FastGene Taq 2x DNA Polymerase

Cat. No.	Product	Content
LS22	FastGene Taq DNA Polymerase	2000 Units
LS21	FastGene Taq DNA Polymerase	500 Units

1. Identity of the substance and the manufacturer

1.1. Name of the substances or preparations

FastGene Taq DNA Polymerase

1.2. Recommended use of the chemical and restrictions on use

Laboratory research use only.

1.3. Name and address of the manufacturer

NIPPON Genetics EUROPE GmbH
Mariaweilerstraße 28 a
52349 Düren
Germany

1.4. Emergency telephone contact

+49 2421/554960

2. Hazards identification

2.1 Classification of Hazards and dangerousness

No information available

2.2 Warning article including prevention methods

2.2.1 Pictograms

No information available

2.2.2 Signal word

No information available

2.2.3 Harmful/dangerous phrases

No information available

2.2.4 Precautionary statements

2.2.4.1 Prevention

No information available

2.2.4.2 Action

No information available

2.2.4.3 Store

No information available

2.2.4.4 Discard

No information available

3. Composition/information on ingredients

Material name	Usual name	CAS No.	Amount (%)
Glycerin	Glycerol	56-81-5	40~60

4. First-aid measures

4.1 Eye contact

Take medical action immediately.
Immediately rinse skin and eyes thoroughly with plenty of running water for at least 20 minutes.

4.2 Skin contact

Take medical action immediately.
Immediately rinse skin and eyes thoroughly with plenty of running water for at least 20 minutes.
Remove contaminated clothes and shoes and isolate contaminated area.
Completely wash clothes and shoes before reuse.

4.3 Inhalation

Move to fresh air.
Take medical action immediately.
CPR when there is no breathing
If the substance is ingested or inhaled, do not perform artificial respiration using the mouth-to-mouth method, but use appropriate respiratory medical equipment.

4.4 Ingestion

Do not give anything by mouth to an unconscious person.
If swallowed, seek medical attention immediately.
Wash out your mouth.
If the substance is ingested or inhaled, do not perform artificial respiration using the mouth-to-mouth method, but use appropriate respiratory medical equipment.

4.5 Note to physicians

Make sure medical personnel know about the substance and take protective measures.

5. Firefighting measures

5.1 Proper (improper) fire extinguishing agents

When extinguishing fires involving this material, use alcohol foam, carbon dioxide or water spray.
When extinguishing asphyxiation, use dry sand or soil.

5.2 Specific hazards from chemical compounds

Containers may explode when heated.
May decompose at high temperatures and produce toxic gases.
Some may burn but do not ignite easily.
Non-flammable, the material itself does not burn, but may decompose when heated, generating corrosive/toxic fumes.

5.3 Protective equipment and precautions for fire fighting

Glycerin:
Extinguish the fire by leaving the area and maintaining a safe distance.
Be careful as it may melt and be transported.
Dig a trench to dispose of fire water, contain it, and prevent material from scattering.
Move containers from fire area if you can do it without risk.
In case of a tank fire, extinguish it from the maximum distance or use unmanned fire extinguishing equipment.
In case of a tank fire, cool the container with plenty of water even after the fire is extinguished.
In case of a tank fire, if there is a high-pitched sound from the pressure relief device or if the tank changes color, leave immediately.
In case of a tank fire, move away from the engulfed tank.
In case of a large-scale tank fire, use unmanned fire extinguishing equipment and, if not possible, step aside and let it burn.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Stop leak if it is not dangerous
Wipe up spills immediately and follow precautions in the protective equipment section.
Isolate contaminated area.
Anyone who does not need to enter or is not wearing protective equipment should not enter.
Eliminate all ignition sources.
Do not touch broken containers or spills without wearing appropriate protective clothing.
Cover with plastic sheeting to prevent spread.
Be aware of substances and conditions to avoid.

6.2 Environmental precautions

Prevent entry into waterways, drains, basements and confined spaces.

6.3 Containment and cleaning up

Absorb spill with inert material (e.g. dry sand or earth) and place in chemical waste container.
Absorb liquid and flush contaminated area with detergent and water.

7. Handling and storage

7.1 Precautions for safe handling

Wash handled area thoroughly after handling.
Do not eat, drink or smoke when using this product.
Follow all MSDS/label precautions as product residue may remain even after container is emptied.
Use with caution when handling/storing.
Open cap carefully before opening.
Do not breathe vapors from heated material.
Do not enter storage area without adequate ventilation.
Be aware of substances and conditions to avoid.
Work with reference to engineering controls and personal protective equipment.

7.2 Conditions for safe storage

Store in a locked storage location.
Empty drums should be completely drained, properly plugged, and immediately returned to the drum regulator or placed appropriately.
Keep away from food and drinks.

8. Exposure controls/personal protection

8.1 Exposure standard of chemical compound, biological exposure standard

8.1.1 Domestic regulations

Glycerin: TWA - 10 mg/m^3 glycerin mist

8.1.2 ACGIH regulation

Glycerin: No information applicable

8.1.3 Biological release regulation
Glycerin: No information applicable

8.1.4 Other exposure standards
Glycerin: No information applicable

8.2 Appropriate engineering controls
Use process isolation, local exhaust, or other engineering controls to keep air levels below exposure limits.
Facilities storing or using this material should be equipped with eyewash facilities and safety showers.

8.3 Individual protection equipment

8.3.1 Respiratory protection
Glycerin Mist:
Use respiratory protection equipment certified by Korea occupational safety and health agency in a release of gas/liquid according to their chemical physical properties.
Use proper filter or half-circled respiratory protection cartridge equipment if the concentration of release material is lower than 100mg/m^3.
Use proper filter or loose-fitting respiratory protection cartridge equipment such as hood/helmet shape motor operated equipment or continuous flow protection mask if the concentration of release material is lower than 250mg/m^3.
Use proper filter or full-face cartridge or motor operated half-circled equipment or half circled continuous flow air supply respiratory protection equipment if the concentration of release material is lower than 500mg/m^3.
Use proper filter or full faced respiratory protection cartridge equipment or hood/helmet type, pressurized mask if the concentration of release material is lower than 10000mg/m^3.
Use proper filter or auto air supply (SCBA) equipment or pressurized auto air supply (SCBA) respiratory protection equipment if the concentration of release material is lower than 100000mg/m^3.

8.3.2 Eye protection
Wear safety glasses or breathable safety glasses to protect your eyes from vaporous organic substances that can cause eye irritation or other health problems.
Install emergency washing facilities (shower type) and eye washing facilities in a location that is easily accessible to workers.

8.3.3 Hand protection
Wear protective gloves made of appropriate material considering the physical and chemical properties of the chemical.

8.3.4 Body protection

Wear protective clothing made of appropriate material considering the physical and chemical properties of the chemical.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance - State	liquid (viscous)
Appearance - Color	No information available
Odor	Unscented
Odor Threshold	No information available
pH	Neutral (litmus paper)
Melting point/freezing point	18.17°C (about 101.3 kPa, no decomposition)
Early boiling point and range	290°C (76mmHg)
Flashing point	199°C (approx. 101.3 kPa, equilibrium method closed, ISO 2719)
Evaporation rate	No information available
Evaporation rate (solid/liquid)	Not flammable
Maximum / minimum evaporation or explosion range	19 / 2.7%
Steam pressure	0.003 mmHg (50°C)
Solubility	1000000 mg/l (25°C)
Vapor density	1.261 g/mL (20°C, density)
Specific gravity	3.17
n-octanol/ distribution coefficient	-1.75 (log Pow, 25°C)
Self-ignition temperature	37°C
Disassemble temperature	290°C
Viscosity	1412 mPa S (20°C, dynamic viscosity)
Molecular weight	92.09

10. Stability and reactivity

10.1 Chemical stability and possibility of hazardous reactions

Glycerin:
May decompose at high temperatures and produce toxic gases.
Containers may explode when heated.
Some may burn but do not ignite easily.

Non-flammable, the material itself does not burn, but may decompose when heated, generating corrosive/toxic fumes.

10.2 Situation to avoid
Glycerin: Ignition sources such as heat, sparks, flames, etc..

10.3 Materials to avoid
Glycerin: Combustible substances, reducible substances.

10.4 Harmful material produce by degradation
Glycerin:
Corrosive/toxic fumes
Irritating, corrosive, toxic gas

11. Toxicological information

11.1 Information on likely routes of exposure
Glycerin: No information available

11.2 Health maleficence information

11.2.1 Acute poison

11.2.1.1 Oral
Glycerin: LD50 27000 mg/kg Rat

11.2.1.2 Ingestion
Glycerin: LD50 45 ml/kg Guinea pig

11.2.1.3 Inhalation
Glycerin: Steam LC50 > 2.75 mg/l 4 hr Rat

11.2.2 Skin corrosion or irritant agent
Glycerin: No irritation as a result of skin corrosion/irritation test using rabbits.

11.2.3 Serious eye damage or irritation
Glycerin: Non-irritating, Rabbit, fully reversible.

11.2.4 Respiratory organ hypersensitiveness
Glycerin: No information available

11.2.5 Skin hypersensitiveness
Glycerin: No information available

11.2.6 Carcinogenic

11.2.6.1 Occupational safety and health acts
Glycerin: No information available

11.2.6.2 Employment announcement
Glycerin: No information available

11.2.6.3 IARC
Glycerin: No information available

11.2.6.4 OSHA
Glycerin: No information available

11.2.6.5 ACGIH
Glycerin: No information available

11.2.6.6 NTP
Glycerin: No information available

11.2.6.7 EU CLP
Glycerin: No information available

11.2.7 Germ cell mutagenicity
Glycerin: *in vitro* - Reverse mutation test using bacteria: negative (*S. typhimurium* TA1535, TA1537, TA98, TA100, regardless of metabolic activity)

11.2.8 Reproduction toxicity test
Glycerin: Glycerin was administered to male and female rats by oral gavage over two generations. As a result, there was no effect on growth, reproduction, and reproductive functions through two generations. Glycerin administered to female rats had no effect on the developmental toxicity of their offspring, rats.

11.2.9 Special target poison (1 time exposer)
Glycerin: Oral: Muscle spasms and epileptic convulsions before death; survivors appeared normal within 2.5 hours after administration. / Hyperemia of the pylorus and small intestine; pulmonary congestion; Pale Zira; Three animals showed meningeal hyperemia. Transdermal: After about 12 hours, the experimental animals (guinea pigs) became accustomed to the restrictions of the bandage and began feeding as usual. The group of experimental animals to which large amounts of experimental substances were applied were weakened and dying as their body temperature dropped. There appears to be no effect at small doses of the test substance applied. In conclusion, no skin irritation was observed with the experimental amount applied to this cotton pad.

Inhalation: Acute toxicity (produced by passing air through a test substance heated to 200 °C) was determined after 1 or 2 h of exposure to saturated vapors of glycerin. Under study conditions, acute inhalation exposure of rats for 2 hours to saturated vapor generated at 200 °C produced 100% mortality, whereas no mortality was observed for a 1-hour exposure. The nominal concentration is 11.0 mg/L and this study is a condensed aerosol. Therefore, the 1-hour LC50 based on nominal concentration was >11.0 mg/L. According to the OECD GHS guidelines, the 1-hour LC50 can be determined by dividing by 4 hours to determine the 4-hour LC50. Therefore, the calculated 4-hour LC50 value based on the nominal concentration is > 2.75 mg/L. Additionally, L(Ct) 50 was measured after exposure to 1100 mg/L. The L(Ct) 50 of glycerin was 4655 mg min/L.

11.2.10 Special target poison (long exposer)

Glycerin: Oral (chronic): NOAEL=8000~10,000 mg/kg bw, Rat Dermal (subchronic): Result of dermal exposure in rabbits at a dose level of 4.0 ml/kg for 8 hours/day, 5 days/week for 45 weeks , No significant effect, Rabbit Inhalation (subchronic): NOAEL is 167 mg/m^3 based on local irritant effect in the upper respiratory tract, Rat.

11.2.11 Absorption injurious

Glycerin: No information available

11.2.12 Other hazardous effects

Glycerin: No information available

12. Ecological information

12.1 Ecotoxicity

12.1.1 Fish

Glycerin: LC50 54000 mg/l 96 hr *Oncorhynchus mykiss* (Static, fresh water, GLP)

12.1.2 Crustacean

Glycerin: LC50 1955 mg/l 48 hr *Daphnia magna* (exponential, fresh water)

12.1.3 Algae

EC3 > 10000 mg/l 8 day *Scenedesmus quadricauda* (exponential, fresh water)

12.2 Residual fungicide and resolvability

12.2.1 Residual fungicide
Glycerin: 01 -1.75 log Kow (log Pow, 25°C)

12.2.2 Resolvability
Glycerin: BOD5/COD COD, TOC 0%, 0% at 0 hours, 14%, 18% at 2 hours, 32%, 38% at 4 hours, 24 hours: 92%, 93%

12.3 Life enrichment

12.3.1 Enrichment
Glycerin: 01 3 BCF

12.3.2 Biodegradability
Glycerin: 60 01 2hr (TOC removal)

12.4 Soil
Glycerin: No information available

12.5 Other harmful influences
Glycerin: No information available

13. Disposal considerations

13.1 Disposal method
Glycerin: If specified in the Waste Management Act, dispose of contents and containers in accordance with regulations.

13.2 Precautions for disposal
Glycerin: Dispose of container contents (according to relevant laws and regulations).

14. Transport information

14.1 UN No.
Glycerin: UN classification information for hazardous substances for transport is not available.

14.2 Proper shipping name
Glycerin: not applicable

14.3 Risk class in transportation
Glycerin: not applicable

14.4 Container grade
Glycerin: not applicable

14.5 Marine pollutants
Glycerin: not applicable

14.6 Special safety measures that the user needs to know about or require regarding transportation or means of transportation.

14.6.1 Emergency measures in case of fire
Glycerin: not applicable

14.6.2 Emergency measures in case of leak
Glycerin: not applicable

15. Regulatory information

15.1 Regulations of occupational safety and health act
Glycerin: Substances for which exposure standards are set.

15.2 Regulations of toxic chemicals regulation act
Glycerin: No information available

15.3 Regulations of safety control of dangerous substances act
Glycerin: Class 4: Class 3 petroleum (water-soluble) 4000 L

15.4 Regulations of waste control act
Glycerin: No information available

15.5 Regulations of other domestic and international act

15.5.1 Domestic act (Glycerin)

15.5.2 Other domestic regulations
Glycerin: Not applicable

15.5.3 Foreign act

15.5.3.1 U.S. OSHA Regulations
Glycerin: Not applicable

15.5.3.2 U.S. CERCLA Regulations
Glycerin: Not applicable

15.5.3.3 U.S. EPCRA 302 Regulations
Glycerin: Not applicable

15.5.3.4 U.S. EPCRA 304 Regulations
Glycerin: Not applicable

15.5.3.5 U.S. EPCRA 313 Regulations
Glycerin: Not applicable

15.5.3.6 U.S. Rotterdam Convention Substances
Glycerin: Not applicable

15.5.3.7 U.S. Stockholm Convention Substances
Glycerin: Not applicable

15.5.3.8 U.S. Montreal Protocol Substances
Glycerin: Not applicable

15.5.3.9 EU Confirmed Classification
Glycerin: Not applicable

15.5.3.10 EU Hazard Statements
Glycerin: Not applicable

15.5.3.11 EU Precautionary Statements
Glycerin: Not applicable

16. Other information

This information is based on our present knowledge. Its objective is to describe the product from the point of view of safety, and no warranty is made other than its characteristics. This information does not absolve the user in any circumstances from observing other Legislative, Regulatory and Administrative requirements applying to the product, and to safety, hygiene and the well-being of the people in the workplace.

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