4-NITROANILINE

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Issue date: 16/04/2015 Revision date: 18/03/2024 Supersedes version of: 12/09/2022 Version: 13.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	:	Substance
Substance name	:	4-NITROANILINE
Chemical name	:	p-nitroaniline
EC Index-No.	:	612-012-00-9
EC-No.	:	202-810-1
CAS-No.	:	100-01-6
Product code	:	B2015
Product group	:	End product

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category	:	Professional use
Use of the substance/mixture	:	Laboratory chemicals
Function or use category	:	Laboratory chemicals

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Elemental Microanalysis Ltd
1 Hameldown Road
Okehampton, Devon, EX20 1UB
GB United Kingdom
T +44 1837 54446
enquiries@microanalysis.co.uk, https://www.elementalmicroanalysis.com/

1.4. Emergency telephone number

Emergency number	:	+44 (0) 7990 767375

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (inhal.), Category 3	H331
Acute toxicity (dermal), Category 3	H311
Acute toxicity (oral), Category 3	H301
Specific target organ toxicity – Repeated exposure, Category 2	H373
Hazardous to the aquatic environment – Chronic Hazard, Category 3	H412

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

May cause damage to organs through prolonged or repeated exposure. Toxic in contact with skin. Toxic if inhaled. Toxic if swallowed. Harmful to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS06 GHS08

Signal word (CLP) : Danger

Hazard statements (CLP)	:	H331 - Toxic if inhaled. H311 - Toxic in contact with skin. H301 - Toxic if swallowed. H373 - May cause damage to organs through prolonged or repeated exposure. H412 - Harmful to aquatic life with long lasting effects.
Precautionary statements (CLP)	:	P260 - Do not breathe dust. P280 - Wear eye protection, protective clothing, protective gloves. P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER, a doctor. P304+P340+P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER, a doctor. P320 - Specific treatment is urgent (see supplemental first aid instruction on this label). P321 - Specific treatment (see supplemental first aid instruction on this label).

2.3. Other hazards

Contains no PBT and/or vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type	:	Mono-constituent
Name	:	4-NITROANILINE
CAS-No.	:	100-01-6
EC-No.	:	202-810-1
EC Index-No.	:	612-012-00-9

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
NITROANILINE (P)	CAS-No.: 100-01-6 EC-No.: 202-810-1 EC Index-No.: 612-012-00-9	100	Acute Tox. 3 (Inhalation), H331 (ATE=0.5 mg/l/4h) Acute Tox. 3 (Dermal), H311 (ATE=300 mg/kg bodyweight) Acute Tox. 3 (Oral), H301 (ATE=75 mg/kg bodyweight) STOT RE 2, H373 Aquatic Chronic 3, H412

Full text of H- and EUH-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	:	Call a physician immediately.
First-aid measures after inhalation	:	Remove person to fresh air and keep comfortable for breathing. Call a doctor.
First-aid measures after skin contact	:	Wash skin with plenty of water. Take off immediately all contaminated clothing.
First-aid measures after eye contact	:	Rinse eyes with water as a precaution.
First-aid measures after ingestion	:	Rinse mouth. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin, eyes and clothing.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wear personal protective equipment. Use only outdoors or in a well-ventilated area.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

4-NITROANILINE (100-01-6)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0.1763158 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0.201 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects,oral	0.201 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0.05 mg/m³
Long-term - systemic effects, dermal	0.04347826 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0.024 mg/l
PNEC aqua (marine water)	0.0024 mg/l
PNEC aqua (intermittent, freshwater)	0.24 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	64.24742 mg/kg dwt
PNEC sediment (marine water)	64.24742 mg/kg dwt
PNEC (Soil)	
PNEC soil	25.96109 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	1 mg/l

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:
Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):

8.2.2.1. Eye and face protection

Eye protection:
Safety glasses

8.2.2.2. Skin protection

Skin and body protection:
Wear suitable protective clothing

Hand protection:
Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:
[In case of inadequate ventilation] wear respiratory protection.

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Colour	:	Yellow.
Molecular mass	:	138.12 g/mol Source: HSDB
Odour	:	Pungent.
Odour threshold	:	Not available
Melting point	:	158 °C Atm. press.: 975 hPa Decomposition: 'no' Sublimation: 'no'
Freezing point	:	Not applicable
Boiling point	:	> 800 °C Atm. press.: 975 hPa Decomposition: 'no'
Flammability	:	Non flammable.
Explosive limits	:	Not applicable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Flash point	:	100.8 °C Atm. press.: 975 hPa
Auto-ignition temperature	:	500 °C
Decomposition temperature	:	Not available
pH	:	7.45 Temp.: 24 °C Concentration: 1 vol%
pH solution	:	Not available
Viscosity, kinematic	:	Not applicable
Solubility	:	Water: 0.728 g/100ml at 30 °C Source: CHemIDplus
Partition coefficient n-octanol/water (Log Kow)	:	Not available
Partition coefficient n-octanol/water (Log Pow)	:	1.39 Source: HSDB,CHemIDplus
Vapour pressure	:	0.2 Pa at 20°C Source: IPCS
Vapour pressure at 50°C	:	Not available
Density	:	0.951 g/cm³ Type: 'bulk density' Temp.: 30 °C
Relative density	:	1.424 Source: HSDB
Relative vapour density at 20°C	:	4.77 Source: HSDB
Particle size	:	Not available

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Relative evaporation rate (butylacetate=1)	:	22.6

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral) : Toxic if swallowed.
Acute toxicity (dermal) : Toxic in contact with skin.
Acute toxicity (inhalation) : Toxic if inhaled.

4-NITROANILINE (100-01-6)	
LD50 oral rat	75 mg/kg Source: HSDB
LD50 oral	75 mg/kg bodyweight Animal: other:, Guideline: other:
LD50 dermal	500 mg/kg
LC50 Inhalation - Rat [ppm]	47.48475 ppm Animal: rat, Animal sex: male, Guideline: other:

NITROANILINE (P) (100-01-6)	
LD50 oral rat	75 mg/kg Source: HSDB
LD50 oral	75 mg/kg bodyweight Animal: other:, Guideline: other:
LC50 Inhalation - Rat [ppm]	47.48475 ppm Animal: rat, Animal sex: male, Guideline: other:

Skin corrosion/irritation : Not classified
pH: 7.45 Temp.: 24 °C Concentration: 1 vol%

NITROANILINE (P) (100-01-6)	
pH	7.45 Temp.: 24 °C Concentration: 1 vol%

Serious eye damage/irritation : Not classified
pH: 7.45 Temp.: 24 °C Concentration: 1 vol%

NITROANILINE (P) (100-01-6)	
pH	7.45 Temp.: 24 °C Concentration: 1 vol%

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

4-NITROANILINE (100-01-6)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.01 mg/l air Animal: rat, Guideline: other:

NITROANILINE (P) (100-01-6)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.01 mg/l air Animal: rat, Guideline: other:
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

4-NITROANILINE (100-01-6)	
Viscosity, kinematic	Not applicable

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Harmful to aquatic life with long lasting effects.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Harmful to aquatic life with long lasting effects.

Not rapidly degradable

4-NITROANILINE (100-01-6)	
LC50 - Fish [1]	87.6 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Other aquatic organisms [1]	68 mg/l

NITROANILINE (P) (100-01-6)	
LC50 - Fish [1]	87.6 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

4-NITROANILINE (100-01-6)	
Partition coefficient n-octanol/water (Log Pow)	1.39 Source: HSDB,CHemIDplus

NITROANILINE (P) (100-01-6)	
Partition coefficient n-octanol/water (Log Pow)	1.39 Source: HSDB,CHemIDplus

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

HP Code	:	HP5 - “Specific Target Organ Toxicity (STOT)/Aspiration Toxicity:” waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration. HP6 - “Acute Toxicity:” waste which can cause acute toxic effects following oral or dermal administration, or inhalation exposure. HP14 - “Ecotoxic:” waste which presents or may present immediate or delayed risks for one or more sectors of the environment

SECTION 14: Transport information

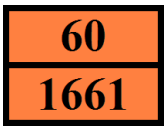
In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 1661	UN 1661	UN 1661	UN 1661	UN 1661
14.2. UN proper shipping name				
NITROANILINES (O-, M-, P-)	NITROANILINES (o-, m-, p-)	Nitroanilines	NITROANILINES (O-, M-, P-)	NITROANILINES (o-, m-, p-)
Transport document description				
UN 1661 NITROANILINES (O-, M-, P-), 6.1, II, (D/E)	UN 1661 NITROANILINES (o-, m-, p-), 6.1, II	UN 1661 Nitroanilines, 6.1, II	UN 1661 NITROANILINES (O-, M-, P-), 6.1, II	UN 1661 NITROANILINES (o-, m-, p-), 6.1, II
14.3. Transport hazard class(es)				
6.1	6.1	6.1	6.1	6.1
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR)	:	T2
Special provisions (ADR)	:	279
Limited quantities (ADR)	:	500g
Excepted quantities (ADR)	:	E4
Packing instructions (ADR)	:	P002, IBC08
Special packing provisions (ADR)	:	B4
Mixed packing provisions (ADR)	:	MP10
Portable tank and bulk container instructions (ADR)	:	T3
Portable tank and bulk container special provisions (ADR)	:	TP33
Tank code (ADR)	:	SGAH, L4BH
Tank special provisions (ADR)	:	TU15, TE19
Vehicle for tank carriage	:	AT
Transport category (ADR)	:	2
Special provisions for carriage - Packages (ADR)	:	V11

Special provisions for carriage - Loading, unloading and handling (ADR)	:	CV13, CV28
Special provisions for carriage - Operation (ADR)	:	S9, S19
Hazard identification number (Kemler No.)	:	60
Orange plates	:	
Tunnel restriction code (ADR)	:	D/E
EAC code	:	2X

Transport by sea

Special provisions (IMDG)	:	279
Limited quantities (IMDG)	:	500 g
Excepted quantities (IMDG)	:	E4
Packing instructions (IMDG)	:	P002
IBC packing instructions (IMDG)	:	IBC08
IBC special provisions (IMDG)	:	B21, B4
Tank instructions (IMDG)	:	T3
Tank special provisions (IMDG)	:	TP33
EmS-No. (Fire)	:	F-A
EmS-No. (Spillage)	:	S-A
Stowage category (IMDG)	:	A
Properties and observations (IMDG)	:	Yellow crystals. Toxic if swallowed, by skin contact or by dust inhalation. ortho-NITROANILINES may be carried in the molten state.

Air transport

PCA Excepted quantities (IATA)	:	E4
PCA Limited quantities (IATA)	:	Y644
PCA limited quantity max net quantity (IATA)	:	1kg
PCA packing instructions (IATA)	:	669
PCA max net quantity (IATA)	:	25kg
CAO packing instructions (IATA)	:	676
CAO max net quantity (IATA)	:	100kg
Special provisions (IATA)	:	A113
ERG code (IATA)	:	6L

Inland waterway transport

Classification code (ADN)	:	T2
Special provisions (ADN)	:	279, 802
Limited quantities (ADN)	:	500 g
Excepted quantities (ADN)	:	E4
Equipment required (ADN)	:	PP, EP
Number of blue cones/lights (ADN)	:	2

Rail transport

Classification code (RID)	:	T2
Special provisions (RID)	:	279
Limited quantities (RID)	:	500g
Excepted quantities (RID)	:	E4
Packing instructions (RID)	:	P002, IBC08
Special packing provisions (RID)	:	B4
Mixed packing provisions (RID)	:	MP10
Portable tank and bulk container instructions (RID)	:	T3
Portable tank and bulk container special provisions (RID)	:	TP33
Tank codes for RID tanks (RID)	:	SGAH, L4BH
Special provisions for RID tanks (RID)	:	TU15
Transport category (RID)	:	2
Special provisions for carriage – Packages (RID)	:	W11
Special provisions for carriage - Loading, unloading and handling (RID)	:	CW13, CW28, CW31

Colis express (express parcels) (RID) : CE9
Hazard identification number (RID) : 60

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number

Abbreviations and acronyms:	
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disruptor

Full text of H- and EUH-statements:	
Acute Tox. 3 (Dermal)	Acute toxicity (dermal), Category 3
Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2

The classification complies with : ATP 12

Safety Data Sheet (SDS)_EMAL, EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.