

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 39j
SRM Name: Benzoic Acid (Calorimetric Standard)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) consists of highly purified benzoic acid. SRM 39j is intended for use in calibration and standardization of adiabatic, isoperibol and aneroid bomb calorimeters. A unit of SRM 39j consists of 30 g of crystalline material.

Company Information

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2. HAZARDS IDENTIFICATION

Classification

Physical Hazard: Not classified.
Health Hazard: Acute Oral Toxicity, Category 4
Eye Damage/Irritation, Category 1
Specific Target Organ Toxicity – Single Exposure, Category 3

Label Elements**Symbol****Signal Word**

Danger

Hazard Statement(s)

H302 Harmful if swallowed.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary Statement(s)

P261 Avoid breathing dust.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear eye protection/face protection.

P301+P304+P312	If swallowed or inhaled: Call a poison center or doctor if you feel unwell.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P305+P310	If in eyes: Immediately call a poison center or doctor.
P330	Rinse mouth.
P405	Store locked up.
P501	Dispose of contents in accordance with all applicable federal, state, and local regulations.

Hazards Not Otherwise Classified: None.

Ingredients(s) with Unknown Acute Toxicity: None.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Benzoic acid

Other Designations: Benzenecarboxylic acid; benzenemethanoic acid; benzeneformic acid; benzoate; carboxybenzene; dracylic acid; phenyl carboxylic acid; phenylformic acid; phenylcarboxylic acid; C₇H₆O₂

Components are listed in compliance with OSHA's 29 CFR 1910.1200.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Benzoic acid	65-85-0	200-618-2	100

4. FIRST AID MEASURES

Description of First Aid Measures

Inhalation: If adverse effects occur, remove to well-ventilated (uncontaminated) area. If breathing is difficult, qualified personnel may administer oxygen. If not breathing, qualified personnel should give artificial respiration. Seek immediate medical attention.

Skin Contact: Rinse affected skin with water for at least 15 minutes, and then wash thoroughly with soap or mild detergent and water. If skin irritation persists, seek medical aid and bring the container or label.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek immediate medical attention.

Ingestion: If a large amount is swallowed, seek medical attention.

Most Important Symptoms/Effects, Acute and Delayed

May cause eye damage, redness, and pain; may cause irritation to the respiratory tract with sore throat and coughing.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight fire hazard; dust/air mixtures might ignite or explode. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media

Suitable: Regular dry chemical, carbon dioxide, water, or regular foam.

Unsuitable: None listed.

Specific Hazards Arising from the Chemical: Not applicable.

Special Protective Equipment and Precautions for Fire-Fighters: Move container from fire area if it can be done without personal risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2 Fire = 1 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Avoid generating dust. Collect in appropriate container for disposal. Keep out of water supplies and sewers.

7. HANDLING AND STORAGE

Safe Handling Precautions: Use in a well-ventilated area; avoid generating dust. See Section 8, "Exposure Controls and Personal Protection".

Storage and Incompatible Materials: Store in a well-ventilated area. Keep separated from incompatible substances (bases, metals, and oxidizing materials).

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: No occupational exposure limits established for benzoic acid. OSHA lists the following exposure limits for Particulates Not Otherwise Regulated.

OSHA (PEL): 15 mg/m³ TWA, total particulates
5 mg/m³ TWA, respirable particulates

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection Measures: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Splash resistant safety goggles and emergency eyewash are recommended.

Skin and Body Protection: Chemical resistant clothing and gloves are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Properties	Benzoic Acid
Molar Mass (g/mol)	122.12
Molecular Formula	C ₇ H ₆ O ₂
Appearance (physical state, color, etc.)	colorless to white crystalline powder
Odor	faint, pleasant odor
Odor threshold	not available
pH	2.8 at 25 °C (saturated solution)
Evaporation rate	<1 (butyl acetate = 1)
Melting point/freezing point	121 °C to 123 °C (250 °F to 253 °F)
Relative Density as Specific Gravity (water = 1)	1.2659
Density	not available
Vapor Pressure	1 mmHg at 96 °C
Vapor Density (air = 1)	4.2
Viscosity	1.26 mPa at 130 °C
Solubilities	water: 2.9 % at 20 °C Solvent: acetone, alcohol, benzene, carbon disulfide, carbon tetrachloride, chloroform, ethanol, ether, fixed and volatile oils, oil of turpentine. Slightly soluble: petroleum ether, hexane.
Partition coefficient (n-octanol/water) (estimated from water solubility)	KOW: 3630.78 KOC: 2432.20

Thermal Stability Properties		Benzoic Acid
Autoignition Temperature		571 °C (1060 °F)
Thermal Decomposition		not available
Initial boiling point and boiling range		249 °C to 250 °C (480 °F to 482 °F)
Explosive Limits, LEL		>3 g/ft ³
Explosive Limits, UEL		35 g/ft ³ (optimum)
Flash Point (Closed Cup)		121°C (250 °F)
Flammability (solid, gas)		not applicable

10. STABILITY AND REACTIVITY

Reactivity: This material is not reactive at normal temperatures and pressure.

Stability: Stable Unstable

Possible Hazardous Reactions: Not applicable.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials: Bases, metals, and oxidizing materials.

Hazardous Decomposition: Oxides of carbon.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: Inhalation Skin Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Eye damage. May cause respiratory tract irritation.

Potential Health Effects (Acute, Chronic, and Delayed)

Inhalation: May cause irritation to the respiratory tract with sore throat and coughing.

Skin Contact: May cause irritation and redness. Repeat exposure may result in dermatitis.

Eye Contact: Acute: possible damage, redness and pain; chronic: conjunctivitis.

Ingestion: Large doses may cause sore throat, gastric pain, nausea, vomiting and possible allergic reactions.

Numerical Measures of Toxicity

Acute toxicity: Category 4, Acute Oral Toxicity

Rat, Oral, LD50: 1700 mg/kg

Rat, Inhalation, LC50: >26 mg/m³ (1 h)

Rabbit, Dermal, LD50: >5000 mg/kg

Skin corrosion/irritation: Not classified.

Human, skin: 0.76 %, mild

Human, skin: 22 mg per 3 d intermittent moderate

Serious eye damage/eye irritation: Category 1

Rabbit, eyes: severe.

Respiratory sensitization: No data available.

Skin sensitization: No data available.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen

Benzoic acid is not listed by IARC, NTP and OSHA as a carcinogen.

Yes No

Reproductive Toxicity: Not classified; no adverse effects reported.

Specific target organ toxicity, single exposure: Category 3: Respiratory irritation.

Specific target organ toxicity, repeated exposure: No data available.

Aspiration hazard: Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data

Fish Toxicity: Mosquitofish (*Gambusia affinis*) LC50: 180 mg/L (96 h)

Algae: Cyanobacteria (plankton) (*Anabaena inaequalis*) EC50: 5 mg/L (3 h)

Invertebrate: Water flea (*Daphnia magna*) EC50: 300 mg/L (24 h), 860 mg/L [static] (48 h)

Persistence and Degradability: No data available.

Bioaccumulative Potential: Low, BCF of 10 for algae and 5 for fish.

Mobility in Soil: Estimated to have moderate mobility in soil based on KOC (250); see Section 9, "Physical and Chemical Properties".

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): 5000 lbs. (2270 kg) final RQ.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	Yes
CHRONIC HEALTH:	No
FIRE:	No
REACTIVE:	No
PRESSURE:	No

STATE REGULATIONS: Not listed by California Proposition 65.

U.S. TSCA Inventory: Listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations: WHMIS Information is not provided for this material.

16. OTHER INFORMATION

Issue Date: 19 September 2013

Sources: ChemADVISOR, Inc., MSDS *Benzoic Acid*, 17 June 2013.

Hazardous Substances Data Bank, National Library of Medicine, *Benzoic Acid* CAS 965-85-0, Animal Toxicity Studies, available at <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB> (accessed Sep 2013).

European Commission, Health & Consumer Protection Directorate-General, Scientific Committee on Consumer Products, Opinion on *Benzoic Acid and Sodium Benzoate*, 2005, available at http://ec.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_o_015.pdf (accessed Sep 2013).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Level
LD50	Median Lethal Dose or Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
NIST	National Institute of Standards and Technology	WHMIS	Workplace Hazardous Materials Information System
n.o.s.	Not Otherwise Specified		

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at <http://www.nist.gov/srm>.