

Material Safety Data Sheet

Date of issue 26 September 2010
Version 9

1. Product and company identification

Product name : LOW TEMP HARDENER
Code : P214-2452
Supplier : Nexa Autocolor
19699 Progress Drive
Strongsville, OH 44149
Nexa Autocolor is part of PPG Industries, Inc.
Emergency telephone number : (412) 434-4515 (U.S.)
(514) 645-1320 (Canada)
01-800-00-21-400 (Mexico)
Technical Phone Number : 1-800-661-4073 (NEXA AUTOCOLOR)

2. Hazards identification

Emergency overview : DANGER!
FLAMMABLE LIQUID AND VAPOR. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTION. SKIN CONTACT TO ISOCYANATE MONOMER MAY LEAD TO ALLERGIC LUNG REACTION. MAY BE HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. ASPIRATION HAZARD. CAN ENTER LUNGS AND CAUSE DAMAGE. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

Keep away from flames, such as a pilot light, and any object that sparks, such as an electric motor. Keep away from heat. Do not smoke. Do not breathe vapor or mist. Do not swallow. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Potential acute health effects

Inhalation : May be harmful if inhaled. Irritating to respiratory system. Can irritate eyes, nose, mouth and throat. May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion : May be harmful if swallowed. Aspiration hazard if swallowed. Can enter lungs and cause damage.
Skin : Harmful in contact with skin. Irritating to skin. May cause an allergic skin reaction.
Eyes : Severely irritating to eyes. Risk of serious damage to eyes.

Over-exposure signs/symptoms

Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. There is some evidence that repeated exposure to organic solvent vapors in combination with constant loud noise can cause greater hearing loss than expected from exposure to noise alone. Based on the properties of the isocyanate components and considering toxicological data on similar preparations, this preparation may cause acute irritation and/or sensitization of the respiratory system, leading to an asthmatic condition, wheezing and tightness of the chest. Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. Repeated exposure may lead to permanent respiratory disability.

Medical conditions aggravated by over-exposure : Pre-existing respiratory and skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

This Material Safety Data Sheet has been prepared in accordance with Canada's Workplace Hazardous Materials Information System (WHMIS) and the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Product name LOW TEMP HARDENER

2. Hazards identification

See toxicological information (section 11)

3. Composition/information on ingredients

Name	CAS number	%
Isocyanic acid, hexamethylene ester, polymers	28182-81-2	30 - 60
n-Butyl acetate	123-86-4	15 - 40
xylene	1330-20-7	5 - 10
4-methylpentan-2-one	108-10-1	1 - 5
Solvent naphtha (petroleum), light arom.	64742-95-6	1 - 5
Ethylbenzene	100-41-4	0.5 - 1.5
1,2,4-trimethylbenzene	95-63-6	0.1 - 1
4-isocyanatosulphonyltoluene	4083-64-1	0.1 - 1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Material Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person.

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Ingestion** : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do not induce vomiting.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

- Flammability of the product** : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

- Suitable** : Use dry chemical, CO₂, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous combustion products** : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides
Hydrogen cyanide (HCN).
Cyanate and isocyanate.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Use spark-proof tools and explosion-proof equipment. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Special provisions** : Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Place in a suitable container. The contaminated area should be cleaned immediately with a suitable decontaminant. One possible (flammable) decontaminant comprises (by volume): water (45 parts), ethanol or isopropyl alcohol (50 parts) and concentrated (d: 0,880) ammonia solution (5 parts). A non-flammable alternative is sodium carbonate (5 parts) and water (95 parts). Add the same decontaminant to the remnants and let stand for several days until no further reaction in an unsealed container. Once this stage is reached, close container and dispose of according to local regulations (see section 13). Do not allow to enter drains or watercourses. If the product contaminates lakes, rivers, or sewers, inform the appropriate authorities in accordance with local regulations.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not breathe vapor or mist. Do not swallow. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. Vapors are heavier than air and may spread along floors. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. If this material is part of a multiple component system, read the Material Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts.

Product name LOW TEMP HARDENER

3. Exposure controls/personal protection

- Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Eyes** : Chemical splash goggles.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Gloves** : butyl rubber
- Respiratory** : By spraying: air-fed respirator. By other operations than spraying, in well ventilated areas, air-fed respirators could be replaced by a combination charcoal filter and particulate filter mask. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Restrictions on use** : Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used.

9. Physical and chemical properties

- Physical state** : Liquid.
- Flash point** : Closed cup: 21.11°C (70°F)
- Explosion limits** : Lower: 1.2%
- Color** : Not available.
- Odor** : Not available.
- pH** : Not available.
- Boiling/condensation point** : >37.78°C (>100°F)
- Melting/freezing point** : Not available.
- Specific gravity** : 0.99
- Density (lbs / gal)** : 8.26
- Vapor pressure** : 1.3 kPa (9.8 mm Hg) [20°C]
- Vapor density** : Not available.
- Volatility** : 59% (v/v), 52.14% (w/w)
- Odor threshold** : Not available.
- Evaporation rate** : 92 (butyl acetate = 1)
- Solubility** : Insoluble in the following materials: cold water.
- Partition coefficient: n-octanol/water** : Not available.
- % Solid. (w/w)** : 47.86

9. Physical and chemical properties

10. Stability and reactivity

- Stability** : The product may not be stable under certain conditions of storage or use.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Uncontrolled exothermic reactions occur with amines and alcohols. The product reacts slowly with water, resulting in the production of carbon dioxide. In closed containers, pressure buildup could result in distortion, expansion and, in extreme cases, bursting of the container. Avoid increased storage temperature. Pressure hazard
- Materials to avoid** : Reactive or incompatible with the following materials: oxidizing materials, strong acids, strong alkalis
- Hazardous decomposition products** : Cyanate and isocyanate.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Isocyanic acid, hexamethylene ester, polymers	LC50 Inhalation	Rat	18500 mg/m3	1 hours
n-Butyl acetate	LD50 Oral	Rat	10.768 g/kg	-
	LD50 Dermal	Rabbit	>17600 mg/kg	-
xylene	LC50 Inhalation	Rat	>21.1 mg/l	4 hours
	LD50 Oral	Rat	4.3 g/kg	-
	LD50 Dermal	Rabbit	>1.7 g/kg	-
	LC50 Inhalation	Rat	5000 ppm	4 hours
	Vapor			
4-methylpentan-2-one	LD50 Oral	Rat	2.08 g/kg	-
	LC50 Inhalation	Rat	32772 mg/m3	4 hours
	Vapor			
Solvent naphtha (petroleum), light arom.	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Dermal	Rabbit	3.48 g/kg	-
Ethylbenzene	LD50 Oral	Rat	3.5 g/kg	-
	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LC50 Inhalation	Rat	4000 ppm	4 hours
	Vapor			
1,2,4-trimethylbenzene	LD50 Oral	Rat	5 g/kg	-
	LC50 Inhalation	Rat	18000 mg/m3	4 hours
4-isocyanatosulphonyltoluene	LD50 Oral	Rat	>0.5 g/kg	-
	LC50 Inhalation	Rat	>640 ppm	1 hours

Chronic toxicity

- Conclusion/Summary** : Not available.
- Defatting irritant?** : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
- Target organs** : Contains material which causes damage to the following organs: brain, central nervous system (CNS).
Contains material which may cause damage to the following organs: blood, kidneys, liver, gastrointestinal tract, upper respiratory tract, skin, eyes.

Carcinogenicity

- Carcinogenicity** : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA

Product code **P214-2452**

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13 . Disposal considerations

Refer to Section 7: **HANDLING AND STORAGE** and Section 8: **EXPOSURE CONTROLS/PERSONAL PROTECTION** for additional handling information and protection of employees. Section 6. **Accidental release measures**

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Additional information
UN	1263	Paint.	3	II	-
IMDG	1263	Paint.	3	II	-
DOT	1263	Paint.	3	II	-

PG* : Packing group

Reportable quantity RQ : ERCLA: Hazardous substances.: 4-methylpentan-2-one: 5000 lbs. (2270 kg); xylene: 100 lbs. (45.4 kg); Ethylbenzene: 1000 lbs. (454 kg); butan-1-ol: 5000 lbs. (2270 kg); n-Butyl acetate: 5000 lbs. (2270 kg);

15 . Regulatory information

United States inventory (TSCA 8b) : All components are listed or exempted.

Australia inventory (AICS) : All components are listed or exempted.

Canada inventory (DSL) : All components are listed or exempted.

China inventory (IECSC) : All components are listed or exempted.

Europe inventory (REACH) : Please contact your supplier for information on the inventory status of this material.

Japan inventory (ENCS) : All components are listed or exempted.

Korea inventory (KECI) : All components are listed or exempted.

New Zealand (NZIoC) : All components are listed or exempted.

Philippines inventory (PICCS) : All components are listed or exempted.

United States

U.S. Federal regulations :

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: 4-methylpentan-2-one; xylene; Ethylbenzene; n-Butyl acetate

ERCLA: Hazardous substances.: 4-methylpentan-2-one: 5000 lbs. (2270 kg); xylene: 100 lbs. (45.4 kg); Ethylbenzene: 1000 lbs. (454 kg); butan-1-ol: 5000 lbs. (2270 kg); n-Butyl acetate: 5000 lbs. (2270 kg);

SARA 311/312 MSDS Distribution - Chemical Inventory - Hazard Identification:

<u>Chemical name</u>	<u>CAS #</u>	<u>Acute</u>	<u>Chronic</u>	<u>Fire</u>	<u>Reactive</u>	<u>Pressure</u>
Isocyanic acid, hexamethylene ester, polymers	28182-81-2	Y	N	N	Y	N
n-Butyl acetate	123-86-4	Y	N	Y	N	N
xylene	1330-20-7	Y	N	Y	N	N
4-methylpentan-2-one	108-10-1	Y	N	Y	N	N
Solvent naphtha (petroleum), light arom.	64742-95-6	Y	N	N	N	N
Ethylbenzene	100-41-4	Y	Y	Y	N	N
4-isocyanatosulphonyltoluene	4083-64-1	Y	N	N	Y	N
Product as-supplied :		Y	Y	Y	Y	N

SARA 313

Supplier notification

Chemical name

: xylene
4-methylpentan-2-one
Ethylbenzene

CAS number

1330-20-7
108-10-1
100-41-4

Concentration

5 - 10
1 - 5
0.5 - 1.5

Additional environmental information is contained on the Environmental Data Sheet for this product, which can be obtained from your PPG representative.

California Prop. 65

ITEM: 2AEU6 - Drill/Driver Kit 18VDC 1/2 In Comp

PICK REQ: 1116401645

MATERIAL SAFETY DATA SHEET (MSDS)

MSDS: L2702

This MSDS should be attached or kept with the respective product with which it is associated.

***** MATERIAL SAFETY DATA SHEET - 12702 *****

Associated Grainger Item: 2AEU6 - Drill/Driver Kit 18VDC 1/2 In Comp

PRODUCT INFORMATION AND DATA SHEET

THIS PRODUCT IS A MANUFACTURED ARTICLE AS DESCRIBED IN 29 CFR 1910.1200 AND IS NOT SUBJECT TO OSHA'S HAZARD COMMUNICATION STANDARD REQUIREMENTS FOR PREPARATION OF MATERIAL SAFETY DATA SHEETS (MSDS).

SANYO BATTERIES
SANYO ENERGY (USA) CORP.
2055 SANYO AVE.
SAN DIEGO, CA 92154

TELEPHONE NO.: (619) 661-4888

WWW.SANYOBATTERIES.COM

MANUFACTURER'S NAME:
SANYO ELECTRIC CO., LTD.
TORIYAMA-CHO KASAI-CITY
HYOGO, 675-2332
JAPAN

TELEPHONE NO.: 0790-43-2043

IN CASE OF EMERGENCY CONTACT:
CHEMTREC AT: (800) 424-9300

SECTION I - PRODUCT INFORMATION

PRODUCT: NICKEL CADMIUM BATTERY

DESIGNATED FOR RECHARGE?:

(X) YES

() NO

TRADE NAME: CAINICA

CHEMICAL SYSTEM: NICKEL CADMIUM

NOMINAL VOLTAGE: 1.2V

SECTION II - COMPOSITION / INFORMATION ON INGREDIENTS

THE INGREDIENTS ARE CONTAINED IN A HERMETICALLY SEALED CASE, DESIGNED TO WITHSTAND TEMPERATURES AND PRESSURES ENCOUNTERED DURING NORMAL USE. AS A RESULT, DURING NORMAL USE, HAZARDOUS MATERIALS ARE FULLY CONTAINED INSIDE THE BATTERY. THE BATTERY SHOULD NOT BE OPENED OR EXPOSED TO HEAT BECAUSE EXPOSURE TO THE FOLLOWING INGREDIENTS CONTAINED WITHIN COULD BE HARMFUL UNDER SOME CIRCUMSTANCES. THE FOLLOWING INFORMATION IS PROVIDED FOR THE USER'S INFORMATION ONLY.

CHEMICAL NAME	CAS NO.	(1)	PEL	TLV
CADMIUM	7440-43-9	11-26	0.005 TWA(2)	0.05 TWA
CADMIUM HYDROXIDE	21041-95-2	11-26	0.005 TWA	0.05 TWA
NICKEL (POWDER)	7440-02-0	8-17	1 TWA	1 TWA
NICKEL HYDROXIDE	12054-48-7	5-12	1 TWA	1 TWA
POTASSIUM HYDROXIDE	1310-58-3	<3	2 CEILING	2 CEILING
NYLON	N/A	<2	N/A	N/A
STEEL	N/A	12-13	N/A	N/A
OTHER	N/A	<1	N/A	N/A
TOTAL		100 %		

NOTES:
(1). CONCENTRATIONS VARY DEPENDING ON THE STATE OF CHARGE OR DISCHARGE.
(2). TWA IS THE TIME WEIGHTED AVERAGE CONCENTRATION OVER AN 8-HOUR PERIOD.

SECTION III - PHYSICAL DATA

CADMIUM:

MELTING POINT (DEG. F): 610

BOILING POINT (DEG. F): 1,407

% VOLATILE BY VOLUME:

VAPOR PRESSURE (MMHG):

EVAPORATION RATE:

VAPOR DENSITY (AIR = 1):

SPECIFIC GRAVITY (H2O): 8.65 @ 77 DEG. F

SOLUBILITY IN WATER: INSOLUBLE

APPEARANCE AND ODOR: SILVER-WHITE, BLUE-TINGED, LUSTROUS METAL

ELECTROLYTE SPECIFIC GRAVITY: 1.29 G/CM3

ELECTROLYTE VISCOSITY: 2.4 MPAS

(4MPAS: MILLI-PASCAL SECOND)

CADMIUM HYDROXIDE:

MELTING POINT (DEG. F):

BOILING POINT (DEG. C):

% VOLATILE BY VOLUME:

VAPOR PRESSURE (MMHG):

EVAPORATION RATE:

VAPOR DENSITY (AIR = 1):

SPECIFIC GRAVITY (H2O): 4.79

SOLUBILITY IN WATER: PRACTICALLY INSOLUBLE

APPEARANCE AND ODOR: POWDER

NICKEL POWDER:

MELTING POINT (DEG. F): 2,831

BOILING POINT (DEG. F): 5,134

% VOLATILE BY VOLUME:

VAPOR PRESSURE (MMHG):

EVAPORATION RATE:

VAPOR DENSITY (AIR = 1):

SPECIFIC GRAVITY (H2O): 8.90

SOLUBILITY IN WATER: INSOLUBLE

APPEARANCE AND ODOR: POWDER

NICKEL HYDROXIDE:

MELTING POINT (DEG. F): *

BOILING POINT (DEG. F):

% VOLATILE BY VOLUME:

VAPOR PRESSURE (MMHG):

EVAPORATION RATE:

VAPOR DENSITY (AIR = 1):

SPECIFIC GRAVITY (H2O):

SOLUBILITY IN WATER: INSOLUBLE

APPEARANCE AND ODOR: APPLE GREEN POWDER

* NOTE: DECOMPOSES ABOVE 392 DEG. F INTO NiO AND H2O.

POTASSIUM HYDROXIDE:

MELTING POINT (DEG. F): *

BOILING POINT (DEG. F):

% VOLATILE BY VOLUME:

VAPOR PRESSURE (MMHG):

EVAPORATION RATE:

VAPOR DENSITY (AIR = 1):

SPECIFIC GRAVITY (H2O):

SOLUBILITY IN WATER: SOLUBLE IN 0.9 PART WATER, 0.6 PART IN BOILING WATER

APPEARANCE AND ODOR: WHITE OR SLIGHTLY YELLOW

* NOTE: POTASSIUM HYDROXIDE IS PRESENT AS A LIQUID OR PASTE AND ACTS AS THE ELECTROLYTE IN THE BATTERY CELL.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NA

LOWER EXPLOSIVE LIMIT: NA

UPPER EXPLOSIVE LIMIT: NA

EXTINGUISHING MEDIA:

ANY CLASS OF EXTINGUISHING MEDIUM MAY BE USED ON THE BATTERIES OR THEIR PACKING MATERIAL.

SPECIAL FIRE FIGHTING PROCEDURES:

SPECIAL FIRE FIGHTING PROCEDURES:

EXPOSURE TO TEMPERATURES OF ABOVE 212 DEG. F CAN CAUSE EVAPORATION OF THE LIQUID CONTENT OF THE POTASSIUM HYDROXIDE ELECTROLYTE RESULTING IN THE RUPTURE OF THE CELL. POTENTIAL FOR EXPOSURE TO CADMIUM FUMES USING FIRE;

USE SELF-CONTAINED BREATHING APPARATUS.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUES: SEE SECTION II

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION:

DURING NORMAL USE INHALATION IS AN UNLIKELY ROUTE OF EXPOSURE DUE TO CONTAINMENT OF HAZARDOUS MATERIALS WITHIN THE BATTERY CASE. HOWEVER, SHOULD THE BATTERIES BE EXPOSED TO EXTREME HEAT OR PRESSURES CAUSING A BREACH IN THE BATTERY CELL CASE, EXPOSURE TO THE CONSTITUENTS MAY OCCUR. INHALATION OF COBALT DUSTS MAY RESULT IN PULMONARY CONDITIONS.

INGESTION:
IF THE BATTERY CASE IS BREACHED IN THE DIGESTIVE TRACT, THE ELECTROLYTE MAY CAUSE LOCALIZED BURNS.

SKIN ABSORPTION: NO EVIDENCE OF ADVERSE EFFECTS FROM AVAILABLE DATA.

SKIN CONTACT:
EXPOSURE TO THE ELECTROLYTE CONTAINED INSIDE THE BATTERY MAY RESULT IN CHEMICAL BURNS. EXPOSURE TO NICKEL MAY CAUSE DERMATITIS IN SOME SENSITIVE INDIVIDUALS.

EYE CONTACT:
EXPOSURE TO THE ELECTROLYTE CONTAINED INSIDE THE BATTERY MAY RESULT IN SEVERE IRRITATION AND CHEMICAL BURNS.

CARCINOGENICITY:
NICKEL HAS BEEN IDENTIFIED BY THE NATIONAL TOXICOLOGY PROGRAM (NTP) AS REASONABLY ANTICIPATED TO BE A CARCINOGEN. COBALT HAS BEEN IDENTIFIED BY IARC AS A 2B CARCINOGEN.

OTHER EFFECTS OF REPEATED (CHRONIC) EXPOSURE:
CHRONIC OVEREXPOSURE TO NICKEL MAY RESULT IN CANCER; DERMAL CONTACT MAY RESULT IN DERMATITIS IN SENSITIVE INDIVIDUALS.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
A KNOWLEDGE OF THE AVAILABLE TOXICOLOGY INFORMATION AND OF THE PHYSICAL AND CHEMICAL PROPERTIES OF THE MATERIAL SUGGESTS THAT OVEREXPOSURE IS UNLIKELY TO AGGRAVATE EXISTING MEDICAL CONDITIONS.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN:
IF THE INTERNAL CELL MATERIALS OF AN OPENED BATTERY CELL COMES INTO CONTACT WITH THE SKIN, IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES.

INHALATION:
IF POTENTIAL FOR EXPOSURE TO FUMES OR DUSTS OCCURS, REMOVE IMMEDIATELY TO FRESH AIR AND SEEK MEDICAL ATTENTION.

EYES:
IF THE CONTENTS FROM AN OPENED BATTERY COMES INTO CONTACT WITH THE EYES, IMMEDIATELY FLUSH EYES WITH WATER CONTINUOUSLY FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

THE BATTERIES ARE STABLE UNDER NORMAL OPERATING CONDITIONS.

HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF NICKEL AND CADMIUM.

CONDITIONS TO AVOID: HEAT, OPEN FLAMES, SPARKS, AND MOISTURE.

POTENTIAL INCOMPATIBILITIES (I.E., MATERIALS TO AVOID CONTACT WITH):
THE BATTERY CELLS ARE ENCASED IN A NON-REACTIVE COVERING; HOWEVER, IF THE COVERING IS BREACHED, AVOID CONTACT OF INTERNAL BATTERY COMPONENTS WITH ACIDS, ALKALINES, AND CARBONATE COMPOUNDS.

SECTION VII - SPILL AND LEAK PROCEDURES

SPILL AND LEAKS ARE UNLIKELY BECAUSE CELLS ARE CONTAINED IN A HERMETICALLY SEALED CASE. IF THE BATTERY CASE IS BREACHED, DON PROTECTIVE CLOTHING THAT IS IMPERVIOUS TO CAUSTIC MATERIALS AND ABSORB OR PACK SPILL RESIDUES IN INERT MATERIAL. DISPOSE OF AS A HAZARDOUS WASTE IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS. RESIDUAL SPILL RESIDUES MAY BE CHARACTERIZED AS D002 (CAUSTIC) AND D006 (CADMIUM) PURSUANT TO THE FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA). SEE SECTION IV FOR RESPONSE TO FIRES OR EXPLOSIONS.

SECTION VIII - SAFE HANDLING AND USE

VENTILATION REQUIREMENTS: NOT REQUIRED UNDER NORMAL USE.

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL USE.

EYE PROTECTION: NOT REQUIRED UNDER NORMAL USE.

GLOVES: NOT REQUIRED UNDER NORMAL USE.

SECTION IX - PRECAUTIONS FOR SAFE HANDLING AND USE

STORAGE:
STORE IN A COOL PLACE, BUT PREVENT CONDENSATION ON CELL OR BATTERY TERMINALS. ELEVATED TEMPERATURES MAY RESULT IN REDUCED BATTERY LIFE. OPTIMAL STORAGE TEMPERATURES ARE BETWEEN -31 DEG. F AND 95 DEG. F.

MECHANICAL CONTAINMENT:
IF THERE ARE SPECIAL ENCASEMENT OR SEALING REQUIREMENTS, CONSULT YOUR SANYO ENERGY CORP. REPRESENTATIVE ABOUT POSSIBLE CELL HAZARD PRECAUTIONS OR LIMITATIONS.

HANDLING:
ACCIDENTAL SHORT CIRCUIT WILL BRING HIGH TEMPERATURE ELEVATION TO THE BATTERY AS WELL AS SHORTEN THE BATTERY LIFE. BE SURE TO AVOID SHORTCIRCUITING THE BATTERY. BE SURE TO AVOID SHORT CIRCUITING THE BATTERY CELL CASE. BATTERIES PACKAGED IN BULK CONTAINERS SHOULD NOT BE SHOWN. METAL COVERED TABLES OR BENCHES USED FOR ASSEMBLY OF BATTERIES INTO DEVICES CAN BE THE SOURCE OF SHORT CIRCUITS. APPLY INSULATING MATERIAL TO ASSEMBLY WORK SURFACE. IF SOLDERING OR WELDING TO THE CASE OF THE BATTERY IS REQUIRED, CONSULT YOUR SANYO ENERGY CORP. REPRESENTATIVE FOR PROPER PRECAUTIONS TO PREVENT SEAL DAMAGE OR EXTERNAL SHORT CIRCUIT.

CHARGING:
THIS BATTERY IS DESIGNED FOR RECHARGING. A LOSS OF VOLTAGE AND CAPACITY OF BATTERIES DUE TO SELF-DISCHARGE DURING PROLONGED STORAGE IS UNAVOIDABLE. CHARGE BATTERY BEFORE USE. OBSERVE THE SPECIFIED CHARGE RATE SINCE HIGHER RATES CAN CAUSE A RISE IN INTERNAL GAS PRESSURE THAT MAY RESULT IN DAMAGING

HEAT GENERATION OR CELL RUPTURE AND/OR VENTING.

LABELING:
IF SEVERAL LABEL VENTINGS ARE NOT VISIBLE, IT IS IMPORTANT TO PROVIDE A DEVICE LABEL STATING:

CAUTION:
DO NOT EXPOSE IN FIRE, MIX WITH OTHER BATTERY TYPES, CHARGE ABOVE SPECIFIED RATE, CONNECT UNSPECIALLY, OR SHORT CIRCUIT, WHICH MAY RESULT IN OVERHEATING, EXPLOSION OR LEAKAGE OF CELL CONTENTS.

SOLDERING/WELDING:
IF SOLDERING OR WELDING TO THE CASE OF THE BATTERY IS REQUIRED, CONSULT YOUR SANYO ENERGY CORP. REPRESENTATIVE FOR PROPER PRECAUTIONS TO PREVENT SEAL DAMAGE OR EXTERNAL SHORT CIRCUIT.

SECTION X - RECYCLING AND DISPOSAL

SANYO ENCOURAGES BATTERY RECYCLING. OUR NICKEL CADMIUM BATTERIES ARE RECYCLABLE THROUGH THE RECHARGEABLE BATTERY RECYCLING CORPORATION'S (RERC) CHARGE UP TO RECYCLE PROGRAM. FOR INFORMATION CALL 1-800-3-BATTERY OR SEE THEIR WEBSITE AT WWW.RERC.ORG. NICKEL CADMIUM BATTERIES MUST BE HANDLED IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL LAWS AND REGULATIONS.

RERC
NI-CO
RECYCLE
1.800.822.8837

DO NOT INCINERATE OR SUBJECT BATTERY CELLS TO TEMPERATURES IN EXCESS OF 212 F. SUCH TREATMENT CAN VAPORIZE THE LIQUID ELECTROLYTE CAUSING CELL RUPTURE. INCINERATION MAY RESULT IN CADMIUM EMISSIONS.

SECTION XI - TRANSPORTATION

SANYO SEALED NICKEL CADMIUM BATTERIES ARE CONSIDERED TO "DRY CELL" BATTERIES AND NOT SUBJECT TO HAZARDOUS MATERIALS (DANGEROUS GOODS) REGULATIONS FOR THE PURPOSE OF TRANSPORTATION BY THE U.S. DEPARTMENT OF TRANSPORTATION (DOT), THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO), THE INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) OR THE INTERNATIONAL MARITIME ORGANIZATION (IMO).

THE ONLY DOT REQUIREMENT FOR SHIPPING NICKEL CADMIUM BATTERIES ARE CONTAINED IN SPECIAL PROVISION 130 WHICH STATES, "BATTERIES, DRY" ARE NOT SUBJECT TO THE REQUIREMENTS OF THIS SUBCHAPTER WHEN THEY ARE SECURELY PACKAGED AND OFFERED FOR TRANSPORTATION IN A MANNER THAT PREVENTS THE DANGEROUS EVOLUTION OF HEAT (FOR EXAMPLE, BY THE EFFECTIVE INSULATION OF EXPOSED TERMINALS) AND PROTECTS AGAINST SHORT CIRCUITS." A SIMILAR REQUIREMENT IS CONTAINED IN 49 CFR 173.21(C) OF THE U.S. DOT HAZARDOUS MATERIALS REGULATIONS.

THE LATA DANGEROUS GOODS REGULATIONS CONTAIN A SIMILAR REQUIREMENT IN SPECIAL PROVISION 133 THAT STATES, "THIS ENTRY APPLIES TO BATTERIES, ELECTRIC STORAGE, NOT OTHERWISE LISTED IN SUBSECTION 4.2-LIST OF DANGEROUS GOODS. EXAMPLES OF SUCH BATTERIES ARE ALKALI-MANGANESE, ZINC-CARBON, NICKEL-METAL HYDRIDE, AND NICKEL CADMIUM BATTERIES. ANY ELECTRICAL BATTERY OR BATTERY POWERED DEVICE HAVING THE POTENTIAL OF DANGEROUS EVOLUTION OF HEAT THAT IS NOT PREPARED SO AS TO PREVENT A SHORT-CIRCUIT (E.G. IN THE CASE OF BATTERIES, BY THE EFFECTIVE INSULATION OF EXPOSED TERMINALS); OR, IN THE CASE OF EQUIPMENT, BY DISCONNECTION OF THE BATTERY AND PROTECTION OF EXPOSED TERMINALS) IS FORBIDDEN FROM TRANSPORT."

FAILURE TO COMPLY WITH THESE REQUIREMENTS MAY RESULT IN SUBSTANTIAL CIVIL PENALTIES.

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