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NICKELOUS CHLORIDE HEXAHYDRATE
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **NICKELOUS CHLORIDE HEXAHYDRATE**
CAS-NUMBER 7791-20-0

TRADE NAMES/SYNONYMS:
NICKEL(II) CHLORIDE HEXAHYDRATE (1:2:6); NICKEL DICHLORIDE HEXAHYDRATE;
NICKEL CHLORIDE HEXAHYDRATE; STCC 4966364; NA 9139; N-53; N-54; ACC16310

CHEMICAL FAMILY:
INORGANIC SALT

MOLECULAR FORMULA: CL₂-NI-6H₂O

MOLECULAR WEIGHT: 237.73

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: NICKELOUS CHLORIDE HEXAHYDRATE
CAS# 7791-20-0
PERCENT: 100

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
NICKEL, SOLUBLE COMPOUNDS (AS NI):
0.1 MG/M³ OSHA TWA
0.1 MG/M³ ACGIH TWA (NOTICE OF INTENDED CHANGES 1989-1990)
15 UG/M³ NIOSH RECOMMENDED 10 HOUR TWA

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING
SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY
WARNING AND RELEASE REQUIREMENTS- (OCTOBER 1, 1989)
(NICKEL AND CERTAIN NICKEL COMPOUNDS)

PHYSICAL DATA

DESCRIPTION: GREEN DELIQUESCENT CRYSTALS OR MONOCLINIC CRYSTALLINE POWDER.
BOILING POINT: SUBLIMES MELTING POINT: SUBLIMES SPECIFIC GRAVITY: 3.6
PH: ACIDIC IN SOLUTION SOLUBILITY IN WATER: SOLUBLE
SOLVENT SOLUBILITY: ALCOHOL, AMMONIUM HYDROXIDE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLECTIBLE FIRE HAZARD IN BULK FORM; HOWEVER, POSSIBLE FIRE AND EXPLOSION
HAZARD IN DUST FORM WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER
SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR
LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE
PAGE 31).

Chemistry

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USE AGENT SUITABLE FOR TYPE SURROUNDING FIRE. AVOID BREATHING HAZARDOUS VAPORS OR DUSTS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
ORM-E

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND
SUBPART E:
NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.510
EXCEPTIONS: NONE

TOXICITY

NICKEL CHLORIDE:

TOXICITY DATA:

ANHYDROUS: 105 MG/KG ORAL-RAT LD50; 10 MG/KG INTRAVENOUS-DOG LDLO; 26 MG/KG
INTRAPERITONEAL-MOUSE LD50; 20597 UG/KG INTRAPERITONEAL-RAT LD50; 27
MG/KG INTRAMUSCULAR-RABBIT LD50; MUTAGENIC DATA (RTECS); REPRODUCTIVE
EFFECTS DATA (RTECS).
HEXAHYDRATE: 175 MG/KG ORAL-RAT LD50; 40 MG/KG INTRAVENOUS-DOG LD50; 48
MG/KG INTRAPERITONEAL-MOUSE LD50; MUTAGENIC DATA (RTECS).
CARCINOGEN STATUS: HUMAN SUFFICIENT EVIDENCE (IARC GROUP 1 FOR NICKEL
COMPOUNDS). EPIDEMIOLOGICAL STUDIES CONCLUSIVELY DEMONSTRATE AN EXCESS RISK
OF CANCER OF THE NASAL CAVITY AND LUNGS IN WORKERS IN NICKEL REFINERIES.
IT IS LIKELY THAT NICKEL IN SOME FORM(S) IS CARCINOGENIC TO MAN.
LOCAL EFFECTS: IRRITANT- INHALATION, EYE.
ACUTE TOXICITY: TOXIC BY INGESTION.
TARGET EFFECTS: SENSITIZER- DERMAL.

HEALTH EFFECTS AND FIRST AID

INHALATION:

NICKEL CHLORIDE:

IRRITANT.

ACUTE EXPOSURE- MAY BE IRRITATING TO THE MUCOUS MEMBRANES OF THE UPPER
RESPIRATORY TRACT.

CHRONIC EXPOSURE- NICKEL CHLORIDE MAY CAUSE HYPERPLASIA OF THE BRONCHIOLAR
AND BRONCHIAL EPITHELIUM WITH PERIBRONCHIAL LYMPHOCYTIC INFILTRATION. IN
HUMANS IT IS PROBABLE THAT AFTER PROLONGED EXPOSURE, NICKEL IN SOME FORM
IS CARCINOGENIC. DUST AND FUMES HAVE PRODUCED LUNG AND NASAL TISSUE
CARCINOMAS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING
HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST.
TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

NICKEL CHLORIDE:

SENSITIZER.

ACUTE EXPOSURE- CONTACT WITH NICKEL COMPOUNDS MAY CAUSE SENSITIZATION
DERMATITIS, "NICKEL ITCH", CHARACTERIZED BY PRURITIS. ERYTHEMATOUS OR
FOLLICULAR ERUPTIONS, FOLLOWED BY SUPERFICIAL ULCERS WHICH DISCHARGE AND
BECOME ENCRUSTED OR ECZEMATOUS MAY BE DELAYED 7 DAYS. IN CHRONIC STAGES,
PIGMENTED OR UNPIGMENTED PLAQUES MAY BE FORMED.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO NICKEL AND NICKEL
COMPOUNDS MAY CAUSE SENSITIZATION DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED
AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO
EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL
ATTENTION IMMEDIATELY.

EYE CONTACT:

NICKEL CHLORIDE:

IRRITANT.

ACUTE EXPOSURE- MAY BE IRRITATING.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO IRRITANTS MAY CAUSE
CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE,
OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL
REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

NICKEL CHLORIDE:

TOXIC.

ACUTE EXPOSURE- INGESTION MAY CAUSE GASTROINTESTINAL IRRITATION, VOMITING,
DIARRHEA, AND DEATH, WHICH MAY BE DELAYED FOR 24 HOURS OR MORE. OTHER
SYSTEMIC EFFECTS FROM INGESTION OF NICKEL COMPOUNDS MAY INCLUDE MYOCARDIAL
WEAKNESS, CAPILLARY DAMAGE IN THE BRAIN AND ADRENALS, RENAL INJURY, AND
CENTRAL NERVOUS SYSTEM DEPRESSION.

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CHRONIC EXPOSURE- 100 MG/KG IN THE DRINKING WATER OF RATS CAUSED LETHARGY, ATAXIA, IRREGULAR BREATHING, COOL BODY TEMPERATURE, SALIVATION AND DISCOLORED EXTREMITIES. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMAL STUDIES.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
NICKEL CHLORIDE:
POTASSIUM: FORMS SHOCK-SENSITIVE MIXTURE.

DECOMPOSITION:
MAY FORM TOXIC AND HIGHLY FLAMMABLE NICKEL CARBONYL UNDER THERMAL DECOMPOSITION.

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

CONDITIONS TO AVOID

NONE REPORTED.

SPILL AND LEAK PROCEDURES

WATER SPILL:
THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) PROHIBITS CONTAMINATING ANY KNOWN SOURCE OF DRINKING WATER WITH SUBSTANCES KNOWN TO CAUSE CANCER AND/OR REPRODUCTIVE TOXICITY.

OCCUPATIONAL SPILL:
FOR LARGE SPILLS, SWEEP UP WITH A MINIMUM OF DUSTING AND PLACE INTO SUITABLE CLEAN, DRY CONTAINERS FOR RECLAMATION OR LATER DISPOSAL.

RESIDUE SHOULD BE CLEANED UP USING A HIGH-EFFICIENCY PARTICULATE FILTER VACUUM.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

AT ANY DETECTABLE CONCENTRATION:

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

ESCAPE- AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH HIGH-EFFICIENCY PARTICULATE FILTER.
ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

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 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.

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EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED 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 TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

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

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