



**SIGMA-ALDRICH**

SIGMA CHEMICAL COMPANY  
POST OFFICE BOX 14508  
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DATE 08/03/96  
CUST#: 2-043-15940  
PO#: P0082800

M A T E R I A L   S A F E T Y   D A T A   S H E E T

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SECTION 1. - - - - - CHEMICAL IDENTIFICATION - - - - -

CATALOG #: B7901  
NAME: BORIC ACID ELECTROPHORESIS REAGENT

SECTION 2. - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -

CAS #: 10043-35-3  
MF: H<sub>3</sub>BO<sub>3</sub>  
EC NO: 233-139-2

SYNONYMS  
BORACIC ACID \* BOROFAX \* BORSAURE (GERMAN) \* NCI-C56417 \* ORTHOBORIC  
ACID \* THREE ELEPHANT \*

SECTION 3. - - - - - HAZARDS IDENTIFICATION - - - - -

LABEL PRECAUTIONARY STATEMENTS

HARMFUL  
HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.  
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.  
POSSIBLE RISK OF IRREVERSIBLE EFFECTS.  
POSSIBLE TERATOGEN.  
REPRODUCTIVE HAZARD.  
TARGET ORGAN(S):  
CENTRAL NERVOUS SYSTEM  
KIDNEYS  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF  
WATER AND SEEK MEDICAL ADVICE.  
WEAR SUITABLE PROTECTIVE CLOTHING.  
DO NOT BREATHE DUST.

SECTION 4. - - - - - FIRST-AID MEASURES - - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF  
WATER FOR AT LEAST 15 MINUTES.  
IN CASE OF CONTACT, IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS  
AMOUNTS OF WATER.  
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL  
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.  
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.  
CALL A PHYSICIAN.  
WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. - - - - - FIRE FIGHTING MEASURES - - - - -

EXTINGUISHING MEDIA  
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.  
WATER SPRAY.

SPECIAL FIREFIGHTING PROCEDURES

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RESEARCH

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CATALOG #: B7901  
NAME: BORIC ACID ELECTROPHORESIS REAGENT

WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO  
PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS  
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

SECTION 6. - - - - - ACCIDENTAL RELEASE MEASURES- - - - -

EVACUATE AREA.  
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY  
RUBBER GLOVES.  
SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.  
AVOID RAISING DUST.  
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - HANDLING AND STORAGE- - - - -

REFER TO SECTION 8.

SECTION 8. - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION- - - - -

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT  
GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.  
USE ONLY IN A CHEMICAL FUME HOOD.  
SAFETY SHOWER AND EYE BATH.  
DO NOT BREATHE DUST.  
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.  
AVOID PROLONGED OR REPEATED EXPOSURE.  
WASH THOROUGHLY AFTER HANDLING.  
IRRITANT.  
HARMFUL SOLID.  
POSSIBLE TERATOGEN.  
REPRODUCTIVE HAZARD.  
KEEP TIGHTLY CLOSED.  
HYGROSCOPIC  
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - -

APPEARANCE AND ODOR  
WHITE CRYSTALLINE POWDER

PHYSICAL PROPERTIES  
VAPOR PRESSURE: 2.6MM 20 C  
SPECIFIC GRAVITY: 1.435

SECTION 10. - - - - - STABILITY AND REACTIVITY - - - - -

INCOMPATIBILITIES  
REACTS VIOLENTLY WITH:  
POTASSIUM  
ACID ANHYDRIDES

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NAME: BORIC ACID ELECTROPHORESIS REAGENT

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS  
BORON OXIDES.

SECTION 11. - - - - - TOXICOLOGICAL INFORMATION - - - - -

ACUTE EFFECTS

HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.  
CAUSES EYE AND SKIN IRRITATION.  
MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER  
RESPIRATORY TRACT.

CHRONIC EFFECTS

OVEREXPOSURE MAY CAUSE REPRODUCTIVE DISORDER(S) BASED ON TESTS WITH  
LABORATORY ANIMALS.  
TARGET ORGAN(S):  
CENTRAL NERVOUS SYSTEM  
KIDNEYS  
MALE REPRODUCTIVE SYSTEM  
FEMALE REPRODUCTIVE SYSTEM

ADDITIONAL INFORMATION

TOXICITY REPORTED FOR BORIC ACID IN HUMANS: INGESTION OR ABSORPTION  
MAY CAUSE NAUSEA, VOMITING, DIARRHEA, ABDOMINAL CRAMPS, ERYTHEMATOUS  
LESIONS ON THE SKIN AND MUCOUS MEMBRANES. OTHER SYMPTOMS INCLUDE:  
CIRCULATORY COLLAPSE, TACHYCARDIA, CYANOSIS, DELIRIUM, CONVULSIONS AND  
COMA. DEATH HAS BEEN REPORTED TO OCCUR IN INFANTS FROM LESS THAN  
5 GRAMS AND IN ADULTS FROM 5 TO 20 GRAMS.

RTECS #: ED4550000  
BORIC ACID

IRRITATION DATA  
SKN-HMN 15 MG/3D-I MLD

85DKA8 -,127,77

TOXICITY DATA

ORL-MAN LDLO:429 MG/KG  
ORL-WMN LDLO:200 MG/KG  
ORL-INF LDLO:934 MG/KG  
SKN-INF LDLO:1200 MG/KG  
SKN-CHD LDLO:4 GM/KG/4D  
SKN-MAN LDLO:2430 MG/KG  
SKN-CHD LDLO:1500 MG/KG  
SCU-INF LDLO:1100 MG/KG  
UNR-MAN LDLO:147 MG/KG  
ORL-RAT LD50:2660 MG/KG  
SCU-RAT LD50:1400 MG/KG  
IVN-RAT LD50:1330 MG/KG  
ORL-MUS LD50:3450 MG/KG  
SCU-MUS LD50:1740 MG/KG  
IVN-MUS LD50:1240 MG/KG  
SCU-GPG LD50:1200 MG/KG

JTCTDW 31,345,93  
LANCAO 2,162,17  
JAMAAP 90,382,28  
JAMAAP 129,332,45  
MMWOAU 52,763,05  
JAMAAP 128,266,45  
OJPPAL 6,714,33  
MDSR\*\* #2,50  
85DCAI 2,73,70  
JAMAAP 128,266,45  
14KTAK -,693,64  
MDSR\*\* #2,50  
JAMAAP 128,266,45  
JAMAAP 128,266,45  
JPETAB 134,117,61  
MDSR\*\* #2,50

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CATALOG #: B7901  
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TARGET ORGAN DATA

BRAIN AND COVERINGS (MENINGEAL CHANGES)  
PERIPHERAL NERVE AND SENSATION (FLACCID PARALYSIS WITHOUT ANESTHESIA)  
SENSE ORGANS AND SPECIAL SENSES (CONJUNCTIVA IRRITATION)  
BEHAVIORAL (WAKEFULNESS)  
BEHAVIORAL (SOMNOLENCE)  
BEHAVIORAL (TREMOR)  
BEHAVIORAL (CONVULSIONS OR EFFECT ON SEIZURE THRESHOLD)  
BEHAVIORAL (ANOREXIA, HUMAN)  
BEHAVIORAL (FLUID INTAKE)  
BEHAVIORAL (ATAXIA)  
CARDIAC (OTHER CHANGES)  
LUNGS, THORAX OR RESPIRATION (CYANOSIS)  
LUNGS, THORAX OR RESPIRATION (RESPIRATORY DEPRESSION)  
GASTROINTESTINAL (HYPERMOTILITY, DIARRHEA)  
GASTROINTESTINAL (NAUSEA OR VOMITING)  
GASTROINTESTINAL (OTHER CHANGES)  
KIDNEY, URETER, BLADDER (CHANGES IN TUBULES)  
SKIN AND APPENDAGES (AFTER SYSTEMIC EXPOSURE: DERMATITIS, OTHER)  
PATERNAL EFFECTS (SPERMATOGENESIS)  
PATERNAL EFFECTS (TESTES, EPIDIDYMIS, SPERM DUCT)  
NUTRITIONAL AND GROSS METABOLIC (BODY TEMPERATURE INCREASE)  
NUTRITIONAL AND GROSS METABOLIC (BODY TEMPERATURE DECREASE)  
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES  
(RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR  
COMPLETE INFORMATION.

SECTION 12. - - - - - ECOLOGICAL INFORMATION - - - - -

DATA NOT YET AVAILABLE.

SECTION 13. - - - - - DISPOSAL CONSIDERATIONS - - - - -

FOR SMALL QUANTITIES: CAUTIOUSLY ADD TO A LARGE STIRRED EXCESS OF  
WATER. ADJUST THE PH TO NEUTRAL, SEPARATE ANY INSOLUBLE SOLIDS OR  
LIQUIDS AND PACKAGE THEM FOR HAZARDOUS-WASTE DISPOSAL. FLUSH THE  
AQUEOUS SOLUTION DOWN THE DRAIN WITH PLENTY OF WATER. THE HYDROLYSIS  
AND NEUTRALIZATION REACTIONS MAY GENERATE HEAT AND FUMES WHICH CAN BE  
CONTROLLED BY THE RATE OF ADDITION.  
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - TRANSPORT INFORMATION - - - - -

CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - REGULATORY INFORMATION - - - - -

EUROPEAN INFORMATION

HARMFUL

R 20/21/22

HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.

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CATALOG #: B7901  
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R 36/37/38  
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.  
R 40  
POSSIBLE RISK OF IRREVERSIBLE EFFECTS.  
S 26  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF  
WATER AND SEEK MEDICAL ADVICE.  
S 36  
WEAR SUITABLE PROTECTIVE CLOTHING.  
S 22  
DO NOT BREATHE DUST.

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK  
EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR RE-REGISTRATION  
FEREAC 54,7740,89  
OEL-RUSSIA:STEL 10 MG/M3 JAN93  
NOES 1983: HZD X7080; NIS 187; TNF 27071; NOS 128; TNE 489668; TFE  
211838  
NOES 1983: HZD X8324; NIS 3; TNF 84; NOS 4; TNE 2919; TFE 1712  
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY  
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES  
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, APRIL 1996  
NTP CARCINOGENESIS STUDIES (FEED);NO EVIDENCE:MOUSE  
NTPTR\* NTP-TR-324,87

SECTION 16. - - - - - OTHER INFORMATION- - - - -

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