

MATERIAL SAFETY DATA SHEET

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Version 1.7

Section 1 - Product and Company Information

Product Name	CATECHOL, REAGENTPLUS, >=99%
Product Number	135011
Brand	SIAL
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
CATECHOL	120-80-9	Yes

Formula C6H6O2

Synonyms Benzene, o-dihydroxy- * o-Benzenediol *
1,2-Benzenediol * Catechin (phenol) * Catechol
(ACGIH) * Catechol (phenol) * C.I. 76500 * C.I.
Oxidation Base 26 * o-Dihydroxybenzene *
1,2-Dihydroxybenzene * o-Dioxybenzene *
o-Diphenol * Durafur developer C * Fouramine PCH
* Fourrine 68 * o-Hydroquinone * o-Hydroxyphenol
* 2-Hydroxyphenol * Katechol (Czech) * NCI-C55856
* Oxyphenic acid * Pelagol Grey C *
o-Phenylenediol * Phthalhydroquinone *
Pyrocatechin * Pyrocatechine * Pyrokatechin
(Czech)

RTECS Number: UX1050000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Toxic (USA) Harmful (EU).

Toxic in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect.

Readily absorbed through skin. Target organ(s): Liver. Kidneys.
Calif. Prop. 65 carcinogen.

HMIS RATING

HEALTH: 2*

FLAMMABILITY: 0

REACTIVITY: 1

NFPA RATING

HEALTH: 2

FLAMMABILITY: 0

REACTIVITY: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

260.6 °F 127 °C Method: closed cup

EXPLOSION LIMITS

Lower: 1.97 %

AUTOIGNITION TEMP

510 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Store in a cool dry place. Store under inert gas.

SPECIAL REQUIREMENTS

Store under inert gas. Air and light sensitive.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	5 PPM
Remarks: Skin			
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	5 PPM (SK)

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	110.11 AMU	
pH	N/A	
BP/BP Range	245 °C	760 mmHg
MP/MP Range	104 °C	
Freezing Point	N/A	
Vapor Pressure	1 mmHg	75 °C
Vapor Density	3.8 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	Log Kow: 0.88	

Decomposition Temp.	N/A	
Flash Point	260.6 °F 127 °C	Method: closed cup
Explosion Limits	Lower: 1.97 %	
Flammability	N/A	
Autoignition Temp	510 °C	
Refractive Index	1.604	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Other Solvents: ETHER, CARBON TETRACHLORIDE VERY SOLUBLE IN PYRIDINE SOLUBLE IN CHLOROFORM, ACETAT	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions of Instability: May discolor on exposure to air. May discolor on exposure to light.

Materials to Avoid: Oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: Harmful if absorbed through skin. Readily absorbed through skin.

Eye Contact: Causes eye irritation.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Central nervous system. Liver.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

TOXICITY DATA

Oral

Rat

260 mg/kg

LD50

Oral

Mouse

260 mg/kg

LD50

Intraperitoneal

Mouse
68 MG/KG
LD50

Subcutaneous
Mouse
247 MG/KG
LD50

Oral
Dog
130 mg/kg
LD50

Oral
Cat
100 mg/kg
LD50

Skin
Rabbit
800 mg/kg
LD50

Remarks: Nutritional and Gross Metabolic:Weight loss or decreased weight gain. Skin and Appendages:Skin: After topical exposure:Primary irritation.

Oral
Guinea pig
210 mg/kg
LD50

Oral
Mammal
240 mg/kg
LD50

Remarks: Behavioral:Change in motor activity (specific assay). Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea.

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Species: Rat
Route of Application: Oral
Dose: 437 GM/KG
Exposure Time: 2Y
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Gastrointestinal:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 645 GM/KG
Exposure Time: 96W
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Gastrointestinal:Tumors.

Species: Rat

Route of Application: Oral
Dose: 60640 MG/KG
Exposure Time: 24W
Frequency: C
Result: Gastrointestinal:Tumors. Tumorigenic:Neoplastic by RTECS criteria.

Species: Rat
Route of Application: Oral
Dose: 349 GM/KG
Exposure Time: 2Y
Frequency: C
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Gastrointestinal:Tumors.

Species: Rat
Route of Application: Oral
Dose: 171 GM/KG
Exposure Time: 51W
Frequency: C
Result: Gastrointestinal:Tumors. Tumorigenic:Carcinogenic by RTECS criteria.

IARC CARCINOGEN LIST

Rating: Group 2B

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 100 UMOL/L
Cell Type: lymphocyte
Mutation test: DNA damage

Species: Human
Dose: 200 UMOL/L
Cell Type: HeLa cell
Mutation test: DNA inhibition

Species: Human
Dose: 40 UMOL/L
Cell Type: lymphocyte
Mutation test: Other mutation test systems

Species: Human
Dose: 40 UMOL/L
Cell Type: lymphocyte
Mutation test: Sister chromatid exchange

Species: Rat
Dose: 3 MMOL/L
Cell Type: liver
Mutation test: DNA damage

Species: Rat
Route: Oral
Dose: 1 GM/KG
Mutation test: Unscheduled DNA synthesis

Species: Mouse
Route: Oral
Dose: 40 MG/KG

Mutation test: Micronucleus test

Species: Mouse
Route: Intraperitoneal
Dose: 10 MG/KG
Mutation test: Micronucleus test

Species: Mouse
Dose: 500 UMOL/L
Cell Type: lymphocyte
Mutation test: DNA damage

Species: Mouse
Dose: 250 UMOL/L
Cell Type: lymphocyte
Mutation test: DNA inhibition

Species: Mouse
Dose: 2500 UG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Hamster
Dose: 25 UMOL/L
Cell Type: lung
Mutation test: Micronucleus test

Species: Hamster
Dose: 1 UMOL/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 1 UMOL/L
Cell Type: Embryo
Mutation test: Unscheduled DNA synthesis

Species: Hamster
Dose: 3 UMOL/L
Cell Type: Embryo
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 50 MG/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 12500 NMOL/L
Cell Type: lung
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 10 UMOL/L
Cell Type: Embryo
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 30 UMOL/L
Cell Type: Embryo
Mutation test: SLN

Species: Hamster
Dose: 10 UMOL/L
Cell Type: Embryo
Mutation test: Mutation in mammalian somatic cells.

Species: Rabbit
Dose: 2 MMOL/L
Cell Type: Bone marrow
Mutation test: Other mutation test systems

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 1 GM/KG
Route of Application: Oral
Exposure Time: (11D PREG)
Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Species: Rat
Dose: 5 MG/KG
Route of Application: Subcutaneous
Exposure Time: (1D PRE)
Result: Maternal Effects: Ovaries, fallopian tubes.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Onchorhynchus mykiss (Rainbow trout)
Time: 96 h
Value: 8.9 mg/l

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 3.5 mg/l

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Toxic solids, organic, n.o.s.
UN#: 2811
Class: 6.1
Packing Group: Packing Group III
Hazard Label: Toxic substances.
PIH: Not PIH

IATA

Proper Shipping Name: Toxic solid, organic, n.o.s.
IATA UN Number: 2811
Hazard Class: 6.1

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn

Indication of Danger: Harmful.

R: 21/22-36/38

Risk Statements: Harmful in contact with skin and if swallowed.
Irritating to eyes and skin.

S: 22-26-37

Safety Statements: Do not breathe dust. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable gloves.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic (USA) Harmful (EU).

Risk Statements: Toxic in contact with skin and if swallowed.
Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves.

US Statements: Readily absorbed through skin. Target organ(s): Liver. Kidneys. Calif. Prop. 65 carcinogen.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes

DEMINIMIS: 1 %

NOTES: This product is subject to SARA section 313 reporting requirements.

TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer.

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.
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