodium Salt
New Jersey: Boric Acid Sodium Salt

WHMIS (Canada) Class D-2A: Material causing other toxic effects (VERY TOXIC).
Class D-2B: Material causing other toxic effects (TOXIC).

CEPA DSL: Boric Acid; Boric Acid Sodium Salt; water

International Regulations

EINECS Not available.

DSCL (EEC) R60- May impair fertility.
R61- May cause harm to the unborn child.

International Lists Australia (NICNAS): water

China: water

Germany water class: Boric Acid; Boric Acid Sodium Salt

Korea (TCCL): water

Philippines (RA6969): water

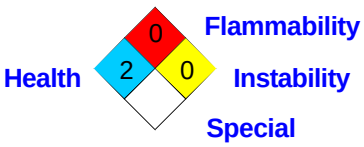
State Regulations Rhode Island RTK hazardous substances: Boric Acid Sodium Salt
Pennsylvania RTK: Boric Acid Sodium Salt: (generic environmental hazard)
Minnesota: Boric Acid Sodium Salt
Massachusetts RTK: Boric Acid Sodium Salt
New Jersey: Boric Acid Sodium Salt

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	1
Fire hazard		0
Reactivity		0
Personal protection		C

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



References Not available.

History of Document Changes Any information changes since last document version are marked with a triangle symbol.

Full text of R phrases referred to in sections 2 and 3 - Europe R60- May impair fertility.
R61- May cause harm to the unborn child.

Full text of classifications referred to in sections 2 and 3 - Europe Repr. Cat.2 - Toxic for reproduction Category 2

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Validated by MSDS Administrator on 7/6/2007. **Verified by MSDS Administrator.** **Date of previous issue** **9/8/2006**

Printed 7/6/2007. **Version** **0.05**

Eng

Material Safety Data Sheet

Conforms to 93/112/EC and ISO 11014-1

Responsible Name **MSDS Administrator**

Section 1. Chemical Product and Company Identification

Product Name **DyLight™ Reactive Dyes**

Product no. 46200 46300 46305 46400 46401 46402 46403 46407 46407B 46408 46414 46415 46415B 46416 46417 46418 46419 46421 46422 46600 46602 46607 46613 46615 46618 46621 1859814 1859815 1859831 1859832 1860507 1860508 1860509 1860510 1861106 1861107 1861108 1861109 1892256 NCI6320

Supplier *In USA:*
Thermo Fisher Scientific
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723

In Europe:
Perbio Science
Industriezone III
Industrielaan 27
9320 Erembodegem-Aalst
Belgium
Tel:+32 53 83 44 04
Fax:+32 53 83 76 38

Manufacturer Pierce
3747 N. Meridian Road
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723
(815)968-7316 fax
www.thermo.com

In case of emergency CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887

Print date 8/13/2007
Validation date **8/13/2007**
MSDS# 7436

Use of the substance/preparation Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Section 2. Composition, Information on Ingredients

Substance/preparation : Substance

Ingredient name	CAS number	%	EC number	Classification
DyLight™ Reactive Dyes		98 - 100		Xi; R41

Section 3. Hazards identification

United States *Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.*

Emergency overview Warning!
CAUSES SEVERE EYE IRRITATION.

Avoid contact with eyes. Wash thoroughly after handling.

Routes of entry Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes Severely irritating to the eyes.

Skin No known significant effects or critical hazards.

Inhalation No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Potential chronic health effects

Carcinogenic effects **CARCINOGENIC EFFECTS**: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by overexposure Repeated or prolonged exposure is not known to aggravate medical condition.

Over-exposure signs/symptoms Not available.

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Europe

Classification	**Xi; R41**
Physical/chemical hazards	Not applicable.
Human health hazards	Risk of serious damage to eyes.
Environmental hazards	Not applicable.

See toxicological Information (section 11)

Section 4. First aid measures

Notice to reader **Get immediate medical attention.**

Effects and symptoms

Inhalation	Not available.
Ingestion	Not available.
Skin contact	Not available.
Eye contact	Extremely hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.
Aggravating conditions	Repeated or prolonged exposure is not known to aggravate medical condition.

First-Aid measures

Inhalation	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
Skin contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Notes to physician	Not available.
Protection of first-aiders	Not available.

Section 5. Fire fighting measures

Flammability of the product	May be combustible at high temperature.
Flash Points	Not available.
Fire hazards in presence of various substances	Not available.
Fire fighting media and instructions	Use an extinguishing agent suitable for surrounding fires.
Protective clothing (fire)	Be sure to use an approved/certified respirator or equivalent.
Hazardous thermal decomposition products	Not available.

Section 6. Accidental release measures

Personal precautions	Splash goggles. Lab coat.
Environmental precautions and clean-up methods	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.
Small spill and leak	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

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Section 7. Handling and storage

Handling Avoid contact with eyes. Wash thoroughly after handling.

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

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Packaging materials
Suitable / Not suitable Use original container.

Section 8. Exposure Controls, Personal Protection

Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Exposure Limit Values

Ingredient Name	Occupational Exposure Limits
United States	

Personal Protection

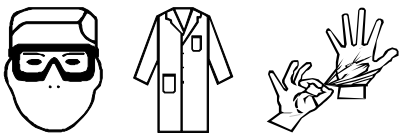
Eyes Splash goggles.

Body Lab coat.

Hands Gloves.

Respiratory Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Protective Clothing (Pictograms)



Section 9. Physical and chemical properties

Physical State Solid.

Color Not available.

Odor Odorless.

Molecular weight Not available.

Taste Not available.

Dispersion properties See solubility in water.

Solubility Easily soluble in cold water, hot water.

Section 10. Stability and reactivity

Stability and Reactivity The product is stable.

Conditions to avoid Not available.

Materials to avoid Not available.

Hazardous polymerization Will not occur.

Hazardous Decomposition Products Not available.

Continued on Next Page

Section 11. Toxicological information

Toxicity to Animals	**DyLight™ Reactive Dyes** LD50: Not available. LC50: Not available.
Chronic Effects on Humans	Not available.
Other Toxic Effects on Humans	Extremely hazardous in case of eye contact (irritant). Very hazardous in case of eye contact (irritant).
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on Other Toxic Effects on Humans	Not available.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Reproductive toxicity	No known significant effects or critical hazards.
Over-exposure signs/symptoms	
Inhalation	No known significant effects or critical hazards.
Ingestion	No known significant effects or critical hazards.
Skin	No known significant effects or critical hazards.

Section 12. Ecological information

Mobility	Not available.
Persistence/degradability	Not available.
Bioaccumulative potential	Not available.
Ecotoxicity	Not available.
Germany water class	VCI WGK: No products were found.

Ecotoxicity data

Ingredient name	*Species*	*Period*

Other ecological information

Persistence/degradability

Ingredient name	BOD_5	*COD*

Ingredient name	*Aquatic half-life*	*Photolysis*

Bioaccumulative potential

Ingredient name	$LogP_{ow}$	*BCF*

Mobility	:	Not available.
Other adverse effects	:	No known significant effects or critical hazards.

Continued on Next Page

Section 13. Disposal considerations

Waste Stream	Not available.
Methods of 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.
European waste catalogue (EWC)	Not available.
Hazardous waste	The classification of the product may meet the criteria for a hazardous waste
Denmark – Carcinogenic waste	Not available.
Denmark - Waste card number	Not available.
Denmark - Waste group	Not available.
Sweden - thermoset plastic waste	Not available.
Sweden - Waste group	Not available.
Austria - Waste catalogue	Not available.
Norway - Waste number	Not available.
Norway - Hazardous waste	The classification of the product may meet the criteria for a hazardous waste
Switzerland - Waste code	Not available.

Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.

Section 15. Regulatory information

Label Requirements (Europe)

R41- Risk of serious damage to eyes.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection.

Irritant

HCS Classification **Irritating material**

U.S. Federal Regulations TSCA: No products were found.

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: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.

Continued on Next Page

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.

State regulations No products were found.

WHMIS (Canada) Not controlled under WHMIS (Canada).

No products were found.

International Regulations

EINECS Not available.

DSCL (EEC) R41- Risk of serious damage to eyes.

International Lists No products were found.

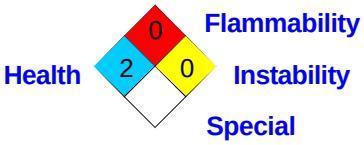
State Regulations No products were found.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

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



References Not available.

History of Document Changes Any information changes since last document version are marked with a triangle symbol.

Full text of R phrases referred to in sections 2 and 3 - Europe R41- Risk of serious damage to eyes.

Full text of classifications referred to in sections 2 and 3 - Europe Xi - Irritant

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Validated by MSDS Administrator on 8/13/2007.

Verified by MSDS Administrator. **Date of previous issue** **7/31/2007**

Printed 8/13/2007. **Version** **0.17**

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Eng

Material Safety Data Sheet

Conforms to 93/112/EC and ISO 11014-1

Responsible Name **MSDS_Specialist**

Section 1. Chemical Product and Company Identification

Product Name **Purification Resin**

Product no. 22858 1860513 1901610

Supplier *In USA:*
Thermo Fisher Scientific
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723

In Europe:
Perbio Science
Industriezone III
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703.527.3887

Print date 7/23/2007

Validation date **7/23/2007**

MSDS# 7542

Use of the substance/preparation Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Section 2. Composition, Information on Ingredients

Substance/preparation : Preparation

No hazardous ingredient according to 29 CFR 1910.1200 Hazard Communication Standard (USA) and Directives 1999/45/EC-2001/59/EC (EU)

Section 3. Hazards identification

United States *Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.*

Emergency overview Warning!
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes Irritating to eyes.

Skin Irritating to skin.

Inhalation Irritating to respiratory system.

Ingestion No known significant effects or critical hazards.

Potential chronic health effects

Carcinogenic effects **CARCINOGENIC EFFECTS**: Classified None. by OSHA, None. by NIOSH [sodium phosphate, dibasic]. Classified None. by OSHA, None. by NIOSH [sodium chloride]. Classified None. by OSHA, None. by NIOSH [sodium dihydrogen orthophosphate, monohydrate].
MUTAGENIC EFFECTS: Classified PROVEN for human [sodium chloride]. Mutagenic for mammalian somatic cells. [sodium chloride]. Mutagenic for bacteria and/or yeast. [sodium chloride].
TERATOGENIC EFFECTS: Classified SUSPECTED for human [sodium chloride].

Medical conditions aggravated by overexposure Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Over-exposure signs/symptoms Not available.

Europe

Continued on Next Page

Classification	**Not classified.**
Physical/chemical hazards	Not applicable.
Human health hazards	Not applicable.
Environmental hazards	Not applicable.

See toxicological Information (section 11)

Section 4. First aid measures

Effects and symptoms

Inhalation	Not available.
Ingestion	Not available.
Skin contact	Irritation of the product in case of skin contact: Not available. Sensitization of the product: Not available.
Eye contact	Not available.
Aggravating conditions	Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

First-Aid measures

Inhalation	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
Skin contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
Notes to physician	Not available.
Protection of first-aiders	Not available.

Section 5. Fire fighting measures

Flammability of the product	May be combustible at high temperature.
Flash Points	Not available.
Fire hazards in presence of various substances	Not available.
Fire fighting media and instructions	Use an extinguishing agent suitable for surrounding fires.
Protective clothing (fire)	Be sure to use an approved/certified respirator or equivalent.
Hazardous thermal decomposition products	Not available.

Section 6. Accidental release measures

Personal precautions	Safety glasses. Lab coat.
Environmental precautions and clean-up methods	Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.
Small spill and leak	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Continued on Next Page

Section 7. Handling and storage

Handling Wash thoroughly after handling.

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

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Packaging materials
Suitable / Not suitable Use original container.

Section 8. Exposure Controls, Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

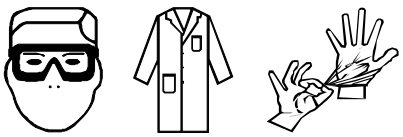
Exposure Limit Values

Ingredient Name	Occupational Exposure Limits
United States	

Personal Protection

Eyes Splash goggles.
Body Lab coat.
Hands Gloves.
Respiratory Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Protective Clothing (Pictograms)



Section 9. Physical and chemical properties

Physical State Liquid. (Resin in aqueous buffer)
Color Not available.
Odor Not available.
Molecular weight Not applicable.
Taste Not available.
pH Neutral.
Boiling/condensation point The lowest known value is 100°C (212°F) (water).
Melting/freezing point May start to solidify at 0°C (32°F) based on data for: water.
Critical temperature The lowest known value is 374.2°C (705.6°F) (water).
Specific Gravity The only known value is 1 (Water = 1) (water).
Vapor pressure The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (water).
Vapor density The highest known value is 0.62 (Air = 1) (water).
Evaporation rate 0.36 (water) compared to (n-BUTYL ACETATE=1)
Viscosity Dynamic: The highest known value is 1 cP (water)
Dispersion properties See solubility in water, methanol, acetone.
Solubility Easily soluble in cold water, hot water, methanol, acetone.

Continued on Next Page

Section 10. Stability and reactivity

Stability and Reactivity The product is stable.

Conditions to avoid Sodium azide may react with lead or copper plumbing to form highly explosive metal azides. (sodium azide)

Materials to avoid Reactive with oxidizing agents.

Hazardous polymerization Will not occur.

Hazardous Decomposition Products Not available.

Section 11. Toxicological information

Toxicity to Animals

Desalting Resin
LD50: Not available.
LC50: Not available.
water:
ORAL (LD50): Acute: >90000 mg/kg [Rat].
sodium phosphate, dibasic:
ORAL (LD50): Acute: 17000 mg/kg [Rat].
sodium chloride:
ORAL (LD50): Acute: 3000 mg/kg [Rat]. 4000 mg/kg [Mouse].
DERMAL (LD50): Acute: >10000 mg/kg [Rabbit].
DUST (LC50): Acute: >42000 mg/m^3 1 hour(s) [Rat].
sodium dihydrogen orthophosphate, monohydrate
LD50: Not available.
LC50: Not available.
sodium azide:
ORAL (LD50): Acute: 27 mg/kg [Rat]. 27 mg/kg [Mouse]. 23.7 mg/kg [Birds.].
DERMAL (LD50): Acute: 20 mg/kg [Rabbit]. 50 mg/kg [Rat].

Chronic Effects on Humans **CARCINOGENIC EFFECTS**: Classified None. by OSHA, None. by NIOSH [sodium phosphate, dibasic]. Classified None. by OSHA, None. by NIOSH [sodium chloride]. Classified None. by OSHA, None. by NIOSH [sodium dihydrogen orthophosphate, monohydrate].
MUTAGENIC EFFECTS: Classified PROVEN for human [sodium chloride]. Mutagenic for mammalian somatic cells. [sodium chloride]. Mutagenic for bacteria and/or yeast. [sodium chloride].
TERATOGENIC EFFECTS: Classified SUSPECTED for human [sodium chloride].
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [PROVEN] [sodium chloride]. Classified Development toxin [POSSIBLE] [sodium chloride].

Other Toxic Effects on Humans No specific information is available in our database regarding the other toxic effects of this material for humans.

Special Remarks on Toxicity to Animals Not available.

Special Remarks on Chronic Effects on Humans Exposure can cause stomach pains, vomiting and diarrhea. Embryotoxic and/or foetotoxic in animal. Laboratory experiments have shown mutagenic effects. May cause convulsions. (sodium chloride)

Special Remarks on Other Toxic Effects on Humans Exposure can cause nausea, headache and vomiting. Material is irritating to mucous membranes and upper respiratory tract. May cause convulsions. (sodium chloride)

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Reproductive toxicity No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Skin No known significant effects or critical hazards.

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Section 12. Ecological information

Mobility	Not available.
Persistence/degradability	Not available.
Bioaccumulative potential	Not available.
Ecotoxicity	Not available.
Germany water class	VCI WGK: No products were found.

Ecotoxicity data

Ingredient name	*Species*	*Period*

Other ecological information

Persistence/degradability

Ingredient name	*BOD_5*	*COD*

Ingredient name	*Aquatic half-life*	*Photolysis*

Bioaccumulative potential

Ingredient name	*$LogP_{ow}$*	*BCF*

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Waste Stream	Not available.
Methods of 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.
European waste catalogue (EWC)	Not available.
Hazardous waste	To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 91/689/EC.
Denmark – Carcinogenic waste	Not available.
Denmark - Waste card number	Not available.
Denmark - Waste group	Not available.
Sweden - thermoset plastic waste	Not available.
Sweden - Waste group	Not available.
Austria - Waste catalogue	Not available.
Norway - Waste number	Not available.
Norway - Hazardous waste	To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by SFT's Directive on special waste.
Switzerland - Waste code	Not available.

Continued on Next Page

Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.

Section 15. Regulatory information

Label Requirements (Europe)

This product is not classified according to the EU regulations.

HCS Classification **Irritating material**

U.S. Federal Regulations

TSCA: No products were found.

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: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.

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

Clean Water Act (CWA) 311: sodium phosphate, dibasic

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.

State regulations

Pennsylvania RTK: sodium phosphate, dibasic: (environmental hazard, generic environmental hazard); sodium azide: (environmental hazard, generic environmental hazard)
Florida: sodium azide
Minnesota: sodium azide
Massachusetts RTK: sodium phosphate, dibasic; sodium azide
New Jersey: sodium phosphate, dibasic; sodium azide

WHMIS (Canada)

Class D-2A: Material causing other toxic effects (VERY TOXIC).

CEPA DSL: water; sodium phosphate, dibasic; sodium chloride; Desalting Resin; sodium azide

International Regulations

EINECS

Not available.

DSCL (EEC)

This product is not classified according to the EU regulations.

International Lists

Australia (NICNAS): water; sodium dihydrogen orthophosphate, monohydrate; sodium phosphate, dibasic; sodium chloride; sodium azide

China: water; sodium dihydrogen orthophosphate, monohydrate; sodium phosphate, dibasic; sodium chloride; sodium azide

Germany water class: sodium dihydrogen orthophosphate, monohydrate; sodium phosphate, dibasic; sodium chloride; sodium azide

Japan (METI): sodium phosphate, dibasic; sodium azide

Korea (TCCL): water; sodium phosphate, dibasic; sodium chloride; sodium azide

Philippines (RA6969): water; sodium dihydrogen orthophosphate, monohydrate; sodium phosphate, dibasic; sodium chloride; sodium azide

State Regulations

Pennsylvania RTK: sodium phosphate, dibasic: (environmental hazard, generic environmental hazard); sodium azide: (environmental hazard, generic environmental hazard)
Florida: sodium azide
Minnesota: sodium azide
Massachusetts RTK: sodium phosphate, dibasic; sodium azide
New Jersey: sodium phosphate, dibasic; sodium azide

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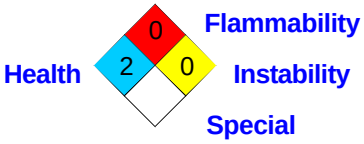
Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

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



References Not available.

History of Document Changes Any information changes since last document version are marked with a triangle symbol.

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Validated by MSDS_Specialist on 7/23/2007.

Verified by MSDS_Specialist.

Date of previous issue **7/6/2007**

Printed 7/23/2007.

Version **0.03**

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

PIERCE
a Perbio Science Company

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Kit Material Safety Data Sheet(s)

Responsible Name **MSDS Administrator**

Chemical Product and Company Identification

Common Name **DyLight™ Labeling Kits**

Code 53024 53025 53034 53035 53050 53051 53056 53057 53062 53063

Supplier
Pierce Biotechnology
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723

Manufacturer
Pierce Biotechnology
P.O. Box 117
Rockford, IL 61105
USA
815.968.0747 or
1.800.874.3723

In Case of Emergency
CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887

Material Safety Data Sheet
Safety documents for kit components are available upon request by phone (1-800-874-3723) as well as on the Internet at http://www.piercenet.com.

MSDS# 7548

Classification (USA)

Code	*Common Name*	*Classification*
1860504 1860506 1860508 1860510	**DyLight™ Reactive Dyes**	***Irritating material***
1860511	**DyLight™ Antibody Labeling Kit**	***Target organ effects***

Classification (Europe)

Code	*Common Name*	*Classification*
1860504 1860506 1860508 1860510	**DyLight™ Reactive Dyes**	***Xi***
1860511	**DyLight™ Antibody Labeling Kit**	***T***

Print Date *12/18/2006*

Validation Date *12/18/2006*