SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : p-Chloroaniline
Catalog Number : io-1960
CAS Number : 106-47-8
Identified uses : Laboratory chemicals, manufacture of chemical compounds
Company : Ionz

>> R&D Use only

2. Hazards Identification

GHS Classification:

Flammable liquid (category 2)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 3)
Specific target organ toxicity, single exposure (Category 1)

Pictogram(s)

GHS Hazard Statements

>> H301 (100%): Toxic if swallowed [Danger Acute toxicity, oral]

>> H311 (99.4%): Toxic in contact with skin [Danger Acute toxicity, dermal]

>> H317 (99.4%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H331 (99.4%): Toxic if inhaled [Danger Acute toxicity, inhalation]

>> H350 (99.4%): May cause cancer [Danger Carcinogenicity]

>> H400 (98.7%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (99.4%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P203, P261, P262, P264, P270, P271, P272, P273, P280, P301+P316, P302+P352, P304+P340, P316, P318, P321, P330, P333+P317, P361+P364, P362+P364, P391, P403+P233, P405, and P501

Health Hazards:

>> Inhalation or ingestion causes bluish tint to fingernails, lips, and ears indicative of cyanosis; headache, drowsiness, and nausea, followed by unconsciousness. Liquid can be absorbed through skin and cause similar symptoms. Contact with eyes causes irritation. (USCG, 1999)

>> Special Hazards of Combustion Products: Irritating and toxic hydrogen chloride and oxides of nitrogen may form in fires. (USCG, 1999)

>> Combustible. Gives off irritating or toxic fumes (or gases) in a fire.

3. Composition/Information On Ingredients

Chemical name : p-Chloroaniline
CAS Number : 106-47-8
Molecular Formula : C6H6ClN
Molecular Weight : 127.5700 g/mol

4. First Aid Measures

First Aid:

>> EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

>> SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

>> INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Refer for medical attention.

Skin First Aid

>> Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Eye First Aid

>> First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Ingestion First Aid

>> Rinse mouth. Refer for medical attention .

5. Fire Fighting Measures

>> Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

>> SMALL FIRE: Dry chemical, CO2 or water spray.

>> LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal. Avoid aiming straight or solid streams directly onto the product.

>> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks in direct contact with flames. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2024)

>> Use water spray, powder, foam, carbon dioxide.

6. Accidental Release Measures

Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

>> Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

>> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Personal protection: P3 filter respirator for toxic particles and chemical protection suit. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Separated from strong oxidants and food and feedstuffs.

Storage Conditions:

>> Storage temperature: ambient.

8. Exposure Control/ Personal Protection

MAK (Maximale Arbeitsplatz Konzentration)

>> skin absorption (H); sensitization of skin (SH); carcinogen category: 2

Inhalation Risk:

>> A harmful concentration of airborne particles can be reached quickly when dispersed.

Effects of Short Term Exposure:

>> The substance is irritating to the eyes. The substance may cause effects on the red blood cells. This may result in lesions of blood cells and the formation of methaemoglobin. Medical observation is indicated. The effects may be delayed.

Effects of Long Term Exposure:

>> Repeated or prolonged contact may cause skin sensitization. The substance may have effects on the spleen. Tumours have been detected in experimental animals but may not be relevant to humans.

Fire Prevention

>> NO open flames.

Exposure Prevention

>> PREVENT DISPERSION OF DUST! STRICT HYGIENE! IN ALL CASES CONSULT A DOCTOR!

Inhalation Prevention

>> Use local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear safety goggles or eye protection in combination with breathing protection.

Ingestion Prevention

>> Do not eat, drink, or smoke during work.

Exposure Control and Personal Protection

Exposure Summary

>> Biological Exposure Indices (BEI) [ACGIH] - Methemoglobin in blood = 1.5% of hemoglobin during or at end of shift. [ACGIH]

9. Physical And Chemical Properties

Molecular Weight:

>> 127.57

Exact Mass:

>> 127.0188769

Physical Description:

>> P-chloroaniline appears as a white or pale yellow solid. Melting point 69.5 °C.

>> COLOURLESS-TO-YELLOW CRYSTALS WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Orthorhombic crystals from alcohol or petroleum ether

Odor:

>> SLIGHTLY SWEETISH; CHARACTERISTIC AMINE ODOR

Boiling Point:

>> 450 °F at 760 mmHg (NTP, 1992)

>> 232 °C

Melting Point:

>> 162.5 °F (NTP, 1992)

>> 69-72.5 °C

Flash Point:

>> 235 °F (NTP, 1992)

>> 120-123 °C o.c.

Solubility:

>> less than 1 mg/mL at 74.3 °F (NTP, 1992)

>> Solubility in water, g/100ml at 20 °C: 0.39

Density:

>> 1.43 at 66.2 °F (USCG, 1999) - Denser than water; will sink

>> Relative density (water = 1): 1.4

Vapor Density:

>> 4.41 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 4.4

Vapor Pressure:

>> 0.015 mmHg at 68 °F ; 0.05 mmHg at 86 °F (NTP, 1992)

>> Vapor pressure, Pa at 20 °C: 2

LogP:

>> log Kow = 1.83 at pH 7.4

>> 1.8

Stability/Shelf Life:

>> Stability during transport: stable.

Autoignition Temperature:

>> 685 °C

Decomposition:

>> When heated to decomposition it emit toxic fumes of /hydrogen chloride and nitrogen oxides/.

Heat of Combustion:

>> -11,000 BTU/LB= -6,000 CAL/G= -250X10+5 J/KG

Heat of Vaporization:

>> 12,832.8 gcal/gmole

Ionization Efficiency:

The ratio of the number of ions formed to the number of electrons or photons used in an ionization process.

Ionization mode

>> Positive

logIE

>> 2.97

pH

>> 2.7

Instrument

>> Agilent XCT

Ion source

>> Electrospray ionization

Additive

>> formic acid (5.3nM)

Organic modifier

>> MeCN (80%)

Reference

>> DOI:10.1038/s41598-020-62573-z

Refractive Index:

>> Index of refraction: 1.5546 at 87 °C/D

Dissociation Constants:

>> pKa= 3.982 at 25 °C (conjugate acid)

10. Stability And Reactivity

>> Insoluble in cold water. Soluble in hot water [Hawley].

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION: 4-Chloroaniline (PCA) is a colorless to slightly amber-colored crystalline solid with a mild aromatic odor. The chemical is soluble in water and in common organic solvents. PCA is used as an intermediate in the production of a number of products, including agricultural chemicals, azo dyes and pigments, cosmetics, and pharmaceutical products. HUMAN EXPOSURE: In humans, hemoglobin adducts are detectable as early as 30 min after accidental exposure, with a maximum level at 3 hr. Slow acetylating individuals have a higher potency to form hemoglobin adducts compared with fast acetylators. Excretion in humans occurs primarily via the urine, with PCA and its conjugates appearing as early as 30 min after exposure. Excretion takes place mainly during the first 24 h and is almost complete within 72 h. Data on occupational exposure of humans to PCA are mostly from a few older reports of severe intoxications after accidental exposure to PCA during production. Symptoms include increased methemoglobin and sulfhemoglobin levels, cyanosis, the development of anemia, and changes due to anoxia. PCA has a strong tendency to form hemoglobin adducts, and their determination can be used in biomonitoring of employees exposed to 4-chloroaniline in the workplace. There are reports of severe methemoglobinemia in neonates from neonatal intensive care units in two countries where premature babies were exposed to PCA as a breakdown product of chlorohexidine; the chlorohexidine, which had been inadvertently used in the humidifying fluid, broke down to PCA upon heating in a new type of incubator. Three neonates in one report (14.5-43.5% methemoglobin) and 33 of 415 neonates in another report (6.5-45.5% methemoglobin during the 8-month screening period) were found to be methemoglobin positive. A prospective clinical study showed that immaturity, severe illness, time exposed to PCA, and low concentrations of NADH reductase probably contributed to the condition. ANIMAL STUDIES: PCA is rapidly absorbed and metabolized. The main metabolic pathways of PCA are as follows: a) C-hydroxylation in the ortho position to yield 2-amino-5-chlorophenol followed by sulfate conjugation to 2-amino-5-chlorophenyl sulfate, which is excreted as is or after N-acetylation to N-acetyl-2-amino-5-chlorophenyl sulfate; b) N-acetylation to 4-chloroacetanilide (found mainly in blood), which is further transformed to 4-chloroglycolanilide and then to 4-chlorooxanilic acid (found in the urine); or c) N-oxidation to 4-chlorophenylhydroxylamine and further to 4-chloronitrosobenzene (in erythrocytes). Reactive metabolites of PCA bind covalently to hemoglobin and to proteins of liver and kidney. Excretion in animals occurs primarily via the urine, with PCA and its conjugates appearing as early as 30 min after exposure. Excretion takes place mainly during the first 24 hr and is almost complete within 72 hr. The prominent toxic effect is methemoglobin formation. PCA is a more potent and faster methemoglobin inducer than aniline. PCA also exhibits a nephrotoxic and hepatotoxic potential. PCA was found to be non-irritating to rabbit skin and slightly irritating to rabbit eyes. A weak sensitizing potential was demonstrated with several test systems. Repeated exposure to PCA leads to cyanosis and methemoglobinemia, followed by effects in blood, liver, spleen, and kidneys, manifested as changes in hematological parameters, splenomegaly, and moderate to heavy hemosiderosis in spleen, liver, and kidney, partially accompanied by extramedullary hematopoiesis. These effects occur secondary to excessive compound-induced hemolysis and are consistent with a regenerative anemia. PCA is carcinogenic in male rats, with the induction of unusual and rare tumors of the spleen (fibrosarcomas and osteosarcomas), which is typical for aniline and related substances. In female rats, the precancerous stages of the spleen tumors are increased in frequency. Increased incidences of pheochromocytoma of the adrenal gland in male and female rats may have been related to PCA administration. There was some evidence of carcinogenicity in male mice, indicated by hepatocellular tumors and hemangiosarcoma. PCA shows transforming activity in cell transformation assays. A variety of in vitro genotoxicity tests Salmonella mutagenicity test, mouse lymphoma assay, chromosomal aberration test, induction of sister chromatid exchange indicate that PCA is possibly genotoxic, although results are sometimes conflicting. Due to lack of data, it is impossible to make any conclusion about PCA's in vivo genotoxicity. No studies are available on reproductive toxicity. From valid test results available on the toxicity of PCA to various aquatic organisms, PCA can be classified as moderately to highly toxic in the aquatic compartment. Therefore, a possible risk to aquatic organisms, particularly benthic species, cannot be completely ruled out, particularly in waters where significant amounts of particulate matter inhibit rapid photomineralization. Experiments with Daphnia magna revealed significantly reduced toxicity with increasing concentrations of dissolved humic materials in the medium, possibly caused by reduced bioavailability of PCA from adsorption to dissolved humic materials.

EPA Provisional Peer-Reviewed Toxicity Values:

This section provides the EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs) and links of related assessment documents.

Chemical Substance

>> p-Chloroaniline

Reference Dose (RfD), Subchronic

>> 5 x 10^-4 mg/kg-day

PPRTV Assessment

>> PDF Document

Weight-Of-Evidence (WOE)

>> Likely to be carcinogenic to humans

Last Revision

>> 2008

Evidence for Carcinogenicity:

Evidence that this chemical does or may cause cancer. The information here is collected from various sources by the Hazardous Substances Data Bank (HSDB).

>> Cancer Classification: Group B2 Probable Human Carcinogen

Carcinogen Classification:

This section provides the International Agency for Research on Cancer (IARC) Carcinogenic Classification and related monograph links. In the IARC Carcinogenic classification, chemicals are categorized into four groups: Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), Group 2B (possibly carcinogenic to humans), and Group 3 (not classifiable as to its carcinogenicity to humans).

IARC Carcinogenic Agent

>> para-Chloroaniline

IARC Carcinogenic Classes

>> Group 2B: Possibly carcinogenic to humans

IARC Monographs

>> Volume 57: (1993) Occupational Exposures of Hairdressers and Barbers and Personal Use of Hair Colourants; Some Hair Dyes, Cosmetic Colourants, Industrial Dyestuffs and Aromatic Amines

Exposure Routes:

>> The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation Exposure

>> Blue lips, fingernails and skin. Confusion. Convulsions. Dizziness. Headache. Nausea. Unconsciousness.

Skin Exposure

>> MAY BE ABSORBED! Further see Inhalation.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> See Inhalation.

Target Organs:

Organs that are affected by exposure to this chemical. Information in this section reflects human data unless otherwise noted.

>> Immune

Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

>> Occupational hepatotoxin - Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.

>> Methemoglobinemia - The presence of increased methemoglobin in the blood; the compound is classified as primary toxic effect.

>> Skin Sensitizer - An agent that can induce an allergic reaction in the skin.

>> IARC Carcinogen - Class 3: Chemicals are not classifiable by the International Agency for Research on Cancer.

Toxicity Data:

>> LC50 (rat) = 2,340 mg/m3/4h

Antidote and Emergency Treatment:

>> Methylene blue, alone or in combination with oxygen, is indicated as treatment in nitrite-induced methemoglobinemia.

Human Toxicity Excerpts:

>> /HUMAN EXPOSURE STUDIES/ In the United Kingdom between 1961 and 1980, chloroaniline, p-toluidine, nitrobenzene, and nitrochlorobenzene were the most common industrial causes of methemoglobinemia. Dermal exposure was a more frequent route of toxicity than inhalation with these compounds. /Chloroaniline/

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ Nephrotoxicity was also reported in male Fischer 344 rats given a single ip dose of para-chloroaniline (purity unspecified) at 1.5 mmol (191 mg)/kg bw in saline, which induced decreased urine volume, hematuria, elevated blood urea nitrogen and decreased renal cortical uptake of para-aminohippurate... .

Non-Human Toxicity Values:

>> LD50 Rat male oral 200-480 mg/kg bw /Purity and vehicle unspecified/

National Toxicology Program Studies:

Reports from the National Toxicology Program, an interagency program supported by three government agencies (NIH, FDA, and CDC) within the Department of Health and Human Services. This program plays a critical role in generating, interpreting, and sharing toxicological information about chemicals of public health concerns.

>> A bioassay for the possible carcinogenicity of p-chloroaniline was conducted using Fischer 344 rats and B6C3F1 mice. p-Chloroaniline was admin in the feed, at either two concn, to groups of 50 male and 50 female animals of each species. Twenty animals of each sex and species were placed on test as controls. The high and low dietary concentrations of p-chloroaniline were, respectively, 500 and 250 ppm for rats and 5,000 and 2,500 ppm for mice. The cmpd was administered in the diet for 78 wk, followed by an observation period of 24 wk for rats and 13 wk for mice. ... The finding of small numbers of fibromas and sarcomas in the spleens of male rats was strongly suggestive of carcinogenicity because of the rarity of these tumors in the spleens of control rats. Hemangiomatous tumors in dosed mice may also have been associated with the administration of p-chloroaniline. ... Under the conditions of this bioassay, /there was not/ sufficient evidence ... to establish the carcinogenicity of p-chloroaniline for Fischer 344 rats or B6C3F1 mice. Levels of Evidence of Carcinogenicity: Male Rats: Equivocal; Female Rats: Negative; Male Mice: Equivocal; Female Mice: Equivocal.

TSCA Test Submissions:

Under the Toxic Substances Control Act (TSCA), EPA has broad authority to issue regulations designed to require manufacturers (including importers) or processors to test chemical substances and mixtures for health and environmental effects. This section provides information on test reports submitted for this chemical under TSCA.

>> p-Chloroaniline was examined for mutagenic activity in Salmonella typhimurium tester strains TA98, TA100, TA1535 and TA1537 with and without metabolic activation provided by rat liver S9 fraction. The method used for inducing liver enzyme activities was not reported. The test article was not mutagenic when it was administered in the plate incorporation assay at concentrations of 1, 3, 10, and 30 ug/plate either with or without activation. The investigators reported that p-chloroaniline in a previous assay using an old protocol was toxic to cells at 100 ul/plate, however it was observed to be non-toxic over the concentration range tested in this assay.

Populations at Special Risk:

>> Some individuals who are deficient in NADH-methemoglobin reductase may be particularly sensitive to 4-chloroaniline... .

12. Ecological Information

Resident Soil (mg/kg)

>> 2.70e+00

Industrial Soil (mg/kg)

>> 1.10e+01

Tapwater (ug/L)

>> 3.70e-01

MCL (ug/L)

>> 6.0E+01(G)

Risk-based SSL (mg/kg)

>> 1.60e-04

Oral Slope Factor (mg/kg-day)-1

>> 2.00e-01

Chronic Oral Reference Dose (mg/kg-day)

>> 5.00e-04

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

Fraction of Contaminant Absorbed Dermally from Soil

>> 0.1

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms. It is strongly advised not to let the chemical enter into the environment.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> WITH INCR TEMP, SOIGNES SOIL COLLOIDS HAVE HIGHER AFFINITY FOR 4-CHLOROANILINE, IN COMPARISON TO ANILINE.

13. Disposal Considerations

Spillage Disposal

>> Personal protection: P3 filter respirator for toxic particles and chemical protection suit. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Disposal Methods

>> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number P024, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> A good candidate for rotary kiln incineration at a temperature range of 820 to 1,600 °C and residence times of seconds for liquids and gases, and hours for solids.

>> PRECAUTIONS FOR "CARCINOGENS": There is no universal method of disposal that has been proved satisfactory for all carcinogenic compounds & specific methods of chem destruction ... published have not been tested on all kinds of carcinogen-containing waste. ... summary of avail methods & recommendations ... /given/ must be treated as guide only. /Chemical Carcinogens/

>> PRECAUTIONS FOR "CARCINOGENS": ... Incineration may be only feasible method for disposal of contaminated laboratory waste from biological expt. However, not all incinerators are suitable for this purpose. The most efficient type ... is probably the gas-fired type, in which a first-stage combustion with a less than stoichiometric air:fuel ratio is followed by a second stage with excess air. Some ... are designed to accept ... aqueous & organic-solvent solutions, otherwise it is necessary ... to absorb soln onto suitable combustible material, such as sawdust. Alternatively, chem destruction may be used, esp when small quantities ... are to be destroyed in laboratory. /Chemical Carcinogens/

>> For more Disposal Methods (Complete) data for 4-CHLOROANILINE (7 total), please visit the HSDB record page.

14. Transport Information

DOT

p-Chloroaniline
6.1
UN Pack Group: II
Reportable Quantity of 1000 lb or 454 kg

IATA

p-Chloroaniline
6.1,
UN Pack Group: II

15. Regulatory Information

TSCA Requirements:

This section provides information on requirements concerning this chemical under the Toxic Substances Control Act (TSCA) of 1976. TSCA provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

>> Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Benzenamine, 4-chloro is included on this list.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Benzenamine, 4-chloro-

REACH Registered Substance

>> Status: Active Update: 12-10-2010 https://echa.europa.eu/registration-dossier/-/registered-dossier/1462

>> Status: Active Update: 29-08-2022 https://echa.europa.eu/registration-dossier/-/registered-dossier/14532

>> Status: No longer Valid Update: 21-02-2014 https://echa.europa.eu/registration-dossier/-/registered-dossier/6684

>> Status: Active Update: 25-09-2012 https://echa.europa.eu/registration-dossier/-/registered-dossier/1796

New Zealand EPA Inventory of Chemical Status

>> 4-Chloroaniline: Does not have an individual approval but may be used under an appropriate group standard

16. Other Information

Toxic Combustion Products:

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> Irritating and toxic hydrogen chloride and oxides of nitrogen may form in fires.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Benzenamine, 4-chloro-: Human health tier II assessment