We create chemistry

Safety Data Sheet
Baxxodur® EC 331

1. Identification

Product identifier used on the label

Baxxodur® EC 331

Recommended use of the chemical and restriction on use

Recommended use*: Chemical used in synthesis and/or formulation of industrial products
Recommended use*: industrial chemicals

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Molecular formula:	C(15)H(30)N(2)
Synonyms:	4,4'Methylenebis-2-methylcyclohexanamine
	CYCLOHEXANAMINE, 4,4-METHYLENEBIS (2-METHYL)-
	3,3'-dimethyl-4,4'diamino- dicyclohexylmethane

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Acute Tox.	4 (oral)	Acute toxicity
Acute Tox.	2 (Inhalation - mist)	Acute toxicity

Acute Tox.	3 (dermal)	Acute toxicity
Skin Corr./Irrit.	1B	Skin corrosion/irritation
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Aquatic Chronic	2	Hazardous to the aquatic environment - chronic
STOT RE	2	Specific target organ toxicity — repeated exposure
Aquatic Acute	2	Hazardous to the aquatic environment - acute

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H311	Toxic in contact with skin.
H330	Fatal if inhaled.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H373	May cause damage to organs (Liver, Kidney, Heart, Skeletal muscle) through prolonged or repeated exposure.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing and eye protection or face protection.
P260	Do not breathe dust/gas/mist/vapours.
P273	Avoid release to the environment.
P284	In case of inadequate ventilation wear respiratory protection.
P270	Do not eat, drink or smoke when using this product.
P264	Wash contaminated body parts thoroughly after handling.

Precautionary Statements (Response):

P310	Immediately call a POISON CENTER or physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P391	Collect spillage.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501 Dispose of contents/container in accordance with local regulations.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)
CAS Number: 6864-37-5
Content (W/W): >= 99.6 - <= 99.85%
Synonym: 4,4'-Methylenebis[2-methylcyclohexanamine]

4. First-Aid Measures

Description of first aid measures

General advice:
Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). First aid personnel should pay attention to their own safety.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

If in eyes:
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Seek medical attention.

If swallowed:
Do not induce vomiting. Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: Overexposure may cause:, corneal injury, skin corrosion, severe pain, coughing, respiratory disorders, dyspnea, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary odema prophylaxis. Medical monitoring for at least 24 hours.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, foam, dry powder, gaseous extinguishing media, carbon dioxide

Unsuitable extinguishing media for safety reasons:
No data available.

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrous gases, carbon oxides
The substances/groups of substances mentioned can be released in case of fire. Under certain conditions in case of fire other hazardous combustion products may be generated.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Breathing protection required. Keep people away and stay on the upwind side. Avoid contact with the skin, eyes and clothing. Take off immediately all contaminated clothing.

Environmental precautions

Substance/product is RCRA hazardous due to its properties.

Methods and material for containment and cleaning up

For small amounts: Pick up with suitable appliance and dispose of. Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder).
For large amounts: Pump off product.
Cleaning operations should be carried out only while wearing breathing apparatus. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Collect waste in suitable containers, which can be labeled and sealed. Incinerate or take to a special waste disposal site in accordance with local authority regulations.

7. Handling and Storage

Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. Refill and handle product only in closed system.

Protection against fire and explosion:
The product is combustible. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Conditions for safe storage, including any incompatibilities

Segregate from acids and acid forming substances.
Segregate from foodstuffs. Store well away from other substances.

Further information on storage conditions: Containers should be stored tightly sealed in a dry place. Avoid all sources of ignition: heat, sparks, open flame. Protect against moisture.

Storage stability:
Storage duration: 24 Months
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

8. Exposure Controls/Personal Protection

No substance specific occupational exposure limits known.

Advice on system design:
Provide local exhaust ventilation to control vapours/mists.

Personal protective equipment

Respiratory protection:
Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. For emergency or non-routine, high exposure situations, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Suitable materials may include, fluoroelastomer (FKM) - 0.7 mm coating thickness, butyl rubber (butyl) - 0.7 mm coating thickness, polyvinylchloride (PVC) - 0.7 mm coating thickness, nitrile rubber (NBR) - 0.4 mm coating thickness, chloroprene rubber (CR) - 0.5 mm coating thickness, Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
full protection suit with breathing-air supply (f.e. according to EN 943)

General safety and hygiene measures:
Eye wash fountains and safety showers must be easily accessible. Avoid contact with the skin, eyes and clothing. Do not breathe vapour/aerosol/spray mists. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Ensure cleanup is performed only by trained personnel wearing appropriate personal protective clothing and equipment. Handle in accordance with good industrial hygiene and safety practice. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Store work clothing separately.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	amine-like	
Colour:	colourless to yellowish	
pH value:	11 (3.6 g/l, 20 °C)	
Melting point:	-7.1 °C Literature data.	
Freezing point:	No data available.	
Boiling point:	342 °C (1,013 mbar) ambiguous	(other)
Boiling range:	No data available.	
Flash point:	173 °C	(DIN 51758, closed cup)
Flammability:	hardly combustible	(derived from flash point)
Lower explosion limit:	0.5 %(V) (160.5 °C)	(air)
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Autoignition:	275 °C	
Vapour pressure:	0.0008 hPa (20 °C)	(measured)
Density:	0.9456 g/cm3 (20 °C)	(other)
Relative density:	0.9456 (20 °C)	(other)
Vapour density:	> 1 (20 °C) Heavier than air.	(estimated)
Partitioning coefficient n-octanol/water (log Pow):	2.3 (23 °C)	(OECD Guideline 107)
Self-ignition temperature:	not self-igniting	(other)
Thermal decomposition:	No decomposition if correctly stored and handled.	
Viscosity, dynamic:	152 mPa.s (20 °C)	(OECD 114)
	32.9 mPa.s (40 °C)	(OECD 114)
Viscosity, kinematic:	162 mm2/s (20 °C)	(OECD 114)
Particle size:	The substance / product is marketed or used in a non solid or granular form.	(other)
Solubility in water:	2.01 g/l (20 °C)	
Molar mass:	238.42 g/mol	

10. Stability and Reactivity

Reactivity

Corrosion to metals:

Corrosive effects to metal are not anticipated. In the presence of water or moisture metal corrosion cannot be excluded.

Oxidizing properties:
not fire-propagating

Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability
The product is chemically stable.

Possibility of hazardous reactions
Strong exothermic reaction with acids. Incompatible with acid chlorides and acid anhydrides.

Conditions to avoid
Avoid extreme heat. Avoid all sources of ignition: heat, sparks, open flame.

Incompatible materials
strong acids, ammonium salts

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: carbon monoxide, carbon dioxide, nitrogen oxides

Thermal decomposition:
No decomposition if correctly stored and handled.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Of moderate toxicity after single ingestion. Of high toxicity after short-term inhalation. Of pronounced toxicity after short-term skin contact.

Oral
Type of value: LD50
Species: rat (male/female)
Value: 320 - 460 mg/kg (BASF-Test)

Inhalation
Type of value: LC50
Species: rat
Value: 0.42 mg/l (similar to OECD guideline 403)
Exposure time: 4 h
An aerosol was tested.

Dermal
Type of value: LD50
Species: rabbit (male/female)
Value: 200 - 400 mg/kg (BASF-Test)

Assessment other acute effects
Assessment of STOT single:
The available information is not sufficient for the evaluation of specific target organ toxicity.

Irritation / corrosion
Assessment of irritating effects: Corrosive! Damages skin and eyes. The European Union (EU) has classified the substance as "Causes severe skin burns and eye damage".

Skin
Species: In vitro assay
Result: Corrosive.
Method: OECD Guideline 435

Eye
Species: rabbit
Result: Risk of serious damage to eyes.
Method: similar to OECD guideline 405

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Guinea pig maximization test
Species: guinea pig
Result: Non-sensitizing.
Method: similar to OECD guideline 406
Literature data.

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: After repeated administration the prominent effect is the induction of corrosion. Repeated exposure may affect certain organs. Damages the liver. Damages the kidneys. Damages the skeletal muscle. Damages the heart.

Information on: Dimethyldicykan (1%)

Genetic toxicity
Assessment of mutagenicity: No mutagenic effect was found in various tests with bacteria and mammalian cell culture.

Carcinogenicity
Assessment of carcinogenicity: A long-term carcinogenity study which does not meet the current requirements did not show a carcinogenic effect.

Reproductive toxicity

Assessment of reproduction toxicity: Animal studies indicated reproductive effects only at doses also toxic to the parental animals.

Teratogenicity
Assessment of teratogenicity: Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Other Information
No experimental evidence available for genotoxicity in vitro (Ames test negative).

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
Acutely toxic for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish
LC50 (96 h) > 100 mg/l, Oryzias latipes (OECD Guideline 203, semistatic)
The product will cause changes in the pH value of the test system. The result refers to a neutralized sample.

LC50 (96 h) 31.6 mg/l, Leuciscus idus (DIN 38412 Part 15, static)
Nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an unneutralized sample. After neutralization a reduction in harmful effect can be observed. No mortality was observed.

Aquatic invertebrates
EC50 (48 h) 4.6 mg/l, Daphnia magna (OECD Guideline 202, part 1)
The statement of the toxic effect relates to the analytically determined concentration.

EC50 (48 h) 15.2 mg/l, Daphnia magna (Directive 84/449/EEC, C.2, static)
Nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an unneutralized sample.

Aquatic plants
EC50 (72 h) > 5 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9)
Nominal concentration.

EC10 (72 h) 1.25 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9)
Nominal concentration.

EC50 (72 h) 7.9 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201)
The statement of the toxic effect relates to the analytically determined concentration.

EC10 4.1 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201)
The statement of the toxic effect relates to the analytically determined concentration.

Chronic toxicity to fish
Study not necessary due to exposure considerations.

Chronic toxicity to aquatic invertebrates

No observed effect concentration (21 d) 4 mg/l, Daphnia magna (OECD Guideline 211, semistatic)
The statement of the toxic effect relates to the analytically determined concentration.

Assessment of terrestrial toxicity
Toxic effects have been observed in studies with soil living organisms.

Soil living organisms

Toxicity to soil dwelling organisms:
EC10 (56 d) 228 mg/kg, Eisenia sp. (OECD Guideline 222)
The details of the toxic effect relate to the nominal concentration.

EC10 (28 d) > 1,000 mg/kg, soil dwelling microorganisms (OECD 216)
The details of the toxic effect relate to the nominal concentration.

Toxicity to terrestrial plants

Study not necessary due to exposure considerations.

Other terrestrial non-mammals
Study not necessary due to exposure considerations.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
DIN EN ISO 8192 activated sludge, domestic/EC20 (0.5 h): 160 mg/l

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Not readily biodegradable (by OECD criteria).

Elimination information

0 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, Inoculum conforming to MITI requirements (OECD 301C))

< 1 % DOC reduction (28 d) (OECD Guideline 302 B) (activated sludge, domestic, adapted)

Assessment of stability in water
According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Assessment bioaccumulation potential
Accumulation in organisms is not to be expected.

Bioaccumulation potential
Bioconcentration factor: < 60 (60 d), Cyprinus carpio (OECD Guideline 305 C)

Mobility in soil

Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Additional information

Other ecotoxicological advice:
Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants. The local regulations on waste-water treatment must be followed.

13. Disposal considerations

Waste disposal of substance:
Incinerate or dispose of in a RCRA-licensed facility. Must be disposed of or incinerated in accordance with local regulations. Do not discharge into drains/surface waters/groundwater.

Container disposal:
Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

Empty containers with less than 1 inch of residue may be landfilled at a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers. If containers are not empty, they must be disposed of in a RCRA-licensed facility.

RCRA: D002

14. Transport Information

Land transport
USDOT

Hazard class:	8
Packing group:	II
ID number:	UN 2922
Hazard label:	8, 6.1, EHSM
Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))

Sea transport
IMDG

Hazard class:	8
Packing group:	II
ID number:	UN 2922
Hazard label:	8, 6.1, EHSM
Marine pollutant:	YES
Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))

Air transport
IATA/ICAO

Hazard class:	8
Packing group:	II
ID number:	UN 2922
Hazard label:	8, 6.1
Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))

15. Regulatory Information

Federal Regulations

Registration status:
Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

NFPA Hazard codes:
Health: 4 Fire: 1 Reactivity: 0 Special:

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Acute Tox.	4 (oral)	Acute toxicity
Acute Tox.	3 (dermal)	Acute toxicity
Acute Tox.	2 (Inhalation - mist)	Acute toxicity
Aquatic Acute	2	Hazardous to the aquatic environment - acute
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Skin Corr./Irrit.	1B	Skin corrosion/irritation
STOT RE	2	Specific target organ toxicity — repeated exposure
Aquatic Chronic	2	Hazardous to the aquatic environment - chronic

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2023/05/05

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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