RESEARCH USE ONLY

LOTI LABS

RESEARCH USE ONLY · FORMULATION

Safety Data Sheet

LGD-4033 Capsules (10mg/capsule, 30 capsules)

Active ingredient	Ligandrol
Active CAS	1165910-22-4
Active MW	338.25 g/mol
DOCUMENT ID	LL-SDS-35848-001
REVISION DATE	2026-10-22
VERSION	1.8

01. Identification

Product identifier	LGD-4033 Capsules (10mg/capsule, 30 capsules)
Other means of identification	Loti Labs catalog listing “LGD-4033 Capsules (10mg/capsule, 30 capsules)” (lotilabs.com product ID 35848); SDS document ID LL-SDS-35848-001.
Formulation type	Capsule contents
Active ingredient	Ligandrol
Active ingredient CAS number	1165910-22-4
Active ingredient molecular formula	C14H12F6N2O
Active ingredient PubChem CID	44137686
Active ingredient IUPAC name	4-[(2R)-2-[(1R)-2,2,2-trifluoro-1-hydroxyethyl]pyrrolidin-1-yl]-2-(trifluoromethyl)benzonitrile
Recommended use	Research laboratory chemical for in-vitro scientific research and development.
Restrictions on use	Not for human or veterinary use. Not for food, drug, cosmetic, household, agricultural, clinical, therapeutic, or diagnostic applications.

Supplier details

Company	Loti Labs
Address	1204 S Broad St, Brooksville, FL 34601, United States
Telephone	877-LOTI-LAB (877-568-4522)
Website	https://lotilabs.com/
Emergency contact	CHEMTREC

Emergency phone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 hours/day; 7 days/week

Product form note (Section 1): the product is supplied in capsule form, each capsule containing the stated active amount in a 500 mg pharmaceutical-grade corn starch base, packaged 30 capsules per container. The capsule is provided as a physical barrier between the researcher and the chemical, minimizing direct handling and exposure during laboratory work. This product is sold for laboratory research use only; it is not approved, intended, or labeled for human or veterinary use, and no administration or consumption instructions are provided or implied.

02. Hazard(s) identification

OSHA/GHS classification	Reproductive toxicity, Category 2 (H361); specific target organ toxicity, repeated exposure, Category 2, liver (H373). The active ingredient is present at 1.961% w/w of the capsule fill. The health classification is based on active-ingredient evidence and the supplied-form concentration. Open handling of the corn-starch-rich capsule contents can generate combustible dust.
Signal word	Warning
Hazard pictograms	GHS08 (health hazard)
Hazard statements	H361 Suspected of damaging fertility or the unborn child. H373 May cause damage to the liver through prolonged or repeated exposure. May form combustible dust concentrations in air.
Hazards not otherwise classified	Fine powder may cause mechanical irritation. Treat as a potentially bioactive research material with limited toxicological data.
Unknown acute toxicity	Approximately 1.96% of the mixture consists of an ingredient of unknown acute toxicity (the active ingredient; no acute toxicity estimate for it was used in classification). The mixture was not classified on the basis of testing of the mixture as a whole.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P240 Ground and bond equipment used for open handling of capsule contents.

P241 Use dust-ignition-protected equipment where dispersed dust could occur.

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P260 Do not breathe dust.

P314 Get medical advice/attention if you feel unwell.

P264 Wash hands and exposed skin thoroughly after handling.

P280 Wear protective gloves, protective clothing, and eye protection.

P501 Dispose of contents/container in accordance with applicable regulations.

Avoid dust generation; fine organic powders may present a combustible dust hazard if dispersed in air near ignition sources.

These precautionary statements are label elements corresponding to the combustible-dust and health-hazard determinations in this section.

03. Composition / information on ingredients

Component	CAS	Formula	MW	Concentration
Ligandrol	1165910-22-4	C14H12F6N2O	338.25 g/mol	10 mg/capsule
Pharmaceutical-grade corn starch	9005-25-8	(C6H10O5)n	polymer	500 mg/capsule

Capsule contents containing Ligandrol at 10 mg/capsule. The capsule shell is outside the stated SDS scope; pharmaceutical-grade corn starch is the declared filler. The declared corn-starch content is 500 mg per capsule (see composition disclosure note below).

Composition disclosure note: each capsule contains 500 mg of pharmaceutical-grade corn starch as the carrier/filler plus the stated active amount. On a fill-contents basis this is approximately 1.96% w/w active and 98.04% w/w corn starch (capsule shell excluded). The capsule format is used for containment and handling of the research material; the product is sold for laboratory research use only and is not approved, intended, or labeled for human or veterinary use.

04. First-aid measures

Inhalation	Move person to fresh air. Keep at rest. Obtain medical advice if symptoms develop or persist.
Skin contact	Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical advice if irritation develops.
Eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Obtain medical attention if irritation persists.
Ingestion	Rinse mouth. Do not induce vomiting unless directed by medical personnel. Contact a poison center or physician if swallowed or symptoms occur.
Most important symptoms/effects	No formulation-specific clinical data available. Exposure may cause irritation. Delayed effects: suspected of damaging fertility or the unborn child; may cause damage to the liver through prolonged or repeated exposure; liver injury has been reported in people using the active ingredient (Section 11).
Immediate medical attention	Treat symptomatically. No specific antidote known.

05. Fire-fighting measures

Suitable extinguishing media	Water spray, dry chemical, carbon dioxide, or foam appropriate to the surrounding fire.
Unsuitable extinguishing media	Do not use a solid (high-pressure) water jet; it can disperse the powder and create a combustible dust cloud.
Specific hazards	Combustible organic powder. The product is not classified as a flammable solid, but fine organic dust dispersed in air may present a combustible dust hazard. Thermal decomposition may produce carbon oxides, nitrogen oxides, and other organic decomposition products. Thermal decomposition may also release hydrogen fluoride.
Protective equipment	Firefighters should wear full protective equipment and positive-pressure self-contained breathing apparatus.

06. Accidental release measures

Personal precautions

Restrict access. Avoid contact and aerosol generation. Ensure adequate ventilation. Remove ignition sources where applicable. Wear PPE described in Section 8.

Environmental precautions

Prevent release to drains, sewers, surface water, and soil.

Containment and cleanup

Collect intact capsules. For released powder, avoid dust generation; gently collect using suitable tools or HEPA-filtered vacuum.

07. Handling and storage

Precautions for safe handling

Handle as a potentially bioactive research formulation of unknown or incompletely characterized toxicity. Avoid contact with eyes, skin, and clothing. Avoid generating dust, mist, or aerosols. Keep away from heat and ignition sources. Do not eat, drink, smoke, or apply cosmetics in work areas. Wash thoroughly after handling.

Storage conditions

Keep tightly closed in the original labeled container. Protect from moisture, heat, light, and physical damage. Follow product-label and lot-specific storage conditions.

Incompatibilities

Strong oxidizing agents, strong acids, strong bases, excessive heat, direct sunlight, and ignition sources.

Other information

Capsule contents containing Ligandrol at 10 mg/capsule. The capsule shell is outside the stated SDS scope; pharmaceutical-grade corn starch is the declared filler.

08. Exposure controls / personal protection

Occupational exposure limits

Corn starch (CAS 9005-25-8): OSHA PEL 15 mg/m³ total dust and 5 mg/m³ respirable fraction; NIOSH REL 10 mg/m³ total and 5 mg/m³ respirable; ACGIH TLV 10 mg/m³ TWA (A4, not classifiable as a human carcinogen). No product-specific OEL is established for the active ingredient.

No OSHA PEL, NIOSH REL, or ACGIH TLV identified for Ligandrol. Maintain exposure as low as reasonably achievable.

Engineering controls

Use local exhaust ventilation or effective containment for open transfer or any task with potential for airborne dust. Provide accessible eyewash and safety shower.

Personal protective equipment

Eye / face protection	Safety glasses with side shields as a minimum; sealed safety goggles for dust-generating or open-transfer tasks.
Hand protection	Disposable nitrile gloves suitable for the mixture. Inspect before use and replace if contaminated, damaged, or degraded.
Skin protection	Laboratory coat, long trousers, and closed-toe footwear. Add a disposable coverall for higher-exposure powder handling.

Respiratory protection	Normally unnecessary inside effective containment. Where controls cannot prevent exposure, use a NIOSH-approved respirator under a compliant respiratory-protection program (29 CFR 1910.134).
Hygiene	Wash hands after handling and before breaks. Remove contaminated clothing. Decontaminate work surfaces and equipment.

PPE must be selected by the employer based on task-specific risk assessment, quantity, physical form, and exposure potential.

09. Physical and chemical properties

Physical state	Solid capsule contents / powder
Appearance	Encapsulated powder; active-content appearance is lot-specific
Color	Not determined for the capsule contents (the corn starch base is a white powder).
Odor / odor threshold	No reliable formulation-specific data available
Melting point / freezing point	Not determined for formulation
Boiling point / range	Not determined for formulation
Flammability	May form combustible dust concentrations in air when capsule contents are released and dispersed; no Kst or MEC test data available.
Lower / upper flammability or explosion limits	Not determined; no minimum explosible concentration (MEC) data are available for the dispersed dust.
Flash point	Not applicable (solid)
Auto-ignition / decomposition temperature	Not determined for formulation
pH	Not applicable (dry solid)
Kinematic viscosity	Not applicable to solid capsule contents
Particle characteristics	Fine powder (capsule contents); no lot-specific particle-size data available.
Solubility	No product-specific measured solubility data available
Partition coefficient	No formulation-specific data available
Vapor pressure / relative vapor density	Vapor pressure: negligible (non-volatile solid). Relative vapor density: not applicable (solid).
Evaporation rate	Not applicable (non-volatile solid).
Relative density	Not determined for formulation
Active ingredient molecular weight	338.25 g/mol
Active ingredient molecular formula	C14H12F6N2O

Physicochemical summary: non-volatile solid with negligible vapor pressure; a sharp melting point is typically not observed because the material chars or decomposes on heating. Flash point and pH are not applicable to the dry solid.

10. Stability and reactivity

Reactivity	No dangerous reaction known under recommended handling and storage conditions.
Chemical stability	Expected to be stable when stored as directed; active compounds may degrade with heat, light, moisture, oxidation, or pH extremes.
Possibility of hazardous reactions	Hazardous polymerization is not expected. Fine dust from opened capsules, if dispersed in air at sufficient concentration, can form a combustible dust cloud that may deflagrate on contact with an ignition source (see Section 2).
Conditions to avoid	Heat, ignition sources, moisture, direct sunlight, ultraviolet exposure, and prolonged exposure to air.
Incompatible materials	Strong oxidizers, strong acids, and strong bases.
Hazardous decomposition products	Carbon monoxide, carbon dioxide, nitrogen oxides, and other irritating or toxic fumes under fire or thermal decomposition conditions; hydrogen fluoride may also form.

11. Toxicological information

Toxicological assessment: The classification in Section 2 reflects the available component and formulation information. No additional GHS health-hazard classification is assigned beyond the hazards stated in Section 2.

Likely routes of exposure	Inhalation, eye contact, skin contact, and ingestion.
Acute toxicity	No reliable quantitative formulation-specific oral, dermal, or inhalation toxicity data identified.
Skin corrosion / irritation	No reliable standardized formulation-specific test data identified. Irritation cannot be excluded.
Serious eye damage / irritation	No reliable standardized formulation-specific test data identified. Irritation cannot be excluded.
Respiratory / skin sensitization	No reliable formulation-specific data identified. Sensitization cannot be excluded.
Carcinogenicity	The active ingredient is not identified in the IARC Monographs or NTP Report on Carcinogens and is not regulated as a carcinogen by OSHA (29 CFR 1910 Subpart Z); IARC and NTP sources are cited in Section 16.

11. Toxicological information · continued

Germ cell mutagenicity	No reliable formulation-specific data identified.
Reproductive toxicity	Category 2 (H361). LGD-4033 is a potent androgen-receptor agonist. In a 21-day study in healthy men it caused suppression of total testosterone that increased with exposure level and, at the highest level, of FSH and free testosterone (Basaria et al. 2013, Section 16), an effect on the hormonal control of fertility. No standard reproductive or developmental toxicity studies were identified, so the suspected category (Category 2) is assigned.
STOT, single / repeated exposure	STOT RE Category 2, liver (H373). Drug-induced liver injury, mainly cholestatic, has been reported in people using LGD-4033 (case reports cited in Section 16). No single-exposure class is assigned. The finished formulation has not been tested; the determination is derived from active-ingredient evidence and the concentration stated in Section 3 (above the 1% generic cut-off).

Aspiration hazard	Not applicable to solid capsule contents.
Symptoms / delayed effects	No formulation-specific symptoms established. Delayed effects: suspected of damaging fertility or the unborn child; may cause damage to the liver through prolonged or repeated exposure; liver injury has been reported in people using the active ingredient (see the rows above). Other effects of accidental exposure may be immediate or delayed; data are insufficient.
Numerical measures of toxicity	No reliable formulation-specific numerical toxicity values available.
Interactive effects	No information on interactive effects was identified.
Alternative information / method	Health-hazard classifications in Section 2 are derived from data on the active ingredient (published studies, regulatory product information and, where applicable, authoritative carcinogen and reproductive-toxicant listings, as cited in Sections 11 and 16), applied at the concentration in Section 3 using the generic cut-off values of 29 CFR 1910.1200 Appendix A. The finished product has not been tested.
Derived no-effect level (DNEL)	No formulation-specific DNEL has been derived.
Predicted no-effect concentration (PNEC)	No formulation-specific PNEC has been derived.

The active ingredient is a selective androgen receptor modulator (SARM); androgen-receptor-mediated (endocrine) effects are possible on accidental exposure. No GLP toxicology studies are available for this mixture, and published LD50 data for the active ingredient were not identified.

12. Ecological information

Ecotoxicity	No reliable formulation-specific fish, aquatic invertebrate, or algae data identified. Avoid environmental release.
Persistence / degradability	No reliable formulation-specific biodegradation data identified.
Bioaccumulative potential	No reliable formulation-specific BCF or log Kow data identified.
Mobility in soil / other adverse effects	No reliable formulation-specific data available.

Potential endocrine activity in aquatic organisms cannot be excluded; avoid environmental release.

13. Disposal considerations

Waste treatment

Dispose of material, contaminated PPE, absorbents, and containers through a licensed waste contractor in accordance with federal, state, and local requirements. Do not discharge to drains, sewers, or waterways. The waste generator is responsible for determining whether the waste meets hazardous-waste criteria at the time of disposal.

14. Transport information

Framework	UN number	Proper shipping name	Class	Packing group

U.S. DOT	Not applicable	Not regulated as dangerous goods	Not applicable
IATA	Not applicable	Not regulated as dangerous goods	Not applicable
IMDG	Not applicable	Not regulated as dangerous goods	Not applicable
Environmental hazards	Not listed as a marine pollutant (49 CFR 172.101 Appendix B; IMDG Code). No aquatic-toxicity data meeting the UN environmentally hazardous substance criteria were identified for the product.		
Transport in bulk	Not applicable. The product is supplied in non-bulk packagings and is not transported in bulk under IMO instruments (MARPOL Annex II / IBC Code).		
Special precautions	No special transport precautions beyond keeping containers closed and protected from heat, moisture, light and physical damage.		

Transport determination: this solid capsule product does not meet the criteria of a U.S. DOT, IATA or IMDG dangerous-goods class and is not regulated as dangerous goods in the supplied form.

15. Regulatory information

Jurisdiction: this SDS is prepared for supply and use in the United States under the OSHA Hazard Communication Standard (29 CFR 1910.1200). Active ingredient CAS number(s) assessed: 1165910-22-4. U.S. TSCA: no exact CAS match on that public inventory (1165910-22-4); confidential identities are not visible in the public file. The corn starch base (starch, 9005-25-8) is listed as active on the TSCA Inventory. California Proposition 65: no exact active-ingredient CAS match on the official list dated July 31, 2026. CERCLA/SARA: no listed component was identified under 40 CFR 302.4 or 40 CFR 372.65 in the reviewed public records; threshold and release-reporting duties remain quantity- and use-dependent. Sources checked: EPA TSCA non-confidential Inventory (July 2026), OEHHA Proposition 65 list (July 31, 2026), 40 CFR 302.4 and 40 CFR 372.65. Public-inventory status is not product approval or authorization.

16. Other information

Document ID	LL-SDS-35848-001
REVISION DATE	2026-10-22
VERSION	1.8
Prepared for	Loti Labs

Basis	OSHA Hazard Communication Standard, 29 CFR 1910.1200, including Appendix D; OSHA HCS 2024 alignment (primarily GHS Revision 7). Jurisdiction: United States; Section 14 covers U.S.-origin shipments under 49 CFR, the IATA Dangerous Goods Regulations and the IMDG Code.
Revision history	Revision 1.8 (2026-10-22): final line-by-line consistency review of all sections; Section 5 unsuitable extinguishing media stated (Appendix D 5(a)); Section 8 corn-starch ACGIH TLV added; Section 10 combustible-dust reaction stated; wording, spelling (U.S.), units and batch-method text standardized. Revision 1.7 (2026-10-18): checked against the batch Certificate(s) of Analysis listed below; Section 1 other means of identification completed; Section 2 unknown-acute-toxicity statement added (Appendix D 2(e)); Section 9 completed for all Appendix D properties (color, flammability limits, vapor density, evaporation rate, particle characteristics); Section 11 interactive-effects and data-basis statements added (Appendix D 11(e), 11(g)); Section 14 environmental-hazard, bulk-transport and special-precaution entries completed; Section 15 limited to U.S. federal and state requirements (non-U.S. inventory statements removed); STOT RE Category 2 (liver, H373) assigned, consistent with the MK-2866 sheets and the published liver-injury case reports cited below; Section 11 and 16 evidence for the SARM classifications replaced with substance-specific published sources; Sections 5 and 10 hazardous decomposition products aligned with the elemental composition of the ingredients. Revision 1.6 (2026-10-03): completed manual formulation and identity review; finalized combustible-dust and health-hazard label elements; removed liquid-template residue; reconciled Sections 2, 3, 8, 9, 11, 14 and 15.
Batch documentation reviewed	No batch Certificate of Analysis for this capsule product was on file at this revision. Identity of the active ingredient is supported by Bioviridian COA5751 (sample “LGD-4033 10mg”, white lyophilized powder; lot not printed; dated 2026-06-29: identity by MALDI-MS, mass 338.2 Da; purity 99.8%; measured content 10.82 mg), which documents the active-ingredient material, not this capsule product. This SDS is product-level; lot-specific identity, purity and content are governed by the batch Certificate of Analysis.

Principal sources consulted

PubChem. Ligandrol, Compound Summary, CID 44137686. National Center for Biotechnology Information. https://pubchem.ncbi.nlm.nih.gov/compound/44137686. Accessed 2026-07-15.

OSHA. Hazard Communication Standard, 29 CFR 1910.1200, including Appendix D, Safety Data Sheets. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200. Accessed 2026-07-15.

ACGIH. Starch, CAS 9005-25-8: TLV-TWA 10 mg/m³, A4. https://www.acgih.org/starch/. Accessed 2026-10-22.

OSHA. Hazard Communication Standard Final Rule (2024). https://www.osha.gov/hazcom/rulemaking. Accessed 2026-07-15.

United Nations. Globally Harmonized System of Classification and Labelling of Chemicals, Revision 7 (2017). https://unece.org/transport/dangerous-goods/ghs-rev7-2017. Accessed 2026-07-15.

NTP / IARC. Report on Carcinogens and IARC Monographs classifications. https://ntp.niehs.nih.gov/whatwestudy/assessments/cancer/roc; https://monographs.iarc.who.int/agents-classified-by-the-iarc/. Accessed 2026-07-15.

Barbara M, Dhingra S, Mindikoglu AL. Ligandrol (LGD-4033)-induced liver injury. ACG Case Reports Journal 2020;7(6):e00370. doi:10.14309/crj.0000000000000370. Accessed 2026-10-18.

Barbara M, Dhingra S, Mindikoglu AL. Drug-induced liver injury associated with Alpha Bolic (RAD-140) and Alpha Elite (RAD-140 and LGD-4033). ACG Case Reports Journal 2020;7(6):e00409. doi:10.14309/crj.0000000000000409. Accessed 2026-10-18.

Basaria S, et al. The safety, pharmacokinetics, and effects of LGD-4033, a novel nonsteroidal oral, selective androgen receptor modulator, in healthy young men. J Gerontol A Biol Sci Med Sci 2013;68(1):87-95 (testosterone suppression increasing with exposure level; FSH suppression at the highest level). doi:10.1093/gerona/gls078. Accessed 2026-10-18.

EPA. TSCA Chemical Substance Inventory, non-confidential portion (July 2026 release). https://www.epa.gov/tsca-inventory. Accessed 2026-10-18.

OEHHA. Proposition 65 List of chemicals known to the State of California to cause cancer or reproductive toxicity (list dated July 31, 2026). https://oehha.ca.gov/proposition-65/proposition-65-list. Accessed 2026-10-18.

Key abbreviations

CAS, Chemical Abstracts Service · GHS, Globally Harmonized System · IATA, International Air Transport Association · IMDG, International Maritime Dangerous Goods · NIOSH, National Institute for Occupational Safety and Health · OSHA, Occupational Safety and Health Administration · PPE, Personal protective equipment · STOT, Specific target organ toxicity.

Document review and approval

By signing below, the reviewer confirms that the supplied form, composition, hazard classification, transport classification and regulatory content of this safety data sheet have been reviewed and are approved for release.

CHECKED BY	Dr Afroza Begum
CREDENTIALS	PhD in Biosciences
DATE	10/11/2026
SIGNATURE	Afroza Begum

Scope of review: Reviewed for content, classification, labelling and transport under 29 CFR 1910.1200 (Appendices A to D) and 49 CFR. Compound identity was checked against public references (PubChem, CAS) and the supplier’s product specification. Batch composition, purity and certificates of analysis were not verified as part of this review. Transport classification reviewed for consistency with 49 CFR; classification for shipment remains the shipper’s responsibility. Applies to version 1.8 dated 2026-10-22 only.

PEPTIDE PURITY. SCIENCE DELIVERED.

This SDS is subject to periodic review and revision when material new hazard information becomes available or applicable regulatory requirements change.

This SDS does not replace institutional risk assessment.

This SDS is not a certification of product safety.