SAFETY DATA SHEET

HYDROLIGROIN™

Inverse water-in-oil emulsion of ligroin and water for cultural heritage cleaning

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU

Document Info	Details
Date of compilation	2026-06-01
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Article number	08

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

1.1 Product identifier

Trade name: Hydroligroin™
Article number: 08

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

Use of substance/mixture: Inverse water-in-oil (W/O) emulsion of ligroin and water in equimolar ratio, stabilised with a proprietary low environmental impact surfactant system. Designed for the professional cleaning of artworks and historic artefacts — selective removal of waxes, aged oil varnishes, paraffins, and lipophilic deposits.
Uses advised against: Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household).

1.3 Details of the supplier of the safety data sheet

Lab4Green S.r.l.
Via Torquato Tasso n. 108
00185 Rome, Italy
E-mail: info@lab4green.it
Website: www.lab4green.it
Competent person: Andrea Macchia — Department Health, Safety and Environment

1.4 Emergency telephone number

Poison Control Centre	Address	Telephone
Centro Antiveleni Milano	Piazza dell'Ospedale Maggiore 3, 20161 Milano	(+39) 02.66101029
Centro Antiveleni Roma	Piazza Sant'Onofrio 4, 00165 Roma	(+39) 06.3054343

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP):

Hazard class	Category	Code	Hazard statement
Flammable liquid	Category 3	H226	Flammable liquid and vapour
Aspiration hazard	Category 1	H304	May be fatal if swallowed and enters airways
Skin irritation	Category 2	H315	Causes skin irritation
STOT — single exposure	Category 3	H336	May cause drowsiness or dizziness
Aquatic toxicity (chronic)	Category 2	H411	Toxic to aquatic life with long lasting effects

Note: Classification is driven by the ligroin (petroleum naphtha) component. The emulsion format significantly reduces operator exposure through lower effective VOC emissions (>60% reduction vs pure ligroin).

2.2 Label elements

Signal word: Danger

Hazard pictograms: GHS02 (Flame), GHS07 (Exclamation mark), GHS08 (Health hazard), GHS09 (Environment)

Hazard statements:

H226 — Flammable liquid and vapour.

H304 — May be fatal if swallowed and enters airways.

H315 — Causes skin irritation.

H336 — May cause drowsiness or dizziness.

H411 — Toxic to aquatic life with long lasting effects.

Precautionary statements:

Code	Precautionary statement
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P261	Avoid breathing vapours.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTRE/doctor.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P331	Do NOT induce vomiting.
P370+P378	In case of fire: Use foam, dry powder, CO_2 to extinguish. Do NOT use water jet.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container in accordance with local/regional/national regulations.

2.3 Other hazards

Contains petroleum hydrocarbons (ligroin fraction). Vapours are heavier than air and may spread along floors. Prolonged or repeated skin contact may cause defatting and dermatitis. Not classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not pertinent (mixture).

3.2 Mixtures

Inverse water-in-oil (W/O) emulsion in equimolar water/ligroin ratio, stabilised with a proprietary low environmental impact surfactant system.

Component	CAS No.	Classification (CLP)	Concentration
Ligroin (petroleum naphtha, light)	8032-32-4	Flam. Liq. 2 (H225); Asp. Tox. 1 (H304); Skin Irrit. 2 (H315); STOT SE 3 (H336); Aquatic Chronic 2 (H411)	~50% (equimolar)
Water	7732-18-5	Not classified	~50% (equimolar)
Proprietary surfactant system	—	Not classified at use concentration	< 1.5%

The mixture does not contain SVHC substances above 0.1%.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact: Rinse immediately with plenty of water for at least 15 minutes. Remove contact lenses if present. Get medical attention if irritation persists.

Skin contact: Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Move to fresh air immediately. If breathing is difficult, give oxygen. If symptoms persist, seek medical advice.

Ingestion: Do NOT induce vomiting — aspiration hazard. Rinse mouth with water. Immediately call a poison centre or doctor. If the person is unconscious, place in recovery position.

4.2 Most important symptoms and effects

Inhalation: headache, drowsiness, dizziness, nausea. Skin: irritation, defatting, dermatitis upon prolonged contact. Eyes: irritation. Ingestion: aspiration into lungs may cause chemical pneumonitis, which can be fatal.

4.3 Indication of immediate medical attention

Aspiration hazard — if swallowed, do not induce vomiting. Seek immediate medical attention. Symptomatic treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable: Alcohol-resistant foam, dry chemical powder, carbon dioxide (CO_2), water spray (fog). Co-ordinate firefighting measures to the fire surroundings.

Unsuitable: Water jet (may spread fire).

5.2 Special hazards arising from the substance or mixture

Flammable liquid (ligroin component). Flash point > 40 °C. Vapours may form explosive mixtures with air. Vapours are heavier than air and may spread along floors. Hazardous combustion products: carbon monoxide (CO), carbon dioxide (CO_2), unburned hydrocarbons, soot.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and full protective clothing. Use water spray to cool fire-exposed containers. Collect contaminated firefighting water separately.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources. Ventilate the area. Wear adequate protective equipment as described in Section 8. Avoid breathing vapours. Avoid contact with skin and eyes.

6.2 Environmental precautions

Prevent entry to sewers, drains, surface and ground water. The product contains petroleum hydrocarbons — notify authorities if significant spillage reaches watercourses.

6.3 Methods and materials for containment and cleaning up

Absorb spillage with inert, non-combustible material (sand, earth, vermiculite). Collect in closed containers for disposal. Ventilate the area thoroughly. Do not flush to drains.

6.4 Reference to other sections

Individual protection: Section 8. Waste disposal: Section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Shake before use to ensure emulsion homogeneity. Keep away from heat, sparks, open flames, and hot surfaces. No smoking. Use explosion-proof electrical/ventilating/lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Avoid breathing vapours. Ensure good ventilation. Do not eat, drink, or smoke during use.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature: 5–35 °C

Keep container tightly closed. Store in a cool, well-ventilated place. Keep away from ignition sources. Protect from frost and direct sunlight. Store away from strong oxidisers.

7.3 Specific end use(s)

Reduced environmental impact alternative to pure ligroin for the professional cleaning of cultural heritage surfaces.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (ligroin component):

Country	Substance	TWA [mg/m³]	STEL [mg/m³]	Source
EU	Petroleum naphtha (as total hydrocarbons)	300	—	EU IOELV
IT	n-Hexane (marker component)	72	—	D.Lgs. 81/2008

Note: Effective operator exposure is reduced by >60% compared to pure ligroin due to the emulsion format.

8.2 Exposure controls

Ensure good ventilation of the work station.

Eye/face protection: Chemical splash goggles (EN 166).

Hand protection: Chemical-resistant gloves, Category III (EN 374). Recommended: nitrile rubber (NBR), thickness ≥0.38 mm, breakthrough time >480 minutes.

Skin protection: Wear suitable protective clothing. Avoid prolonged or repeated skin contact (defatting risk).

Respiratory protection: In well-ventilated areas, not normally required (>60% VOC reduction vs pure ligroin). In confined spaces or prolonged use, use respiratory protection Type A (colour code: Brown) for organic vapours.

Environmental exposure controls: Keep away from drains, surface and ground water. Do not allow to enter the environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property	Value
Physical state	Liquid (emulsion)
Appearance	Homogeneous white milky emulsion
Colour	White (opaque)
Odour	Characteristic petroleum odour (reduced vs pure ligroin)
pH (aqueous phase)	6.5–7.5
Melting point/freezing point	Not available
Boiling point	Not available (emulsion system)
Flash point	> 40 °C (significantly higher than pure ligroin < 0 °C)
Auto-ignition temperature	~250 °C (ligroin component)
Flammability	Flammable liquid — Category 3 (H226)

Lower explosion limit (LEL)	~1.1 vol% (ligroin component)
Upper explosion limit (UEL)	~5.9 vol% (ligroin component)
Vapour pressure (20 °C)	Reduced >60% vs pure ligroin (emulsion format)
Evaporation rate	Comparable to pure ligroin
Relative density (20 °C)	0.75–0.80 g/mL
Water solubility	Emulsion system (W/O) — equimolar water/ligroin
Viscosity (25 °C)	5–15 mPa·s
Residues after evaporation	None (FTIR-ATR verified)
Hansen Solubility Parameters (δD, δP, δH)	15.1, 1.2, 2.8 MPa½
Preferential solubility	Nonpolar substances (RED < 1)
Oxidising properties	None

9.2 Other information

Effective VOC reduction in use: >60% compared to pure ligroin. Solvent consumption reduction: ~35% per m² of treated surface.

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapours of the ligroin component may form explosive mixtures with air.

10.2 Chemical stability

Stable under recommended storage conditions (5–35 °C). Shake before use to restore emulsion homogeneity if phase separation occurs.

10.3 Possibility of hazardous reactions

Vapour/air mixtures are explosive within the LEL–UEL range. May react with strong oxidisers.

10.4 Conditions to avoid

Heat, sparks, open flame, hot surfaces. Static discharge. Freezing. Excessive temperatures.

10.5 Incompatible materials

Strong oxidising agents. Strong acids.

10.6 Hazardous decomposition products

Thermal decomposition or combustion may liberate carbon monoxide (CO), carbon dioxide (CO_2), unburned hydrocarbons, soot.

SECTION 11: Toxicological information

The hazard assessment is based on the properties of the ligroin component. The emulsion format significantly reduces effective operator exposure through lower VOC emissions and reduced dermal contact.

11.1 Information on toxicological effects

Endpoint	Classification
Acute toxicity (oral)	Not classified (LD50 > 5,000 mg/kg, rat — ligroin)
Acute toxicity (dermal)	Not classified (LD50 > 3,160 mg/kg, rabbit — ligroin)
Acute toxicity (inhalation)	Not classified (LC50 > 10 mg/L/4h, rat — ligroin)
Skin corrosion/irritation	Category 2 — H315: Causes skin irritation
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT — single exposure	Category 3 — H336: May cause drowsiness or dizziness
STOT — repeated exposure	Not classified
Aspiration hazard	Category 1 — H304: May be fatal if swallowed and enters airways

11.2 Endocrine disrupting properties

Not listed.

SECTION 12: Ecological information

Use according to good practice, avoiding dispersal in the environment. The product contains petroleum hydrocarbons (ligroin) which are toxic to aquatic life.

12.1 Toxicity

Toxic to aquatic life with long lasting effects (ligroin component). Aquatic Chronic Category 2 — H411.

12.2 Persistence and degradability

The ligroin component is inherently biodegradable. The aqueous phase and surfactant system are readily biodegradable. Overall environmental impact reduced >30% vs pure ligroin (LCA verified, ReCiPe 2016 Midpoint H).

12.3 Bioaccumulative potential

Ligroin hydrocarbons may bioaccumulate to a limited extent. Log KOW for typical ligroin components: 3.0–5.2.

12.4 Mobility in soil

The ligroin component is volatile and has low water solubility. The emulsion format may increase mobility in soil due to the aqueous phase.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Endocrine disrupting properties

Not listed.

12.7 Other adverse effects

Prevent contamination of soil and water. The emulsion format reduces overall environmental impact by >30% compared to pure ligroin (LCA cradle-to-gate, Ecoinvent 3.10).

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose as hazardous waste containing organic solvents (EWC code 14 06 03*). Do not empty into drains. Do not mix with other waste. Consult the appropriate local waste disposal authority. Empty containers may retain product residue and vapour — observe all label precautions.

SECTION 14: Transport information

The product may be subject to transport regulations due to the flammable ligroin component.

Parameter	Details
14.1 UN number	UN 1993
14.2 UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (contains ligroin)
14.3 Transport hazard class(es)	Class 3 (Flammable liquid)
14.4 Packing group	III
14.5 Environmental hazards	Environmentally hazardous (H411)
14.6 Special precautions for user	Observe standard precautions for flammable liquids
14.7 Transport in bulk (MARPOL/IBC)	Not applicable

ADR/RID: Class 3, PG III, environmentally hazardous. IMDG: Class 3, PG III, marine pollutant. IATA: Class 3, PG III.

SECTION 15: Regulatory information

15.1 Regulations specific to the substance or mixture

Seveso Directive (2012/18/EU): Category P5c — Flammable liquids.

REACH Annex XVII restrictions: Entry 3 — Substances or mixtures which are liquid and classified as Flam. Liq. Category 1, 2 or 3.

SVHC Candidate List (Art. 59 REACH): Does not contain SVHC substances > 0.1%.

Annex XIV authorisation: None.

Export authorisation (Reg. (EC) 649/2012): None.

VOC Directive 2004/42/EC: This product contains volatile organic compounds (ligroin component).

Directive 94/33/EC on the protection of young people at work applies.

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC).

15.2 Chemical safety assessment

No chemical safety assessment has been carried out for this mixture. Life Cycle Assessment (LCA) has been conducted demonstrating >30% overall environmental impact reduction vs pure ligroin.

SECTION 16: Other information

Full text of hazard statements (Sections 2 and 3)

Code	Text
H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H336	May cause drowsiness or dizziness
H411	Toxic to aquatic life with long lasting effects

Environmental impact — Life Cycle Assessment

LCA analysis (cradle-to-gate, Ecoinvent 3.10, ReCiPe 2016 Midpoint H) per functional unit (cleaning of 1 m² of painted surface) demonstrates:

Impact category	Reduction vs pure ligroin
Climate change (kg CO_2 eq)	−28%
Human toxicity, non-cancer	−35%
Photochemical ozone formation	−62%
Fossil resource depletion	−32%

Particulate matter formation	−41%

General bibliography

1. Regulation (EC) 1907/2006 (REACH) • 2. Regulation (EC) 1272/2008 (CLP) • 3. Regulation (EU) 2015/830 • 4–13. CLP ATP 1st–10th

Additional references

The Merck Index • INRS Toxicological Sheets • Patty’s Industrial Hygiene and Toxicology • IFA GESTIS database • ECHA Agency website

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