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BUFFER SOLUTIONS PH 9.0 TO 11.0
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Sodium Borate

FISHER SCIENTIFIC
1 BEACON LANE
FAIR LAMM NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTEC ASSISTANCE: (800) 424-5300

MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **BUFFER SOLUTIONS PH 9.0 TO 11.0**

TRADE NAMES/SYNONYMS:
PH 9.0, (50-B-114); PH 10.0 (CONC), (50-B-141); PH 10.0 BLUE, (50-B-115);
PH 10.0, (50-B-116); PH 11.0 (CONC), (50-B-142); ACC03494

GENERAL RATING (SCALE 0-3): HEALTH=U FIRE=U REACTIVITY=U PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=U FIRE=U REACTIVITY=U

COMPONENTS AND CONTAMINANTS

| COMPONENT | NAME | PERCENT |
|-------------|--------------------------------------|----------------|
| COMPONENT 1 | SODIUM CHLORIDE CAS# 7647-14-5 | PERCENT: 0-3.0 |
| COMPONENT 2 | SODIUM TETRABORATE CAS# 1303-96-4 | PERCENT: 0-5.8 |
| COMPONENT 3 | POTASSIUM CHLORIDE CAS# 7447-40-7 | PERCENT: 0-3.8 |
| COMPONENT 4 | SODIUM GLYCINATE CAS# 8000-44-8 | PERCENT: 0-6.0 |
| COMPONENT 5 | WATER | PERCENT: >81.4 |

EXPOSURE LIMITS:
SODIUM BORATE: 10 MG/M3 TWA
SODIUM GLYCINATE: 10 MG/M3 TWA
1 MG/M3 ACID TWA

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID (RED, YELLOW OR BLUE FOR COLOR CODE)
BOILING POINT: APPROX 100 C MELTING POINT: APPROX 0 C
SPECIFIC GRAVITY: 1-1.13 VAPOR PRESSURE: 14 MMHG (WATER)
EVAPORATION RATE: EITHER * 1) > 1 PH: 9-11 SOLUBILITY IN WATER: SOLUBLE
VAPOR DENSITY: 0.7 (WATER)

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
UNKNOWN FIRE AND EXPLOSION HAZARD.
FLASH POINT: NOT AVAILABLE
FIREFIGHTING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
11950 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
11950 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING: MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. AVOID BREATHING
VAPORS OR DUSTS; KEEP UPWIND.

TOXICITY

SODIUM CHLORIDE:
IRRITATION DATA: 50 MG/24 HOURS SKIN-RABBIT MILD; 500 MG/24 HOURS SKIN-RABBIT

SODIUM CHLORIDE
ACUTE EXPOSURE MAY CAUSE MILD IRRITATION UNLESS THE CONTACT IS INTENSIVE
WHICH MAY RESULT IN DERMATITIS.
CHRONIC EXPOSURE- PRIMARY IRRITANT DERMATITIS MAY RESULT FROM SODIUM
CHLORIDE BEING TRODDED BETWEEN THE SKIN AND JEWELRY SUCH AS METAL

MILD; 100 MG/24 HOURS EVE-RABBIT MODERATE; 10 MG
EYE-RABBIT MODERATE
TOXICITY DATA: 12.957 MG/KG/22 DAYS CONTINUOUS DIAL-RUMIN T.D.₀₁: 3000 MG/KG
ORAL-RAT L.D.₅₀: 4000 MG/KG ORAL-MOUSE L.D.₅₀: 8 GM/KG ORAL-RABBIT L.D.₅₀:
3000 MG/KG SUBCUTANEOUS-RAT L.D.₅₀: 4000 MG/KG SUBCUTANEOUS-MOUSE L.D.₅₀:
2500 MG/KG INTRAPERITONEAL-RAT L.D.₅₀: 4500 MG/KG INTRAPERITONEAL-MOUSE L.D.₅₀:
3000 MG/KG INTRAPERITONEAL-DOG L.D.₅₀: 1100 MG/KG INTRAPERITONEAL-RABBIT L.D.₅₀: 300 MG/KG
INTRAVENOUS-GUINEA PIG L.D.₅₀: 861 MG/KG INTRAPERITONEAL-MOUSE L.D.₅₀: 131
MG/KG INTRAPERITONEAL-MOUSE L.D.₅₀: 300 MG/KG INTRAPERITONEAL-GUINEA L.D.₅₀:
MUTAGENIC DATA (MUTAGENS): REPRODUCTIVE EFFECTS DATA (RECS).
CARCINOGENIC DATA (CANCERS): NONE
LOCAL EFFECTS: IRRITANT: NONE
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION.
ACUTE EFFECTS: POISONING MAY AFFECT THE CENTRAL NERVOUS SYSTEM.

ANHYDROUS: REPRODUCTIVE EFFECTS DATA (RTECS)

[illegible]

POTASSIUM CHLORIDE;
IRRITATION DATA; 40

TOXICITY DATA: 938 MG/KG/D, 2 DAYS ORAL INFANT LOLO; 50 MG/G/D, 6 DAYS ORAL -WOMAN
TOLDO; 20 MG/KG ORAL -MALE LOLO; 2500 MG/KG ORAL -LAT LOLO; 2711 MG/KG
ORAL -MUSTI; 1050; 2500 MG/KG ORAL -GUINEA PIG LOLO; 650 MG/KG
INTRAPERITONEAL -LAT LOLO; 1180 MG/KG INTRAPERITONEAL -MUSTI; 250; 800 MG/KG
MG/KG SUBCUTANEOUS -GUINEA PIG LOLO; 40 MG/KG PERITONEAL -GUINEA PIG LOLO;
112 MG/KG INTRAVENOUS -LAT LOLO; 117 MG/KG INTRAVENOUS -MUSTI; 1050; 71 MG/KG
INTRAVENOUS -GUINEA PIG LOLO; 130 MG/KG INTRAPERITONEAL -GUINEA PIG LOLO;
MUTAGENIC DATA: (LIESCH)

CARDIOTOXICITY LEVEL: MODERATELY TOXIC BY INGESTION, ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION, TARGET EFFECTS: POISONING MAY AFFECT THE POTASSIUM LEVEL WITH RESULTANT DISTURBANCES IN THE HEART RHYTHM. CARDIAC, PANCREATIC AND AT INCREASED ALSO FROM EXPOSURE; PERSONS WITH RENAL, ARTERIAL INSUFFICIENCIES; PERSONS WITH ESOPHAGEAL, PLEURIC OR DUODENAL STENOSIS. ADDITIONAL DATA: INTERACTIONS WITH MEDICATIONS HAVE BEEN REPORTED.

SODIUM GLYCINATE:
664 MG/KG INTRAVENOUS-MOUSE LD50; CARCINOGEN STATUS: NONE.
THE TOXICITY OF SODIUM GLYCINATE HAS NOT BEEN FULLY QUANTIFIED.

HEALTH EFFECTS AND FIRST AID

INHALATION:

ACUTE EXPOSURE - NO DATA AVAILABLE. NO INHALATION EFFECTS OR SYMPTOMS ARE ANTICIPATED IN THE PROPOSED (ANALYTICAL) USE OF THIS SOLUTION.
CHRONIC EXPOSURE - SEE ACUTE EXPOSURE.

CHRONIC EXPOSURE - SEE ACUTE EXPOSURE.

FIRST AID - MOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD CIRCULATION. GIVE OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND DRY. AT REST. TREAT SYMPTOMATICALLY AS APPROPRIATE. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

CHLORIDE EXPOSURE MAY CAUSE MILD IRRITATION UNLESS THE CONTACT IS INTENSIVE WHICH MAY RESULT IN DERMATITIS. DERMATITIS MAY RESULT FROM SODIUM CHLORIDE EXPOSURE - PRIMARY IRRITANT. DERMATITIS MAY BE TRAPPED BETWEEN THE SKIN AND JEWELLERY SINCE SOME METAL ALLOYS MAY BE CORRODED AND DISCOLOURED BY SUCH CONTACT.

LIUM BORATE/NEPHROTOXIN. IFTANT/NARCOTIC. BORATE MAY BE IRRITATING TO THE SKIN AND MAY BE ABSORBED THROUGH INTACT OR DAMAGED SKIN. SYSTEMIC EFFECTS AS DETAILED IN ACUTE INGESTION MAY OCCUR. REPEATED OR PROLONGED CONTACT MAY CAUSE DERMATITIS. IF SUFFICIENTLY QUANTITIES ARE ASSORBED, SYSTEMIC POISONING AS DETAILED IN CHRONIC INGESTION MAY OCCUR.

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ON PAMS AND TAILS. TESTICULAR ATROPHY ALSO OCCURRED AT THIS LEVEL
IN BOTH DOGS AND RATS. OTHER REPRODUCTIVE EFFECTS HAVE BEEN REPORTED
IN ANIMALS.

POTASSIUM CHLORIDE:

ACUTE EXPOSURE MAY CAUSE GASTROINTESTINAL IRRITATION WITH NAUSEA, VOMITING,
ULCERATION, IF THERE IS DYSPHAGIA. GASTRIC ULCERATION, ESPECIALLY IF
PERFORATION OF THE SMALL INTESTINE, ACUTE INTOXICATIONS ORALLY ARE UNCOMMON
SINCE LARGE DOSES USUALLY INDUCE VOMITING AND NORMAL FUNCTIONING KIDNEYS
EXCRETE EXCESS POTASSIUM. ANESTHESIA, AGONIZED WEAKNESS, VERTIGO,
HYPERREFLEXIA, FLACID PARALYSIS, LETHARGY, APPEARENCE OF "STAGNANT"
MENTAL CONFUSION, HYPOTENSION, SLOW, WEAK PULSE, CARDIAC ARRHYTHMIAS,
HEART BLOCK, AND POSSIBLE DEATH. ANIMALS POISONED BY POTASSIUM SALTS DIED
FROM RESPIRATORY FAILURE, SOMETIMES FOLLOWING CONVULSIONS AND ACCOMPANIED
BY GASTROENTERITIS, DEHYDRATION OF PROXIMS AND EARLY RENAL TUBULAR
NECROSIS. IN DOGS, DEATH OCCURRED AFTER 10-15 HOURS OF EXPOSURE TO
MEDIUM AND GASTROINTESTINAL DISTURBANCES DURING THE FIRST 24 HOURS, BUT
RECOVERED RAPIDLY.
CHRONIC EXPOSURE - REPEATED AND PROLONGED INGESTION OF EXCESSIVE AMOUNTS MAY
CAUSE SYMPTOMS AS IN ACUTE EXPOSURE. SKIN RASHES HAVE BEEN REPORTED
RARELY.

SODIUM OXYACETATE:

ACUTE EXPOSURE - NO DATA AVAILABLE.
CHRONIC EXPOSURE - NO DATA AVAILABLE.

FIRST AID: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. IF PERSON IS CONSCIOUS AND
ABLE TO SWALLOW, GIVE LARGE AMOUNTS OF WATER OR MILK TO DILUTE SUBSTANCE.
GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS
TO HELP PREVENT ASPIRATION.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:

SODIUM CHLORIDE:
BROMINE TRIFLUORIDE: POSSIBLE VIOLENT REACTION.
DILUTE HYDROFLUORIC ACID: MAY BE ATTACKED BY SODIUM.
DILUTE BROMINE TRIFLUORIDE: UREA EXPLOSIVE REACTION ABOVE 118 C.
LITHIUM (BURNING): RELEASES VIOLENTLY FLAMMABLE SODIUM.
METALS: MAY BE ATTACKED.
NITROGEN COMPOUNDS: MAY FORM EXPLOSIVE COMPOUNDS UNDER ELECTROLYSIS
CONDITIONS.

SODIUM BORATE:

ZINCUM: EXPLOSIVE REACTION WHEN HEATED.

POTASSIUM CHLORIDE:

SULFURIC ACID AND POTASSIUM PERMANGANATE: POSSIBLE EXPLOSION.

SODIUM OXYACETATE:

NO DATA AVAILABLE.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE CORROSIVE HYDROCHLORIC ACID AND
SODIUM OXYACETATE WHICH CAN REACT WITH WATER OR STEAM TO PRODUCE HEAT, HYDROGEN
AND FLAMMABLE VAPORS.

HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL
TEMPERATURES AND PRESSURES.

CONDITIONS TO AVOID

NONE REPORTED.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
NO SPECIAL PRECAUTIONS INDICATED.

PROTECTIVE EQUIPMENT

VENTILATION:

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PROVIDE GENERAL DILUTION VENTILATION.

RESPIRATORS:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE
MATERIAL SAFETY DATA SHEET (MSDS) FOR THE SUBSTANCE. THEY ARE RANKED IN
ORDER FROM MAXIMUM TO MINIMUM RESPIRATORY PROTECTION. THEY ARE RANKED IN
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND
IN THE WORK PLACE. MUST BE BASED ON THE SPECIFIC OPERATION. MUST NOT EXCEED
THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY
AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY CHEMICAL CARTRIDGE RESPIRATOR WITH AN ORGANIC VAPOR CARTRIDGE(S) WITH A
FULL FACEPIECE.

ANY GAS MASK WITH ORGANIC VAPOR CARTRIDGE (CHIN-STYLE OR FRONT - ON
BACK-MOUNTED CANISTER) WITH A FULL FACEPIECE.

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN
PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE,
HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN
PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN
PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN
CONTINUOUS-FLOW MODE OR WITH A FULL FACEPIECE AND OPERATED IN
PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE. IN COMBINATION WITH AN
AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND
OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT
TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS
SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A
FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE
EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN
AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

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