G-Biosciences, St Louis, MO, USA ♦ 1-800-628-7730 ♦ 1-314-991-6034 ♦ technical@GBiosciences.com

A Geno Technology, Inc. (USA) brand name

Safety Data Sheet

P-Aminobenzamidine Agarose

Cat. # 786-692

ρ-Aminobenzamidine Agarose

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 11/15/2013 Revision date: 11/24/2025 Supersedes: 10/30/2025 Version: 11.0

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Product name : ρ-Aminobenzamidine Agarose
Product code : 190A

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

No additional information available

1.4. Supplier's details

G-Biosciences/ Geno Technology, Inc.
9800 Page Avenue
St. Louis, MO 63132-1429, USA
Tel.1-800-628-7730
www.GBiosciences.com

1.5. Emergency phone number

Emergency number : Chemtrec **1-800-424-9300** (USA/Canada), **+1-703-527-3887** (Intl)

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquid, Category 4	H227	Combustible liquid.
Carcinogenicity, Category 1A	H350	May cause cancer.

Full text of H statements : see section 16

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger
Hazard statements (GHS US) : H227 - Combustible liquid
H350 - May cause cancer.
Precautionary statements (GHS US) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 - Wear protective gloves, protective clothing, eye protection, face protection, and hearing protection.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P370+P378 - In case of fire: Use appropriate media to extinguish.
P403 - Store in a well-ventilated place.
P405 - Store locked up.

P501 - Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Common Name (Synonyms)	Product identifier	%	GHS US classification
ethanol	1-hydroxyethane / absolute alcohol / absolute ethanol / alcohol / alcohol 200 proof / alcohol C2 / alcohol, absolute / alcohol, anhydrous / alcohol, dehydrated / algrain / anhydrol / anydrol / APEXA / bioethanol / BIO-Fire / cologne spirit / cologne spirits / ECO-Fire / ethanol / ethanol 200 proof / ethanol, absolute / ethicap / ethyl alcohol / ethyl alcohol, anhydrous / ethyl hydrate / ethyl hydroxide / ethylic alcohol / fermentation alcohol / grain alcohol / hydrated oxide of ethyl / IMS grades (=ethanol) / industrial alcohol / jaysol / jaysol S / methyl carbinol / methylated spirit (=ethanol) / molasses alcohol / neutral spirits / potable spirits / potato alcohol / proof spirits / rectified spiritus / SD alcohol 23-hydrogen / silent spirit / spirit / spirit of wine / spirits of wine / tecsol / Tecsol C	CAS-No.: 64-17-5	10 – 50	Flam. Liq. 2, H225 Carc. 1A, H350

Name	Common Name (Synonyms)	Product identifier	%	GHS US classification
4-Aminobenzamidine dihydrochloride		CAS-No.: 2498-50-2	0.5 – 2	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335

Full text of hazard classes and H-statements : see section 16

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing.

First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a poison center/doctor/physician if you feel unwell.

Self protection of the first-aider : First aid workers will be equipped with suitable personal protective equipment.

4.2. Most important symptoms/effects, acute and delayed

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects after inhalation : May cause cancer by inhalation.

Symptoms/effects after skin contact : None under normal conditions.

Symptoms/effects after eye contact : None under normal conditions.

Symptoms/effects after ingestion : None under normal conditions.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : Combustible liquid. Highly flammable liquid and vapor.

Explosion hazard : May form flammable/explosive vapor-air mixture.

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

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment. Do not enter fire area without proper protective equipment, including respiratory protection.

Protection during firefighting	:	Do not enter fire area without proper protective equipment, including respiratory protection. 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

General measures	:	Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking. Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage.

For non-emergency personnel

Protective equipment	:	Wear recommended personal protective equipment.
Emergency procedures	:	Ventilate spillage area. No open flames, no sparks, and no smoking. Evacuate unnecessary personnel. Only qualified personnel equipped with suitable protective equipment may intervene.

For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Ventilate area. Evacuate unnecessary personnel. Stop leak if safe to do so.
Environmental precautions	:	Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Notify authorities if product enters sewers or public waters.

6.2. Methods and materials for containment and cleaning up

For containment	:	Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak, if possible without risk.
Methods for cleaning up	:	Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.
Other information	:	Dispose of materials or solid residues at an authorized site.

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No open flames. No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapors may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Separate working clothes from town clothes. Launder separately.
Additional hazards when processed	:	Handle empty containers with care because residual vapors are flammable. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

7.2. Conditions for safe storage, including incompatibilities

Technical measures	:	Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment.
Storage conditions	:	Store in a well-ventilated place. Keep cool. Keep only in the original container in a cool, well ventilated place away from : Keep container closed when not in use. Keep in fireproof place. Keep container tightly closed. Store locked up.
Incompatible products	:	Strong bases. Strong acids.
Incompatible materials	:	Sources of ignition. Direct sunlight. Heat sources.
Storage temperature	:	4 °C
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

ethanol (64-17-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH® TLV® STEL	1000 ppm
USA - Cal/OSHA - Occupational Exposure Limits	
Local name	Ethyl alcohol; ethanol
Cal/OSHA PEL (OEL TWA)	1900 mg/m³
	1000 ppm
Regulatory reference	California Division of Occupational Safety and Health (Cal/OSHA) - Permissible Exposure Limit for Chemical Contaminants (Table AC-1)
USA - NIOSH - Occupational Exposure Limits	
Local name	Ethyl alcohol (Ethanol)
NIOSH REL 10h TWA	1000 ppm
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))

8.2. Appropriate engineering controls

Appropriate engineering controls	:	Ensure good ventilation of the work station.
Environmental exposure controls	:	Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:
Avoid all unnecessary exposure.

Hand protection:
Protective gloves. Wear protective gloves.

Eye protection:
Chemical goggles or safety glasses. Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment. Wear appropriate mask. [In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):

Other information:

Do not eat, drink or smoke during use.

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	liquid slurry.
Color	:	Colorless
Odor	:	characteristic
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	Not applicable
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	65 °C
Flammability (solid, gas)	:	Not applicable. Combustible liquid. Highly flammable liquid and vapor.
Vapor pressure	:	No data available
Relative vapor density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Explosion limits	:	No data available
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Stable under normal conditions. Combustible liquid. May form flammable/explosive vapor-air mixture.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use. Not established.

10.4. Conditions to avoid

Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition. Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Hazardous decomposition products. fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

ethanol (64-17-5)	
LD50 oral rat	10470 mg/kg body weight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 oral	8300 mg/kg body weight Animal: mouse
LD50 dermal rabbit	> 15800 mg/kg body weight (Rabbit, Experimental value, Dermal)
LC50 Inhalation - Rat	124.7 mg/l air (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Experimental value, Inhalation (vapours), 14 day(s))
LC50 Inhalation - Rat (Vapors)	116.9 mg/l Source: ECHA
ATE US (oral)	10470 mg/kg body weight
ATE US (vapors)	116.9 mg/l/4h
ATE US (dust, mist)	124.7 mg/l/4h

Skin corrosion/irritation : Not classified

ethanol (64-17-5)	
pH	7 (789 g/l, 20 °C)

Serious eye damage/irritation : Not classified

ethanol (64-17-5)	
pH	7 (789 g/l, 20 °C)

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : May cause cancer.

ethanol (64-17-5)	
IARC group	1 - Carcinogenic to humans

Reproductive toxicity : Not classified
STOT-single exposure : Not classified

4-Aminobenzamidine dihydrochloride (2498-50-2)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Not classified

ethanol (64-17-5)	
LOAEL (oral,rat,90 days)	3200 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (oral,rat,90 days)	1730 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents), Remarks on results: other:
NOAEL (subchronic,oral,animal/male,90 days)	< 9700 mg/kg body weight Animal: mouse, Animal sex: male, Guideline: EPA OPPTS 870.3100 (90-Day Oral Toxicity in Rodents)
NOAEL (subchronic,oral,animal/female,90 days)	> 9400 mg/kg body weight Animal: mouse, Animal sex: female, Guideline: EPA OPPTS 870.3100 (90-Day Oral Toxicity in Rodents)

Aspiration hazard : Not classified

4-Aminobenzamidine dihydrochloride (2498-50-2)	
Viscosity, kinematic	Not applicable
ethanol (64-17-5)	
Viscosity, kinematic	1.6 mm²/s (20 °C)

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects after inhalation : May cause cancer by inhalation.

Symptoms/effects after skin contact : None under normal conditions.

Symptoms/effects after eye contact : None under normal conditions.

Symptoms/effects after ingestion : None under normal conditions.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

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

Hazardous to the aquatic environment, long-term (chronic) : Not classified

ethanol (64-17-5)	
LC50 - Fish [1]	15300 mg/l (US EPA, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	9300 mg/l (48 h, Daphnia magna, Pure substance)
EC50 72h - Algae [1]	275 mg/l (Equivalent or similar to OECD 201, Chlorella vulgaris, Static system, Fresh water, Experimental value, Growth rate)
EC50 96h - Algae [1]	≈ 22000 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	275 mg/l Source: ECHA
NOEC (chronic)	9.6 mg/l Test organisms (species): Daphnia magna Duration: '9 d'

12.2. Persistence and degradability

ρ-Aminobenzamidine Agarose	
Persistence and degradability	Not established.

4-Aminobenzamidine dihydrochloride (2498-50-2)	
Persistence and degradability	Not established.

ethanol (64-17-5)	
Persistence and degradability	Not established.
Biochemical oxygen demand (BOD)	0.8 – 0.967 g O_2/g substance
Chemical oxygen demand (COD)	1.7 g O_2/g substance
ThOD	2.1 g O_2/g substance
BOD (% of ThOD)	0.43

12.3. Bioaccumulative potential

ρ-Aminobenzamidine Agarose	
Bioaccumulative potential	Not established.

4-Aminobenzamidine dihydrochloride (2498-50-2)	
Bioaccumulative potential	Not established.

ethanol (64-17-5)	
Partition coefficient n-octanol/water (Log Pow)	-0.35 (Experimental value, Equivalent or similar to OECD 107, 24 °C)
Bioaccumulative potential	Not established.

12.4. Mobility in soil

ethanol (64-17-5)	
Surface tension	22.31 mN/m (20 °C, 100 %)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	0.2 (log Koc, Experimental value)
Ecology - soil	Highly mobile in soil.

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

Other information : Avoid release to the environment.

SECTION 13 Disposal considerations

Regional legislation (waste) : Disposal must be done according to official regulations.
Waste treatment methods : Waste treatment methods.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. Disposal must be done according to official regulations.
Additional information : Handle empty containers with care because residual vapors are flammable. Flammable vapors may accumulate in the container. Do not re-use empty containers.
Ecological waste information : Avoid release to the environment.

SECTION 14 Transport information

In accordance with DOT / TDG / IATA

14.1. UN number

Not regulated for transport

14.2. UN Proper Shipping Name

Proper Shipping Name (DOT) : Not regulated
Proper Shipping Name (TDG) : Not regulated
Proper Shipping Name (IATA) : Not regulated

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : Not regulated

TDG
Transport hazard class(es) (TDG) : Not regulated

IATA
Transport hazard class(es) (IATA) : Not regulated

14.4. Packing group

Packing group (DOT) : Not regulated
Packing group (TDG) : Not regulated
Packing group (IATA) : Not regulated

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT
Not regulated

TDG
Not regulated

IATA
Not regulated

SECTION 15 Regulatory information

15.1. Federal regulations

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
4-Aminobenzamidine dihydrochloride	2498-50-2	Not present	-	
ethanol	64-17-5	Present		

4-Aminobenzamidine dihydrochloride (2498-50-2)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

15.2. International regulations

CANADA

ethanol (64-17-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

ethanol (64-17-5)
Listed on IARC (International Agency for Research on Cancer) Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. State regulations

No additional information available

SECTION 16 Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 11/24/2025

Date of issue : 11/15/2013

Other information : None.

Full text of hazard classes and H-statements	
H225	Highly flammable liquid and vapor
H227	Combustible liquid
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H350	May cause cancer.

Abbreviations and acronyms	
ACGIH	American Conference of Government Industrial Hygienists
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)
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

Abbreviations and acronyms	
COD	Chemical oxygen demand (COD)
CSA	Chemical safety assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
ED	Endocrine disruptor
EN	European Standard
EWC	European waste catalogue
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
Log Kow	Partition coefficient n-octanol/water (Log Kow)
Log Pow	Partition coefficient n-octanol/water (Log Pow)
MAK	maximum workplace concentration
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety & Health Administration
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
PPE	Personal protection equipment
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TF	Technical function
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TWA	Time Weighted Average
VOC	Volatile Organic Compounds

Abbreviations and acronyms	
vPvB	Very Persistent and Very Bioaccumulative
UFI	Unique Formula Identifier

Safety Data Sheet (SDS), USA

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.