ANILINE

GHS Safety Data Sheet

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
ANILINE

OTHER NAMES

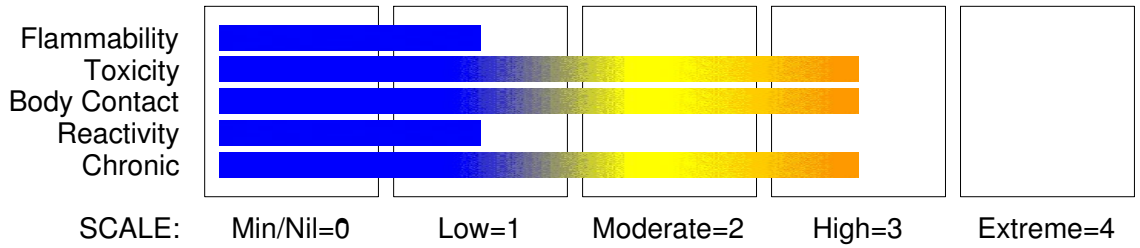
C6-H7-N, C6H5NH2, aminobenzene, "aniline oil", phenylamine, benzenamine, aminophen, "benzene, amino", benzidam, "blue oil", cyanol, krystallin, kyanol, arylamine

PROPER SHIPPING NAME
ANILINE

PRODUCT USE
In the manufacture of dyestuffs and dyestuff intermediates, plastics, resins, photographic developers, pharmaceuticals, antioxidants, varnishes, perfumes, shoe blacks (rubber accelerator and in vulcanizing rubber), isocyanates, explosives, phenolics, herbicides and pesticides.
A solvent in organic synthesis.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



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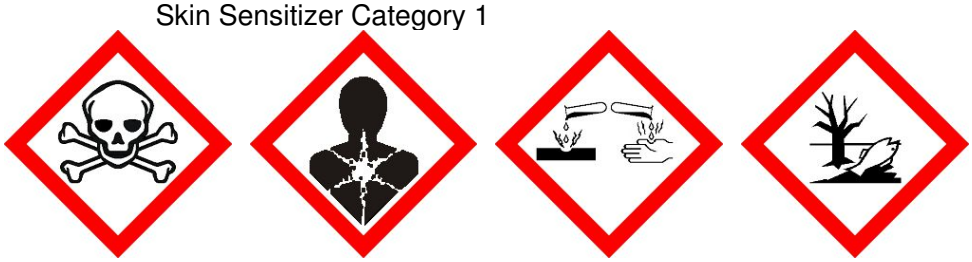
Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Aquatic Hazard Category 1
Acute Toxicity (Dermal) Category 3
Acute Toxicity (Inhalation) Category 2
Acute Toxicity (Oral) Category 3
Carcinogen Category 2
Flammable Liquid Category 4
Organ Damage Category 1
Reproductive Toxicity Category 1B
Serious Eye Damage Category 1
Skin Corrosion/Irritation Category 3
Skin Sensitizer Category 1



EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H227 H330 H311 H301 H316 H317 H351 H360 H372 H318 H400
Combustible Liquid
Fatal if inhaled
Toxic in contact with skin
Toxic if swallowed
Causes mild skin irritation
May cause allergic skin reaction
Suspected of causing cancer
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure.
Causes serious eye damage
Very toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/clothing
Avoid breathing dust/fume/gas/mist/vapours/spray.
Use only outdoors or in a well ventilated area.
Wear respiratory protection.
Do not handle until all safety precautions have been read and understood.

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Use explosion-proof electrical/ventilating/lighting/equipment
Do not breathe dust/fume/gas/mist/vapours/spray.
Use personal protective equipment as required.
Contaminated clothing should not be allowed out of the workplace.
Keep away from flames and hot surfaces.
Obtain special instructions before use.

Response

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Keep container tightly closed.
If eye irritation persists, get medical advice/attention.
If skin irritation or rash occurs, seek medical advice/attention.
If exposed or concerned: Get medical attention advice.
Wear eye/face protection.
Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation occurs, seek medical advice/attention.
Specific treatment: refer to Label or MSDS.
Get medical advice/attention if you feel unwell.
Call a POISON CENTER or doctor/physician if you feel unwell.
In case of fire, use dry agent for extinction.
In case of fire, use alcohol-type foam for extinction.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Remove/Take off immediately all contaminated clothing
Immediately call a POISON CENTER or doctor/physician.
Wash/Decontaminate removed clothing before reuse.
IF ON SKIN: Gently wash with plenty of soap and water.

Storage

Store locked up.
Store away from other materials

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
aniline	62-53-3	>99

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain

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open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Immediately flush body and clothes with large amounts of water, using safety shower if available.
· Quickly remove all contaminated clothing, including footwear.
· Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
· Transport to hospital, or doctor.

INHALED

· If inhaled, remove quickly from contaminated area.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

NOTES TO PHYSICIAN

The material may induce methaemoglobinaemia following exposure.
· Initial attention should be directed at oxygen delivery and assisted ventilation if necessary. Hyperbaric oxygen has not demonstrated substantial benefits.
· Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
· Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue. (Cyanosis, alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 50 minutes; repeat, using the same dose, if symptoms of hypoxia fail to subside within 1 hour.
· Thorough cleansing of the entire contaminated area of the body, including the scalp and nails, is of utmost importance.
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comment

continued...

1. Methaemoglobin in blood	1.5% of haemoglobin	During or end of shift	B, NS, SQ

B: Background levels occur in specimens collected from subjects NOT exposed
NS: Non-specific determinant; also observed after exposure to other materials
SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.
Preplacement and annual medical examinations with emphasis on blood (methaemoglobin), kidneys, liver, and cardiovascular system should be undertaken. Medical surveillance of aniline exposed workers should include periodic complete blood analysis.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Water spray or fog.
· Alcohol stable foam.
Dry chemical powder.
Carbon dioxide.

FIRE FIGHTING
Alert Fire Brigade and tell them location and nature of hazard.
Environmental hazard - contain spillage.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water course.
· Consider evacuation (or protect in place).
Cool fire exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD
Combustible liquid.
Moderate fire hazard when exposed to heat, flame or oxidisers.
Decomposes on heating and produces toxic fumes of carbon monoxide (CO) and nitrogen oxides (NOx).

FIRE INCOMPATIBILITY
Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Personal Protective Equipment
Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

continued...

MINOR SPILLS
Environmental hazard - contain spillage.
Clean up all spills immediately.
Wear protective clothing, impervious gloves and safety glasses.
Avoid breathing vapours and contact with skin and eyes.
Wipe up and absorb small quantities with vermiculite or other absorbent material.
Place in suitable containers for disposal.

MAJOR SPILLS
Pollutant - contain spillage.
Advise emergency services.
Clear area of personnel and move upwind.
Increase ventilation.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.

Stop leak if safe to do so.
Contain and absorb spill with sand, earth, inert material or vermiculite.
Collect and seal in labelled drums for disposal.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)
The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
aniline 100 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
aniline 10 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:
aniline 6 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:
aniline 5 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

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SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	+	X	X	+

+: May be stored together
O: May be stored together with specific preventions

continued...

X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Avoid breathing vapours and contact with skin and eyes.
Keep containers securely sealed when not in use.
until atmosphere has been checked.
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Wash hands with soap and water after handling.
Work clothes should be laundered separately: NOT at home.

SUITABLE CONTAINER

· Check that containers are clearly labelled.
Glass container.
Plastic container.
Metal can.

STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.
Avoid reaction with albumin, acids, alkalies, amines, halocarbons and solutions of iron, zinc and aluminium.
Aniline may react violently with acids, boron trichloride, diisopropyl peroxycarbonate, N-haloimide, hexachloromelamine, peroxyformic acid, chloropicrin.
May react explosively with benzyldiazonium-2-carboxylate, dibenzoyl peroxide, epichlorohydrin, fluorine nitrate, hydrogen peroxide, nitromethane, perchloric acid and formaldehyde, perchloryl fluoride, perchromates, peroxyformic acid peroxysulfuric acid, silver perchlorate, sodium perchlorate.
May ignite on contact with nitric acid, nitrosyl perchlorate, potassium peroxide, sodium peroxide and water, tetranitromethane.
Corrodes aluminium and zinc.

STORAGE REQUIREMENTS

Keep containers securely sealed.
Store in a cool area and away from sunlight.
Store in a well-ventilated area.
Store away from incompatible materials.
Store away from foodstuff containers.
Outside or detached storage is preferred.
Protect containers against physical damage.
Check regularly for spills and leaks.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
aniline		100 [Unch]

ODOUR SAFETY FACTOR (OSF)

OSF=0.91 (ANILINE)
Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

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MATERIAL DATA

Odour Threshold Value: 0.58-10 ppm (detection)
Threshold odour concentration, 50% recognition is >0.1 ppm, identification at 1 ppm.
NOTE: Detector tubes for aniline, measuring in excess of 0.5 ppm are commercially available.
Increased levels of methaemoglobin are detected in the blood of animals exposed at 5 ppm and following skin exposure by humans. The TLV-TWA is thought to provide protection against the significant risk of systemic effects.

PERSONAL PROTECTION

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EYE
· Chemical goggles.
· Full face shield.
DO NOT wear contact lenses.
· Eyewash unit.

HANDS/FEET
Butyl rubber gloves.

OTHER
· Impervious protective clothing.
Rubber apron.
Ensure there is ready access to a safety shower.

GLOVE SELECTION INDEX
Glove selection is based on a modified presentation of the:
" Forsberg Clothing Performance Index" .
The effect(s) of the following substance(s) are taken into account in the computer- generated selection: aniline

Protective Material	
BUTYL	A
BUTYL/NEOPRENE	A
NEOPRENE/NATURAL	A
NITRILE+PVC	A
PE/EVAL/PE	A
SARANEX- 23	A
VITON/NEOPRENE	A
PVA	A
TEFLON	A
PVC	B
NEOPRENE	B
NATURAL RUBBER	B
NITRILE	B
NATURAL+NEOPRENE	C

A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice

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of gloves which might otherwise be unsuitable following long-term or frequent use.
A qualified practitioner should be consulted.

RESPIRATOR
Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	AK- AUS	-
1000	50	-	AK- AUS
5000	50	Airline *	-
5000	100	-	AK- 2
10000	100	-	AK- 3
	100+		Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult
your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25- 0.5 m/s (50- 100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

continued...

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

A clear, colourless to light yellow, oily volatile liquid with a characteristic amine odour (unpleasant fishy odour). The liquid darkens on exposure to air and light, becoming dark brown in colour. Mixes with water (3.5%). Soluble in alcohol, ether, acetone, benzene, ligroin, chloroform, organic solvents. Viscosity is 44.7 mPa sec at 20 C.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Toxic or noxious vapours/gas.

Molecular Weight: 93.13	Boiling Range (°C): 184- 186
Melting Range (°C): - 6.2	Specific Gravity (water=1): 1.02 @ 20 C
Solubility in water (g/L): Miscible	pH (as supplied): Not applicable
pH (1% solution): ~8 (2%)	Vapour Pressure (kPa): 2.0 @ 25 C
Volatile Component (%vol): 100	Evaporation Rate: Not available
Relative Vapour Density (air=1): 3.2	Flash Point (°C): 70 (TCC)
Lower Explosive Limit (%): 1.3	Upper Explosive Limit (%): 11.0
Autoignition Temp (°C): 617	Decomposition Temp (°C): Not available
State: Liquid	Viscosity: Not available

log Kow (Sangster 1997): 0.9
log Kow: 0.90-0.98

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials.

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Stable under normal storage conditions.
Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia).

Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.

At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions. Levels exceeding 70% may be fatal.

EYE
When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.
The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN
Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.
Toxic effects may result from skin absorption.
The material may cause skin irritation after prolonged or repeated exposure and may

continued...

produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

INHALED

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

Principal routes of exposure are usually by.

skin contact/absorption and inhalation of vapour.

Chronic exposure may result in anaemia, anorexia, weight loss and has been reported to produce red blood cell damage. Kidney and liver damage has been reported in test animals. Chronic poisoning in humans is said to be due to central nervous system symptoms but this observation is contested by some authorities.

Repeated or prolonged contact may cause conjunctivitis and photophobia.

Aniline may also cause a brownish discolouration of the conjunctiva and cornea in the palpebral fissure.

Prolonged exposures to aniline produced haemolysis of red blood cells, and stimulation of bone marrow. Jaundice may also be present. The urine may be dark or wine coloured.

beta-Naphthylamine, a contaminant of commercial aniline is a potent carcinogen capable of producing papilloma in the bladder wall.

WARNING! - Avoid exposure of pregnant women to this substance, it may have adverse effects on embryo or foetus (AIHA J., 1976, 423).

In male rats several types of mesenchymal tumours, primarily of the spleen have been associated with administration of the compound.

Most arylamines are powerful haemopoietic poisons producing methaemoglobinaemia in humans. High chronic doses cause splenic congestion and in turn sarcoma formation. Single ring aromatic amines are relatively weak carcinogens requiring large doses to produce any effect in animal experiments. The polycyclic aromatic amines exhibit a wide range of carcinogenic activity which appear, in part, to be dependent on the position on which benzene rings are substituted and the nature of the substituent.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (rat) LD50: 250 mg/kg	Skin (rabbit): 500mg/24h- Moderate
Oral (human) LDLo: 350 mg/kg	Eye (rabbit): 102 mg - SEVERE
Inhalation (rat) LCLo: 250 ppm/4h	Eye (rabbit): 20 mg/24h- Moderate
Dermal (rat) LD50: 1400 mg/kg	

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

NOTE: The substance is classified under EC Directive on Dangerous Substances (67/548/EEC) : Possible risk of irreversible effects, (substances suspected of being carcinogenic

continued...

and/or mutagenic).
Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
NOTE: Impure technical grade aniline may also contain toluidines and xylidines which can give increased toxic hazard. Long continued employment in the manufacture of aniline dyes has been associated with the development of papillomatous growths of the bladder, some of which became malignant. Aniline itself has not been proven to be a carcinogen, but the intermediates benzidine and naphthylamines have been incriminated

Section 12 - ECOLOGICAL INFORMATION

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	134
Daphnia magna EC50 (48hr.) (mg/l):	0.1- 0.65
log Kow (Sangster 1997):	0.9
log Pow (Verschueren 1983):	0.90/0.98

log Kow: 0.90-0.98
Koc: 25.5
Half-life (hr) air: 3.3
Half-life (hr) H2O surface water: 52-520
Henry's Pa m^3 /mol: 0.136
BOD 5 if unstated: 1.42-2.26,62%
COD: 2.4,94%
ThOD: 2.41-3.18
BCF: <148
Log BCF: 0.6-0.78
Toxicity Fish: LC50(96)134mg/L
Toxicity invertebrate: cell mult. inhib. 24-130mg/L
Bioacculmulation: not sig
Nitrif. inhib.: 75% inhib at 2.5-7.7mg/L
Effects on algae and plankton: decr. in BOD,tox-0.4-10mg/L,LD50-20ppm
Degradation Biological: v sig
processes Abiotic: photox-uv in H2O,RxnOH*

Section 13 - DISPOSAL CONSIDERATIONS

DO NOT discharge into sewer or waterways.
Recycle wherever possible.
Bury or incinerate residue at an approved site.
Consult State Land Waste Management Authority for disposal.

WASTE DISPOSAL PROCEDURES
• Wear protective clothing and rubber gloves to control personal contact.
Dissolve 1mL aniline in 50mL of 3M sulfuric acid (prepared by adding 8mL of concentrated sulfuric acid to 21mL of water.) Over a period of one hour, stir 10g of potassium permanganate into the aniline solution. Stir the mixture at room temperature for 48 hours. Neutralise the solution with a 10% solution of sodium hydroxide or by adding solid sodium carbonate. Discard any clear liquid into the drain and dispose of any solid quantities with normal refuse [Armour 1996].

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SPILLAGE DISPOSAL
• Wear protective clothing, eye protection, butyl rubber gloves and breathing apparatus to dispose of an aniline spill. Contain and cover the spill with 1:1 :1
mixture by weight of sodium carbonate or calcium carbonate, calcium bentonite and sand. Scoop the mixture into a container of water, ensuring the sodium carbonate dissolves. Decant the liquid into a separate container. The solid residue is discarded with regular refuse. Slowly add 6M sulfuric acid to the liquid to obtain a pH of 2. To the acidified solution stir in solid potassium permanganate until the liquid is purple. Stand the mixture at room temperature for 48 hours, and then neutralise with solid sodium carbonate or 10% aqueous solution of sodium hydroxide. Add solid sodium bisulfite until the solution is colourless. Discard of any clear liquid into the drain and dispose of any solid residues with normal refuse [Armour 1996].

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC
HAZCHEM: 3X

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	None
UN Number:	1547	Packing Group:	II

Shipping Name:ANILINE

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1547	Packing Group:	II
ERG Code:	6L		

Shipping name:ANILINE

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
UN Number:	1547	Packing Group:	II
EMS Number:	F- A, S- A		

Shipping name:ANILINE

continued...

Section 15 - REGULATORY INFORMATION

REGULATIONS

aniline (CAS: 62-53-3) is found on the following regulatory lists;
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
International Agency for Research on Cancer (IARC) Carcinogens
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for aniline as CAS: 146997-94-6, CAS: 37342-16-8.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
aniline	62- 53- 3, 146997- 94- 6, 37342 - 16- 8

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

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