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

1.1 Product identifier

Trade name: 2,2',4,5',6-Pentabromobiphenyl 100 µg/mL in Hexane

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

General use: specific analysis

1.3 Details of the supplier of the safety data sheet

Company name: LGC Standards GmbH
Street/POB-No.: Mercatorstr. 51
State/city/postal code: D-46485 Wesel
World Wide Web: www.lgcstandards.com
Email: de@lgcstandards.com
Telephone: +49 (0)281-98 87-0
Telefax: +49 (0)281-98 87-199

Dept. responsible for information:
Telephone: +49 (0)281-98 87-0, Email: de@lgcstandards.com

1.4 Emergency telephone number

Telephone: +49 (0)281-98 87-0
Only available during office hours.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC

Repr. Cat. 3; R62	Possible risk of impaired fertility.
F; R11	Highly flammable.
Xn; R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
Xn; R65	Harmful: may cause lung damage if swallowed.
Xi; R38	Irritating to skin.
R67	Vapours may cause drowsiness and dizziness.
N; R51-53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling (67/548/EEC or 1999/45/EC)


F highly flammable


Xn harmful


N dangerous for the environment

R phrase(s):	R 11	Highly flammable.
	R 38	Irritating to skin.
	R 48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
	R 51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
	R 62	Possible risk of impaired fertility.
	R 65	Harmful: may cause lung damage if swallowed.
	R 67	Vapours may cause drowsiness and dizziness.
S phrase(s):	S (2)	Keep out of the reach of children.
	S 9	Keep container in a well-ventilated place.
	S 16	Keep away from sources of ignition - No smoking.
	S 29	Do not empty into drains.
	S 33	Take precautionary measures against static discharge.
	S 36/37	Wear suitable protective clothing and gloves.
	S 61	Avoid release to the environment. Refer to special instructions / safety data sheet.
	S 62	If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Text for labelling: Contains n-Hexane.

2.3 Other hazards

No risks worthy of mention.

SECTION 3: Composition/ information on ingredients

3.1 Substances: not applicable

3.2 Mixtures

Hazardous ingredients:

Ingredient	Chemical name	Content	Classification
EINECS - CAS 59080-39-6	2,2',4,5',6-PBB	< 0,1 %	EU: N; R50-53. R33. Xn; R22. Xi; R36/37/38. CLP: Acute Tox. 4; H302. Skin Irrit. 2; H315. Eye Irrit. 2; H319. STOT SE 3; H335. STOT RE 2; H373. Aquatic Acute 1; H400. Aquatic Chronic 1; H410.
EINECS 203-777-6 CAS 110-54-3	n-Hexane	>= 99,9 %	EU: F; R11. N; R51-53. R67. Repr. Cat. 3; R62. Xi; R38. Xn; R48/20. Xn; R65. CLP: Flam. Liq. 2; H225. Skin Irrit. 2; H315. Repr. 2; H361f. STOT SE 3; H336. STOT RE 2; H373. Asp. Tox. 1; H304. Aquatic Chronic 2; H411.

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation: Move victim to fresh air. If the casualty has difficulty breathing, call a doctor immediately. If breathing becomes irregular or ceases, apply mouth-to-mouth resuscitation or artificial respiration immediately, where required supply oxygen.

In case of skin contact: Take off immediately all contaminated clothing.
After contact with skin, wash immediately with soap and plenty of water.
In case of skin irritation, consult a physician.

After eye contact: With eyelids open, wash out eyes for several minutes under flowing water. In case of troubles or persistent symptoms, consult an opthalmologist.

After swallowing: Rinse mouth thoroughly with water.
Caution if victim vomits: Risk of aspiration! Immediately get medical attention.
Keep airway open. Give activated carbon (20 - 40 g in a suspension of 10%).
Do not give fatty oils and milk.

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

No special measures are required.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Extinguishing powder, foam, carbon dioxide.
In case of greater fires: Foam or water fog.

Extinguishing media which must not be used for safety reasons:

High power water jet

5.2 Special hazards arising from the substance or mixture

Highly flammable. Explosive mixtures with air may even form at room temperature.
Concentrated vapours are heavier than air. Beware of reignition.
In case of fire may be liberated: Carbon monoxide and carbon dioxide, traces of incompletely burned carbon compounds.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained breathing apparatus. Wear full protective gear.

Additional information: Cool endangered containers with water spray and, if possible, remove from danger zone. Do not allow water used to extinguish fire to enter drains, ground or waterways. Treat runoff as hazardous. Contaminated fire-fighting water must be collected separately.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Plug leak if safely possible.
Avoid contact with the substance. Wear suitable protective clothing.
Do not breathe vapour/aerosol. Provide adequate ventilation.
In case of spills of large quantities: Use appropriate respiratory protection.

6.2 Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains. Danger of explosion!
In case of release, notify competent authorities.

6.3 Methods and material for containment and cleaning up

Take up with non-flammable, liquid binding material (e.g. sand/earth/diatomaceous earth/vermiculit) and perform disposal according to instructions. Thoroughly clean surrounding area.
In case of spills of large quantities: Dam spills and pump to remove. Contact expert.

Additional information: Beware of reignition. Use only spark proof tools.

6.4 Reference to other sections

not required

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed.
Execute works under fume hood. Provide room air exhaust at ground level.
Do not allow containers to stand open. Do not inhale substance.
Avoid contact with skin and eyes.

Precautions against fire and explosion:
Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Do not weld. Use grounding equipment. Use only spark proof tools. Beware of reignition.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:
Keep container tightly closed and in a well-ventilated place.
Keep away from sources of ignition and heat.
Qualified materials: steel, stainless steel, aluminium

Hints on joint storage: Do not store together with combustible or self-igniting materials or any highly flammable solids.
Keep away from food, drink and animal feeding stuffs.

Storage class: 3 = Flammable liquids

7.3 Specific end use(s)

No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS No.	Chemical name	Type	Limit value
110-54-3	n-Hexane	Great Britain: WEL-TWA	72 mg/m³; 20 ppm
		Europe, IOELV: TWA	72 mg/m³; 20 ppm

8.2 Exposure controls

Execute works under fume hood. Do not inhale substance.
The substance should only be handled in closed apparatus or systems.
In case of spill or release: Use local exhaust.

Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the WEL levels have been exceeded.
Use filter type A (= against vapours of organic substances), identification colour brown, according to EN 141.

Hand protection: Protective gloves according to EN 374.
Glove material: Nitrile rubber (0,35 mm) or fluoro rubber (0,4 mm).
Unsuitable materials: natural rubber, butyl caoutchouc (butyl rubber), PVC.
Breakthrough time: > 480 min.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed safety glasses according to EN 166.

Body protection: Wear suitable protective clothing.
In case of handling larger quantities: flame-retardant protective clothing, antistatic

General protection and hygiene measures:
Take off immediately all contaminated clothing.
Wash hands before breaks and after work.
When using do not eat, drink or smoke.
Have eye wash bottle or eye rinse ready at work place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	liquid
Colour	colourless
Odour:	weak like benzine
Boiling temperature / boiling range	68,7 °C
Flash point / flash point range:	-26 °C
Ignition temperature	230 °C
Explosion limits:	LEL (Lower Explosion Limit): 1,00 Vol-% (n-Hexane) UEL (Upper Explosive Limit): 8,90 Vol-% (n-Hexane)
Vapour pressure:	at 20 °C: 160 hPa (n-Hexane) at 50 °C: 540 hPa (n-Hexane)
Density:	at 20 °C: approx. 0,66 g/mL
Water solubility:	at 20 °C: 50 mg/L (n-Hexane)
Partition coefficient n-octanol /water:	4,11 log P(o/w) (n-Hexane) An appreciable bioaccumulation potential is to be expected (log P(o/w) >3).

9.2 Other information

Information about n-Hexane:
Molecular weight: 86,18 g/mol
Relative vapour density at 20 °C (air=1): 2,98
Concentration of the saturated vapour (20°C): 566 g/m³

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Attacks many plastics and rubbers.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Highly flammable. Liquid evaporates very quickly.
Keep away from heat sources, sparks and open flames.
Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may backflash over great distances when ignited. Ignition by hot surfaces, sparks and open flames.

10.5 Incompatible materials

strong oxidizing agents (Ignition hazard/Danger of explosion!)

10.6 Hazardous decomposition products

In case of fire may be liberated: Carbon monoxide and carbon dioxide, traces of incompletely burned carbon compounds.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral: 5000 mg/kg (n-Hexane)
LC50 Rat, inhalative: 48000 ppm/4h (n-Hexane)
LD50 Rat, dermal: 3000 mg/kg (n-Hexane)

After inhalation: Vapours may cause drowsiness and dizziness.
Danger of serious damage to health by prolonged exposure.
Other symptoms: Mucous membrane irritation, headache, fatigue, dizziness, amyosthenia, dizziness, unconsciousness, apnea, narcosis, CNS disorders, muscle paralysis.

After swallowing: Harmful: may cause lung damage if swallowed.
When swallowed and vomited immediately, aspiration into the lungs may occur resulting in chemical pneumonia or suffocation.

In case of skin contact: Irritant. Danger of cutaneous absorption.

After eye contact: Irritant. Risk of corneal clouding.

carcinogenic, germ cell mutagen and reproduction effects

Repr. Cat. 3 - Possible risk of impaired fertility.

General remarks

Information about n-Hexane:
Chromosomal aberrations mammalian cells (in-vitro): negative.
Bacterial mutagenicity: Salmonella typhimurium: negative.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Information about n-Hexane:
Daphnia toxicity:
EC50 Daphnia magna: 2,1 mg/L/48h.
Fish toxicity:
LC50 Pimephales promelas: 2,5 mg/L/96h.

Water Hazard Class: 2 = hazardous to water

12.2. Persistence and degradability

Further details: Information about n-Hexane:
Substance floats on the water surface.
Potentially explosive mixtures with air may form above water surface.
Bioconcentration factor (BCF): 242 - 453

12.3 Bioaccumulative potential

Partition coefficient n-octanol /water:

4,11 log P(o/w) (n-Hexane)

An appreciable bioaccumulation potential is to be expected (log P(o/w) >3).

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains.
In case of spills of large quantities: Danger to drinking water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste key number: 16 05 06* = laboratory chemicals consisting of or containing dangerous substances including mixtures of laboratory chemicals.
* = Evidence for disposal must be provided.

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.
Discharge into the environment must be avoided.

Contaminated packaging

Waste key number: 15 01 07 = Glass packaging.

Recommendation: Dispose of waste according to applicable legislation.
Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA: 1208

14.2 UN proper shipping name

ADR/RID: UN 1208, HEXANES, solution
IMDG, IATA: HEXANE, solution

14.3 Transport hazard class(es)

ADR/RID: Class 3, Code: F1
IMDG: Class 3, Code -
IATA: Class 3

14.4 Packing group

ADR/RID, IMDG, IATA: II

14.5 Environmental hazards

Marine Pollutant: Yes

14.6 Special precautions for user

Land transport (ADR/RID)

Warning board:	ADR/RID: Kemmler-number 33, UN number 1208
Hazard label	3
Limited quantities	1 L
EQ	E2
Contaminated packaging: Instructions	P001 IBC02 R001
Special provisions for packing together	MP19
Portable tanks: Instructions	T4
Portable tanks: Special provisions	TP1
Tank coding	LGBF
Tunnel restriction code:	D/E

Sea transport (IMDG)

EmS:	F-E, S-D
Special provisions	-
Limited quantities	1 L
EQ	E2
Contaminated packaging: Instructions	P001
Contaminated packaging: Provisions	-
IBC: Instructions	IBC02
IBC: Provisions	-
Tank instructions: IMO	-
Tank instructions: UN	T4
Tank instructions Provisions	TP1
Stowage and segregation	Category E.
Properties and observations	Colourless, volatile liquids with a faint odour. Explosive limits: 1.1% to 7.5%. n-HEXANE: flashpoint -22°C c.c. boiling point 69°C. Immiscible with water. Slightly irritating to skin, eyes and mucous membranes.

Air transport (IATA)

Hazard	Flamm. liquid
EQ	E2
Passenger Ltd.Qty.:	Pack.Instr. Y341 - Max.Qty. 1 L
Passenger:	Pack.Instr. 353 - Max.Qty. 5 L
Cargo:	Pack.Instr. 364 - Max.Qty. 60 L
ERG	3H

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

SECTION 15: Regulatory information

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

National regulations - Great Britain

Hazchem-Code: 3YE

National regulations - Germany

Storage class: 3 = Flammable liquids

Water Hazard Class: 2 = hazardous to water

Informations on working limitations:

Information about n-Hexane: Pregnancy risk group C.
There is no risk of damage to the embryo when WEL values are observed.

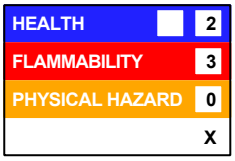
Observe employment restrictions concerning young persons.
Observe employment restrictions for expectant or nursing mothers.

National regulations - USA

Hazard rating systems

NFPA Hazard Rating:
Health: 2 (Moderate)
Fire: 3 (Serious)
Reactivity: 0 (Minimal)

HMIS Version III Rating:
Health: 2 (Moderate)
Flammability: 3 (Serious)
Physical Hazard: 0 (Minimal)
Personal Protection: X = Consult your supervisor



15.2 Chemical Safety Assessment

No data available

SECTION 16: Other information

Further remarks

R phrase(s):

R 11 = Highly flammable.
R 22 = Harmful if swallowed.
R 33 = Danger of cumulative effects.
R 36/37/38 = Irritating to eyes, respiratory system and skin.
R 38 = Irritating to skin.
R 48/20 = Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R 50/53 = Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 51/53 = Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 62 = Possible risk of impaired fertility.
R 65 = Harmful: may cause lung damage if swallowed.
R 67 = Vapours may cause drowsiness and dizziness.

Reason of change: Changes in section 14: ADR 2011, IATA 2011, General revision

Literature: ICSC 0279

Group that issues data sheet

Contact person: see chapter 1, department responsible for information.

The information in this safety data sheet (SDS) has been prepared with due care and is true and accurate to the best of our knowledge. The user must determine the suitability of the information for its particular purpose, ensure compliance with existing laws and regulations, and be aware that other or additional safety or performance considerations may arise when using, handling and/or storing the material.
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