Unconjugated Lectin Staining Kit #1
(Cat. No.: LK-001)

Kit Composition

The Unconjugated Lectin Staining Kit #2 (LK-series) contains 1 mg each of the labeled lectins: Con A, DBA, SBA, WGA, UEA-I, PNA, GS-I, GS-II, BPA, MPA.

Lectin Specificity

Con A	α-D-Mannose, α-D-Glucose, Branched mannose.
DBA	Methyl-2-acetamido-2-deoxy-D-galactose.
SBA	α and β- N-Acetylgalactosamine > α and β-Galactose.
WGA	$(GlcNAc\text{-}\beta\text{-}(1,4)\text{-}GlcNAc)_{1\text{-}4}$>β-GlcNAc>Neu5Ac.
UEA-I	α-L-Fucose.
PNA	Terminal β-Galactose.
GS-I	Melibiose, α-D-Galactose.
GS-II	Terminal α– or β- N-Acetylglucosamine. The specific linkage of the N-Acetylglucosamine to the subterminal carbohydrate plays an important role in lectin binding
BPA	N-Acetylgalactosamine.
MPA	N-Acetylgalactosamine>Galactose.

Specific Applications

See individual datasheets for References.

Additional Products

In addition to more than 300 labeled lectins, EY Laboratories, Inc. also manufactures a large selection of carbohydrate gels for lectin purification, antibody gels for purification of primary antibodies, and a number of different protein/glycoprotein gels. For further information, please contact customer service at EY Laboratories, Inc.

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Unconjugated Lectin Staining Kit #1 Product Information

Catalog Number: L-1104-1

Description: Pure *Canavalia ensiformis* lectin (Con A) from Jackbean.

Lot Number:

Protein Concentration: (Based on OD 280) 1 mg affinity purified Con A / vial. Reconstitute with Buffer to a final concentration of 1mg/1ml.

Carbohydrate Specificity: α-Mannose, α-Glucose, Branched Mannose.

Inhibitory Carbohydrate: Methyl α-D-Mannopyranoside >> α–D-Mannose>> α-D-Glucose.

Activity: Con A is a relatively weak blood agglutinin More than 10 µg/ml may be required to give visible agglutination of neuraminidase treated human erythrocytes.

Buffer: 0.05M Tris - 0.15M NaCl - 0.004M $CaCl_2$, pH 7.0.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial. MITOGENIC.

Remarks: Con A exists as a dimer below pH 5.0 and a tetramer in alkaline pH.

References:

1. Goldstein, I. J. and Poretz, R. D. (1986). The Lectins: Properties, Functions, and Applications in Biology and Medicine. Academic Press.
2. Wecksler, M., et al. (1968). Acta Cient. Venezo. **19** : 154.
3. Powell, A. E. and Leon, M. A. (1970). Exp. Cell. Res.**62** : 315.
4. Yamashita, U., et al. (1987). J. Immunol. **138** : 3284-3289.
5. Murray, H. W., et al. (1987). J. Immunol. **138** : 2290.
6. Weiss, A., et al. (1987). J. Immunol. **138** : 2169-2176.
7. Ree, H. J. (1983). Cancer. **51** : 1639-1646.
8. Hori, T., et al. (1985). Acta Neuropath. (Berlin). **66** : 177.

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Catalog Number: L-1201-1

Description: Pure *Dolichos biflorus* lectin (DBA) from horsegram.

Lot Number:

Protein Concentration: 1 mg affinity purified DBA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: Methyl-2-acetamido-2-deoxy-D-galactose.

Inhibitory Carbohydrate: Terminal α-D-Acetylgalactosamine.

Activity: 4 µg/ml will agglutinate human type A_1 cells. As much as 200 µg/ml is needed to agglutinate type A_2 cells.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Etzler, M. E. and Kabat, E. A. (1970). Biochemistry. **9** : 869-877.
2. Borrebaeck, C. and Etzler, M. E. (1980). FEBS. Lett. **117** : 237-240.
3. Etzler, M. E. (1973). Meth. Enzymol. **28** : 340-344.
4. acobs, L. R. and Huber, P. W. (1985). J. Clin. Invest. **75** : 112-118.
5. Muramatsu, T., et al. (1980). Biochem. Biophys. Res. Comm. **96** : 1547-1553.
6. Watanabe, M., et al. (1981). J. Histochem. Cytochem. **29** : 779-790.

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Unconjugated Lectin Staining Kit #1 Product Information

Catalog Number: L-1301-1

Description: Pure *Glycine max* lectin (SBA) from soybean.

Lot Number:

Protein Concentration: 1 mg affinity purified SBA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: α and β-N-Acetylgalactosamine > α and β-Galactose

Inhibitory Carbohydrate: Terminal α- and β- N-Acetylgalactosamine>Galactose.

Activity: Less than 4 µg/ml will agglutinate fresh A_1 cells. Older B cells can react stronger than A_2 cells.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Lotan, R., et al. (1973). Biochem. Biophys. Res. Comm. **55** : 1347-1355.
2. Sela,B. -A., et al.(1970). J. Membr. Biol. **3** : 267-279.
3. Reisner, Y., et al. (1976). Biochem. Biophys. Res. Comm. **72** :1585-1591.
4. O'Reilly, R. J., et al. (1985). Transplant. Proc. **17** :455.

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Catalog Number: L-2101-1

Description: Purified *Triticum vulgaris* lectin (WGA) from Wheat Germ.

Lot Number:

Protein Concentration: (Based On OD280) 1 mg affinity purified WGA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: $(GlcNAc-\beta-(1,4)-GlcNAc)_{1-4}$>β-GlcNAc>Neu5Ac

Inhibitory Carbohydrate: GlcNAc β(1,4) GlcNAc β(1,4) GlcNAc>GlcNAc β(1,4) GlcNAc> GlcNAc>>sialic acid(Neu5Ac)>>GalNAc

Activity: Less than 4mg/ml will agglutinate human type O erythrocytes. Less than 1 µg/ml will agglutinate neuraminidase treated erythrocytes.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Peters, B.P., et al (1979) Biochemistry. **18** : 5505-5511.
2. Lotan, R., et al. (1979) Biochem. Biophys. Res. Comm. **62**:144-150.
3. Ebisu, S, et al. (1977) Carbohydrate Res. **58** : 187-191.
4. Watanabe, K. and Hakomori, S. I. (1973) FEBS Lett. 37 : 317-320.
5. Yamamoto, K., et al. (1981) Biochemistry, **20** : 5894-5899.
6. Rutishauser, U., et al. (1988) Science, **240** : 53-57.
7. Wright, C.S. (1984) J.Mol.Biol., **178** :91-104.
8. Rice, R.H. and Etzler, M.E. (1975) Biochemistry, **14** : 4093-4099.
9. Matsumoto, I. et al. (1987) J. Chromatography **400** : 77-81.

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Unconjugated Lectin Staining Kit #1 Product Information

Catalog Number: L-2201-1

Description: Pure *Ulex europaeus* lectin (UEA-I) from gorse.

Lot Number:

Protein Concentration: 1 mg affinity purified UEA-I /vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: α-L-Fucose.

Inhibitory Carbohydrate: α-L-Fucose.

Activity: Less than 4 µg/ml will agglutinate human type O erythrocytes. Less than 0.5 µg/ml will agglutinate neuraminidase treated erythrocytes.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Matsumoto, I. and Osawa, T. (1969) Biochem. Biophys. Acta. **194**:180.
2. Sugii, S., et al. (1982) Carbohydrate Res. **99** : 99-101.
3. Debray, H., et al. (1981) Eur.J. Biochem. 117 : 41-55.
4. Goldstein, I.J. and Poretz, R.D. (1986) in: The Lectins : Properties, Functions and Applications in Biology abd Medicine. (Liener, I.E., Sharon, N., and Goldstein, I.J. eds) Academic Press. pg 33-248 (Table XXVI).
5. Holthofer, H. et al. (1982) Lab. Investigation. **47** : 60-66.
6. Miettinen, M., et al. (1983) Am. J. Clin. Path. **79** : 32.
7. Walker, R.A. (1985) J. Pathology. **146** : 123-127.
8. Allen, J.U. and Bosslet, K. (1988) Am. J. Clin. Path. **90** : 463-471.
9. Oriol, R., et al. (1986) Vox Sang. **51**:161-171.
10. Torrado, J. et al. (1989) Am. J. Clin. Path. **91** : 503 (Letter to the Editor).
11. Pereira, M.E.A., et al. (1979) Arch.Biochem.Biophys. **194** : 511-525.

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Catalog Number: L-2301-1

Description: Pure *Arachis hypogaea* lectin (PNA) from peanut.

Lot Number:

Protein Concentration: 1 mg affinity purified PNA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: Terminal β-Galactose.

Inhibitory Carbohydrate: Lactose > β-Galactose.

Activity: Less than 1 µg/ml will agglutinate human erythrocytes neuraminidase treatment of the cells.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation at 5,000 x g.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial. MITOGENIC.

References:

1. Lotan, R., et al. (1975). J. Biol. Chem. **250** (21) : 8518.
2. Novogrodsky, N., et al. (1975). J. Immunol. **115** : 1243.
3. Cooper, H.S. (1984). Human Pathology. **15** : 904-906.
4. Bird, G.N. and Wingham, J. (1971). Scand. J. Haematol. **8** : 307-308.
5. Moller, P. (1982). Virchows Arch. **396** : 313-317.
6. Vierbuchen, M. and Klein, P.J. (1983). Laboratory Inv. **48** (2): 181.
7. Ree, H.J. and Hsu, Su-ming. (1983). Cancer. **51** : 1631.
8. Okada, M., et al. (1988). J. Immunol. 141

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Unconjugated Lectin Staining Kit #1 Product Information

Catalog Number: L-2401-1

Description: Pure *Griffonia simplicifolia* lectin (GS-I).

Lot Number:

Protein Concentration: 1 mg affinity purified GS-I / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: Melibiose, α-D-Galactose.

Inhibitory Carbohydrate: α-Galactose.

Activity: 20-30 µg/ml is required to agglutinate fresh type B blood cells. Lectin activity against all blood types increases after neuraminidase treatment of the cells.

Buffer: 0.01M Phosphate - 0.15M NaCl containing 0.5 mM $CaCl_2$, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

Remarks: Calcium is REQUIRED for binding. 0.5mM Calcium is the maximum concentration in Buffer that will not form a white precipitate.

References:

1. Murphy, L. A. and Goldstein, I. J. (1977). J. Biol. Chem. **252** : 4739-4742.
2. Judd, W. J., et al. (1978). Transfusion (Philadelphia). **18** : 274-280.
3. Eckhardt, A. E., et al. (1982). Cancer Res. **42** : 2977-2979.
4. Maddox, D. E., et al. (1982). PNAS. **79** : 166-170.

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Catalog Number: L-2402-1

Description: Pure *Griffonia simplicifolia* lectin (GS-II).

Lot Number:

Protein Concentration: 1 mg affinity purified GS-II /vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: Terminal α– or β- N-Acetylglucosamine. The specific linkage of the N-Acetylglucosamine to the subterminal carbohydrate plays an important role in lectin binding.

Inhibitory Carbohydrate: N-Acetylglucosamine.

Activity: 5-10 µg/ml will agglutinate T_k polyagglutinable cells.

Buffer: 0.01M Phosphate - 0.15M NaCl containing 0.5 mM $CaCl_2$, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

Remarks: Calcium is REQUIRED for binding. 0.5mM Calcium is the maximum concentration in Buffer that will not form a white precipitate.

References:

1. Murphy, L. A. and Goldstein, I. J. (1977). J. Biol. Chem. **252** : 4739-4742.
2. Shanker Iyer, P. N., et al. (1976). Arch. Biochem. Biophys. **177** : 330-333.

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Unconjugated Lectin Staining Kit #1 Product Information

Catalog Number: L-2501-1

Description: Pure *Bauhinia purpurea* lectin (BPA) from Camel's foot tree.

Lot Number:

Protein Concentration: 1 mg affinity purified BPA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: N-Acetylgalactosamine.

Inhibitory Carbohydrate: N-Acetylgalactosamine.

Activity: Less than 0.5 µg/ml will agglutinate human erythrocytes after neuraminidase treatment of the cells. Without prior enzyme treatment, at least 25 µg/ml is required to agglutinate red blood cells.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Irimura, T. and Osawa, T. (1972). Arch. Biochem. Biophys. **151** : 475-482.
2. Imai, Y. and Osawa, T. (1983). Scand. J. Immunol. **18** : 217-224.

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Catalog Number: L-3901-1

Description: Pure *Maclura pomifera* lectin (MPA) from Osage Orange.

Lot Number:

Protein Concentration: 1 mg affinity purified MPA / vial. Reconstitute with Buffer to a concentration of 1mg/1ml.

Carbohydrate Specificity: N-Acetylgalactosamine>Galactose.

Inhibitory Carbohydrate: Melibiose [Gal α(1,6) Glc]>α-D-Galactose.

Activity: Less than 5 µg/ml will agglutinate type O human erythrocytes. Less than
0.1 µg/ml will agglutinate neuraminidase treated cells.

Buffer: 0.01M Phosphate - 0.15M NaCl, pH 7.2 - 7.4.

Storage: Store lyophilized powder refrigerated at 5-8°C or frozen. Store liquid frozen in aliquots. Avoid freeze-thaw cycles. Clarify by centrifugation.

Stability: The lyophilized material is stable for several years when stored frozen. After reconstitution the material is stable for at least 1 year when stored frozen in aliquots with 0.1% sodium azide added as a preservative.

Caution: Refer to the enclosed MSDS for information regarding lectins. The aluminum seals have sharp edges and the vial itself may have cracks which can cause lacerations. Use caution when opening the vial.

References:

1. Bausch, J. N., et al. (1981) Biochemistry. **20** : 2618-2620.
2. Jirgensons, B. (1980) Biochim. Biophys. Acta. **625** : 193.
3. Allen, P. Z. (1985) Infect. Immunol. **47** : 90-93.
4. Chuba, J. V. and Kuhns, W. (1973) Nature (London). **242** : 342.
5. Jones, J. M. and Soderberg, F. (1979) Cell. Immunol. **42** : 319-326.
6. Jones, J. M. and Feldman, J. D. (1973) J. Immunol. **111** : 1765.

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MATERIAL SAFETY DATA SHEET

Effective Date: March 31, 2006
Revision 5

PRODUCT IDENTIFICATION

Name: Crude and purified protein and enzymes.

Catalog Number (s): P-01, 2402, 2404, EC-32118, EC-32118S, E-34424, EC-34424, BA-000, BA-002, NP-01 to NP-05, B-1201 to B-4601, L-1102 to L-9000, AT-2100 to AT-2701, AF-001 to AF-2354, AL-1104 to AL-4701,13-600 to 13-607, DM1011P to DM1064P.

Formula: Complex polypeptides.

Synonyms: Protein A, Horseradish Peroxidase, Laminin (mouse), Neuraminidase, Bromelain, Avidin (egg white), Glycosylated Bovine Serum Albumin, Lectins, Secondary and Monoclonal Antibodies, other Antisera.

EMERGENCY INFORMATION

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EMERGENCY PHONE: 650-342-3296

HAZARDOUS COMPONENTS

Specific protein (s) as listed on the vial label. Solutions are at a concentration generally greater than 0.5mg protein / ml. Powders are generally greater than 95% specific protein unless otherwise indicated on the vial label or product information sheet. Biological activity of these proteins will vary. Although these materials are not generally considered to be hazardous they may cause allergic responses in sensitive individuals if inhaled or allowed to contact skin.

HEALTH HAZARD INFORMATION

EXPOSURE LIMITS: None established. The toxicological properties of these products have not been thoroughly investigated. Care should be taken when handling any of these materials.

EFFECTS OF OVEREXPOSURE: Any of these proteins may cause acute localized eye, skin, or mucous membrane irritation. Some sensitive individuals may develop a chronic allergic reaction with exposure.

ROUTES OF EXPOSURE: Inhalation of powders and skin contact with liquids are the primary routes of exposure. Care should be taken to avoid the formation of aerosols when handling any of the solutions.

PHYSICAL CHARACTERISTICS

APPEARANCE: Powders may be white to amber brown in color. Solutions may be translucent to a clear brown

SOLUBILITY: Powders are completely soluble in many biological buffers. Some are soluble in water. All liquids are completely miscible in water and biological buffers

FIRE AND EXPLOSION HAZARDS

Not considered to be a fire hazard.

EXTINGUISHING MEDIA: Water spray or CO_2.

SPECIAL FIRE FIGHTING PRECAUTIONS: None required.

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NOTE: Most solutions contain 0.05% sodium azide as a preservative. Azide may react with lead and copper plumbing to form explosive metal azides. Flush with copious amounts of water when disposing material in the sink.

REACTIVITY DATA

STABILITY: Stable. Decomposition products are not known to be hazardous.

HAZARDOUS POLYMERIZATION: Will NOT occur.

INCOMPATIBILITY: None known. (Lead and copper may react with sodium azide).

SPILL / LEAK PROCEDURES

MATERIAL RELEASE / SPILL: Avoid contact with powder or liquid. Clean up spill with a paper towel soaked in household bleach. Do not allow solutions to dry on environmental surfaces. Wash affected area with detergent after the area has been treated with bleach.

WASTE DISPOSAL: Incinerate, autoclave, or dispose of paper waste in accordance with all Local, State, and Federal regulations. Due to the small quantities of material involved these products are generally not considered to be environmental hazards. All of these proteins are fully biodegradable.

EMERGENCY FIRST AID PROCEDURES

May be harmful if swallowed, inhaled, or allowed to absorb through the skin. Wash contacted area with water for 15 minutes. If inhaled remove to fresh air. Report exposure to the appropriate safety official. Consult a physician if irritation occurs or if there is any indication of an allergic response such as watering eyes, sneezing, or difficulty breathing

SPECIAL HANDLING PRECAUTIONS

VENTILATION: No special ventilation is required but it is recommended to handle these reagents in a fume hood when possible.

EYE PROTECTION: Not required under most circumstances but recommended as a safety precaution.

RESPIRATORY PROTECTION: Recommended as a safety precaution, specifically when working with powders. An approved respirator may be required for those individuals already known to be sensitive to these materials.

PROTECTIVE GLOVES: Required when handling any of these materials.

SPECIAL PRECAUTIONS

This material is for research and experimental application only. It is not intended for food, drug, household, agricultural, or cosmetic use. All materials should be handled only by technically qualified individuals experienced with working with potentially hazardous chemicals. The above information is correct to the best of our knowledge. The user should make independent decisions regarding completeness of the information, based on all sources available. EY Laboratories, Inc. shall not be held liable for any damage resulting from handling or contact with the above product.

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