SAFETY DATA SHEET

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SECTION 1: COMPANY AND PRODUCT INFORMATION

1.1 Product identifiers

Product name	:	D-Luciferin Free Acid
Product code	:	21530055
CAS number	:	2591-17-5
Synonyms	:	Not Available

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

Identified uses	:	For research and laboratory use only.

1.3 Details of the supplier of the safety data sheet

Address	:	Genelinx International Inc, dba bioWORLD 4150 Tuller Rd. Suite 228 Dublin, OH 43017
Email	:	tech@bio-world.com
Phone	:	614-792-8680

1.4 Emergency telephone number

CHEMTREC USA	:	1-800-424-9300
CHEMTREC International	:	+1-703-537-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Skin Corrosion/Irritation (Category 2), H315
Serious Eye Damage/Irritation (Category 2A), H319
Specific Target Organ Toxicity (Category 3), H335

2.2 GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Skin Corrosion/Irritation (Category 2), H315
Serious Eye Damage/Irritation (Category 2A), H319
Specific Target Organ Toxicity (Category 3), H335

2.3 Label elements and precautionary statements

Pictogram :



Signal word	:	Warning
Hazard statement(s)	:	H315 - Causes skin irritation. H319 - Causes serious eye irritation. H335 - May cause respiratory irritation.

Precautionary statement(s)	:	P264 - Wash hands thoroughly after handling. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P261 - Avoid breathing dust/fumes/gas/mist/vapors/spray. P271 - Use only outdoors or in a well-ventilated area. P308+311 - If exposed or concerned: Call a POISON CENTER/ doctor. P305+351+338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. P337+313 - If eye irritation persists get medical advice/attention. P302+352 - IF ON SKIN: Wash with plenty of water P332+313 - If skin irritation occurs: Get medical advice/attention. P362+364 - Take off contaminated clothing and wash it before reuse. P304+340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312 - Call a POISON CENTER/doctor if you feel unwell. P403+233 - Store in a well ventilated place. Keep container tightly closed. P405 - Store locked up. P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

2.4 Hazards not otherwise classified (HNOC) or not covered by GHS

No unclassified hazards known.

2.5 NFPA Rating

Health hazard	:	0
Fire hazard	:	1
Reactivity hazard	:	0

2.6 HMIS Rating

Health hazard	:	0
Chronic health hazard	:	-
Reactivity hazard	:	0
Flammability	:	1
Physical hazard	:	0

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Substance	CAS#	EC#	Concentration
D-Luciferin M.F: $C_{11}H_8N_2O_3S_2$ M.W: 280.33 g/mol	2591-17-5	219-981-3	>= 98%

3.2 Hazardous components & classification

Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; H315, H319, H335.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician if symptoms are severe or persistent. Provide this data sheet to medical personnel. If product is spilled or leaked, evacuate area.

In case of inhalation

If inhaled, move person to fresh air and monitor breathing. If not breathing, give artificial ventilation. Consult a physician if symptoms are severe or persistent.

In case of skin contact

Immediately wash with excess soap and water. If spilled on clothing, remove all affected clothing. Consult a physician if symptoms are severe or persistent.

In case of eye contact

Flush eyes with water or eye wash solution as a precaution for 15 minutes. Consult a physician if symptoms are severe or persistent.

In case of ingestion

Only induce vomiting if recommended by medical personnel. If subject is unconscious, do not give anything by mouth. If conscious, rinse mouth with water. Consult a physician if symptoms are severe or persistent.

4.2 Most important symptoms and effects, both acute and delayed

All known important symptoms are described in Section 2 and/or Section 11. No other important symptoms to report.

4.3 Indication of any immediate medical attention and special treatment needed

No special treatment indicated. Provide treatment in accordance with exhibited symptoms.

SECTION 5: FIREFIGHTING MEASURES

5.1 Suitable extinguishing media

Water spray, alcohol-resistant foam, dry chemical, and carbon dioxide extinguishers are suitable.

5.2 Unsuitable extinguishing media

No known unsuitable extinguishing media.

5.3 Special hazards arising from the substance

Hydrogen sulfide, carbon oxides, nitrogen oxides.

5.4 Advice for firefighters

Wear protective gear, such as self-contained breathing apparatus, if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Provide suitable ventilation. Use any necessary personal protective equipment. Avoid contact with skin and eyes, and avoid creation and inhalation of vapor or dust. Keep all unnecessary personnel away.

For personal protection see section 8

6.2 Environmental precautions

Prevent product from entering public sewers and waterways.

6.3 Methods and material for containment and cleaning up

Sweep up any spilled product. Keep in suitable, closed containers for disposal.

For proper disposal see section 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Provide suitable ventilation. Wear any necessary personal protective equipment.

For precautions see section 2

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	:	Store upright, closed container in arid, ventilated environment. Storage Temperature: -20°C
Incompatible materials	:	Strong oxidizing agents are incompatible with this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

This product is not known to contain any substances with occupational exposure limit values.

8.2 Engineering controls

Follow good industrial hygiene and safety practices when handling product.

8.3 Personal protective equipment

Eye/face protection	:	Use only government-approved safety glasses with side-shields.
Skin protection	:	Use gloves when handling product. Inspect gloves before use to ensure suitability for use. Remove without exposing skin to the gloves outer surface. Discard used gloves according to all pertinent laws and/or current good practices (cGXP). Wash hands with soap and water.
Body protection	:	Wear appropriate clothing. Ensure clothing is in good condition, with no holes or tears. When selecting clothing, consider the concentration and amount of substance to be handled.
Respiratory protection	:	Use only approved respirators and components which comply with CDC and NIOSH (US) or CEN (EU) regulations. Required only when vapors or aerosols are created.
Control of environmental exposure	:	Prevent product from entering the environment, especially through public sewers or waterways.
General hygiene considerations	:	Comply with general industrial hygiene practice guidelines.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	:	White to Faint Yellow
b)	Physical states	:	Solid
c)	Odor	:	Characteristic
d)	Odor threshold	:	Not available
e)	Melting point	:	201°C

f)	Boiling point range	:	587.58°C
g)	pH	:	Not available
h)	Density	:	1.8 g/cm3
i)	Flash point	:	309.2°C
j)	Evaporation rate	:	Not available
k)	Flammability	:	Not available
l)	Upper/lower flammability or explosive limits:	:	Not available
m)	Vapor pressure	:	Not available
n)	Vapor density	:	Not available
o)	Relative density	:	Not available
p)	Water solubility	:	Not available
q)	Partition coefficient:n-octanol/water	:	2.72
r)	Autoignition temperature	:	Not available
s)	Decomposition temperature	:	Not available
t)	Kinematic viscosity	:	Not available
u)	Explosive properties	:	Not available
v)	Oxidizing properties	:	Not available
w)	Solubility in other solvents	:	Not available
x)	Surface tension	:	Not available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No special reactivity is known.

10.2 Chemical stability

Product is stable when stored and used as recommended.

10.3 Stability note(s)

Avoid extreme temperatures and direct sunlight.

10.4 Polymerization

No known polymerization.

10.5 Possibility of hazardous reactions

No hazardous reactions are known.

10.6 Incompatible materials

Strong oxidizing agents are incompatible with this product.

10.7 Hazardous decomposition products

Hydrogen sulfide, carbon oxides, and nitrogen oxides can form if fire occurs.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Acute toxicity

LD50 Oral : No toxicity data available.

LD50 Dermal : No toxicity data available.

LC50 Inhalation : No toxicity data available.

11.2 Skin corrosion/irritation

No skin/corrosion irritation data available.

11.3 Serious eye damage/eye irritation

No eye damage/irritation data available.

11.4 Respiratory or skin sensitization

No sensitization data available.

11.5 Germ cell mutagenicity

No mutagenicity data available.

11.6 Carcinogenicity

IARC : Product and components are not regulated by the IARC.

ACGIH : Product and components are not regulated by the ACGIH.

NTP : Product and components are not regulated by the NTP.

OSHA : Product and components are not regulated by OSHA.

11.7 Reproductive toxicity

No reproductive toxicity data available.

11.8 Specific target organ toxicity – single exposure

No specific organ toxicity data available.

11.9 Specific target organ toxicity – repeated exposure

Avoid repeated exposure to this product.

11.10 Aspiration hazard

No aspiration hazard data available.

11.11 Additional Information

RTECS: No RTECS data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological toxicity data available.

12.2 Aquatic toxicity

No aquatic toxicity data available.

12.3 Persistence and degradability

No persistence/degradability data available.

12.4 Bioaccumulative potential

No bioaccumulation data available.

12.5 Mobility in soil

No soil mobility data available.

12.6 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment is not required/was not conducted.

12.7 Other adverse effect

May cause long lasting harmful effects to aquatic life.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Product

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult and adhere to local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

13.2 Packaging

Packaging should be disposed of in the same manner as unused product.

13.3 Recommendation

Disposal must be made according to official regulations.

SECTION 14: TRANSPORTATION INFORMATION

14.1 DOT (US)

Not a dangerous good under DOT(US) regulations.

14.2 IMDG

Not a dangerous good under IMDG regulations.

14.3 IATA

Not a dangerous good under IATA regulations.

SECTION 15: REGULATORY INFORMATION

15.1 SARA

SARA 302: This product and components are not subject to the reporting requirements of SARA Title III, Section 302.
SARA 313: This product does not contain any components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.
SARA 311/312: Acute Health Hazard

15.2 Clean water act (CWA)

No chemicals are present in this product that are subject to regulation under the Clean Water Act.

15.3 Right to know components

Massachusetts	:	No chemicals are present which require disclosure under the Massachusetts Right to Know Act.
Pennsylvania	:	(S)-4,5-Dihydro-2-(6-hydroxybenzothiazol-2-yl)thiazole-4-carboxylic acid CAS No.: 2591-17-5
New Jersey	:	(S)-4,5-Dihydro-2-(6-hydroxybenzothiazol-2-yl)thiazole-4-carboxylic acid CAS No.: 2591-17-5

California proposition 65 components	:	This product contains no chemicals which are known to the State of California to cause cancer, or birth defects or other reproductive harm.

SECTION 16: OTHER INFORMATION

16.1 Disclaimer

This product is offered by bioWORLD for research, laboratory or further manufacturing use. Not for human use or consumption. The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchant-ability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall bio-WORLD.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect,incidental,consequential or exemplary damages, howsoever arising, even if bio-WORLD.com has been advised of the possibility of such damages.

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16.2 Preparation Information

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