

## SAFETY DATA SHEET

### 1. Product and Company Identification

Product Name: **Light Check LCD-450 (Visible dye penetrant “Developer”)**  
Company Name: Denshijiki Industry Co., Ltd.  
Address: 5-6-20 Ukima, Kita-Ku, Tokyo  
Section in Charge: Development department  
Telephone: +81-3-5970-8681 FAX: +81-3-5970-8680  
Emergency Telephone: Same as the section in charge  
Date of Creation: June 1, 2004 Date of Revision: January 21, 2021  
Reference Number: SDS15116-09e  
Product Code: 15116  
Recommended Uses and Restrictions on Use: Dye penetrant testing (developer)

### 2. Hazards Identification

#### GHS Classification

Physical Hazards	Aerosols	Category 1
Health Hazards	Acute toxicity (oral)	Classification not possible
	Acute toxicity (dermal)	Classification not possible
	Acute toxicity (inhalation: vapors)	Classification not possible
	Acute toxicity (inhalation: dust/mist)	Category 4
	Skin corrosion/irritation	Classification not possible
	Serious eye damage/eye irritation	Category 2A
	Respiratory Sensitization	Classification not possible
	Skin sensitization	Classification not possible
	Germ cell mutagenicity	Classification not possible
	Carcinogenicity	Classification not possible
	Reproductive toxicity	Category 2
	Reproductive toxicity/effects on or via lactation	Classification not possible
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system, systemic toxicity)
		Category 3 (airway irritant, anesthetic effect)
	Specific target organ toxicity (repeated exposure)	Category 2 (spleen, blood vessels, liver)
	Aspiration hazard	Classification not possible
Environmental Hazards	Hazardous to the aquatic environment (acute)	Classification not possible
	Hazardous to the aquatic environment (chronic)	Classification not possible
	Hazardous to the ozone layer	Classification not possible

## GHS Label Elements



Pictograms:

Signal Word: Danger

Hazard Statement: Extremely flammable aerosol  
Pressurized container: may burst if heated  
Harmful if inhaled (dust, mist)  
Causes serious eye irritation  
Suspected of damaging fertility or the unborn child  
Causes damage to organs (central nervous system, systemic toxicity)  
May cause respiratory irritation  
May cause drowsiness or dizziness  
May cause damage to organs through prolonged or repeated exposure (spleen, blood vessels, liver)

## Precautionary Statement:

Prevention Obtain special instructions (SDS) before use.  
Do not handle until all safety precautions have been read and understood.  
Keep away from ignition sources such as heat, sparks, open flames and hot objects. No smoking.  
Do not spray on an open flame or other ignition source.  
Do not pierce or burn, even after use.  
Do not breathe gas, mist, vapor and spray.  
Wash hands thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/eye protection/face protection/protective clothing.

## Response

IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
If exposed or concerned: Call a POISON CENTER/doctor. Get medical advice/attention.  
Call a POISON CENTER/doctor, if you feel unwell. Get medical advice/attention.

Storage Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.

Protect from sunlight. Do not expose to temperatures exceeding 40°C/104°F.

Disposal Dispose of contents/container at an approved waste disposal plant in accordance with local/regional/national regulations.

## Other hazards not categorized by GHS classification

Contact with liquefied gas may cause frostbite

### 3. Composition/Information on Ingredients

Substance/Mixture: Mixture

Chemical Name or Common Name	Content (%)	CAS No.
Isopropyl alcohol	45-55	67-63-0
Calcium carbonate *	2-10	471-34-1
Silicon dioxide	1-5	112926-00-8
Polyoxyethylene decyl ether	≤ 1	26183-52-8
Rosin	< 0.5	8050-09-7
LPG (Liquefied Petroleum Gas)		
Propane	15-25	74-98-6
n-Butane	5-15	106-97-8
i-Butane	1-5	75-28-5

\*Contains 1-5% rosin in calcium carbonate

### 4. First Aid Measures

- IF INHALED: : Remove person to fresh air and keep comfortable for breathing.  
Call a POISON CENTER/doctor, if you feel unwell.
- IF ON SKIN: : Take off immediately all contaminated clothing.  
Rinse for at least 15 minutes with lukewarm slowly flowing water.  
If skin irritation occurs, get medical advice/attention.  
Wash contaminated clothes before reuse.
- IF IN EYES: : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse for at least 15 minutes, and then get medical attention.
- IF SWALLOWED: : Call a POISON CENTER/doctor, if you feel unwell.  
If the product remains in the mouth, rinse thoroughly.  
Do NOT induce vomiting.
- Most Important Signs and Symptoms, Acute and Delayed : Causes irritation in eyes, nose, and throat by high-concentration exposure.  
Causes drowsiness, headache and coordination disorder. Causes dryness, cracks, and dermatitis by long exposure to skin because of its antilipid nature.

### 5. Firefighting Measures

- Extinguishing Media : Small fire: Carbon dioxide, powder extinguisher, foam extinguisher and water mist with extinguishing agent.  
Large fire: Foam extinguisher, plenty of water mist.
- Inappropriate Extinguishing Media : Straight stream of water
- Specific Hazards : May explode if aerosol container is at the scene of a fire.  
Extremely flammable and easily ignited by heat, spark and flame.  
May cause vapor-explosion indoors, outdoors or in a sewage trench.  
May generate irritant, poisonous, or corrosive gas in a fire.

Special Firefighting Procedures	: Extremely low flash point: Use water if other extinguishing media are not effective. Remove containers from the fire area, if it can be done safely. If not, spray containers and the surrounding area with water to keep them cool. Conduct firefighting activities from the most distant place that allows it to be done effectively using an unmanned hose holder or a nozzle with a monitor. Keep cooling containers with plenty of water even after the fire is extinguished.
Protection of Firefighters	: Wear appropriate protective equipment to avoid inhalation of toxic gases. Fight a fire from upwind.

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## 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures	: Operators must wear proper protective gear (refer to 8. Exposure Controls/Personal Protection) and avoid contact with the eyes and skin, and gas inhalation. When leaking (spraying), handle from upwind. Keep the leaking spot facing up. Let the gas spray out completely and then perform the subsequent procedures. Quickly remove nearby ignition sources, high-temperature objects and flammables. Evacuate anyone who is downwind and keep everyone out except authorized persons. Ventilate before entering the restricted area.
Environmental Precautions	: Avoid draining to drainage trench, sewage trench, basement or a closed space. Be careful not to discharge into rivers or anywhere else that would affect the environment.
Method and Materials for Containment and Cleaning Up	: Use tools whose materials do not generate sparks upon impact or due to static electricity. For small leaks, collect the material by absorbing the released material with soil, sand, or non-combustible material. For large leaks, put sand around the leakage to keep it from flowing out. Process contaminated items and waste according to relevant regulations.
Measures to Prevent Secondary Accidents	: Inform relevant organizations immediately to prevent further accidents and expansion. Remove nearby potential ignition sources immediately and prepare fire extinguishing media. Do not walk on the released material unnecessarily.

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## 7. Handling and Storage

### Handling

Technical Measures	: Amounts larger than the designated amount must be handled in a factory, a storage facility, or a laboratory in compliance with the standards required by the relevant regulations. Connect the equipment to ground and use explosion-proof electric appliances as an anti-static measure. Do not use high-temperature objects, sparks and fire nearby. - No smoking. Take engineering measures and use protective equipment as described in Section 8. Exposure Controls/Personal Protection. Provide local and general ventilation as described in Section 8. Exposure Controls/Personal Protection.
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Precautions for Safe Handling	: Do not use things that generate fire, sparks and arcs or high-temperature objects. Do not spray at an open flame or high-temperature incandescent objects. Use this substance with one's back facing upwind to prevent it from being blown back on the user. The container may rupture if stored in a high-temperature place. Avoid contact, inhalation, or ingestion. Do not get in eyes. Wash hands thoroughly after handling. Avoid contact with halogens, strong acids, alkalis, and oxidizing agents.
Storage	
Proper Storage Conditions	: Store in a cool, well-ventilated place, away from direct sunlight. May leak or spray out if containers get rusty. Avoid storing it in a humid spot. Store away from fire and heat sources. Do not store where the temperature exceeds 40°C. Use explosion-proof grounded electric appliances if using them in the storage area. Store away from oxidizing agents because of the combustibility. Store locked up.
Safe Packaging Materials	: Use containers regulated by the High Pressure Gas Safety Act and other regulations.

## 8. Exposure Controls/Personal Protection

Control Levels	: Isopropyl alcohol...200 ppm
Permissible Exposure Levels	
Japan Society for Occupational Health (2015 version)	: Isopropyl alcohol...400 ppm, 980 mg/m <sup>3</sup> Butane...500 ppm, 1,200 mg/m <sup>3</sup>
ACGIH	: TLV-TWA Isopropyl alcohol...200 ppm (2013 Version) Butane...1,000 ppm (2008 Version) TLV-STEL Isopropyl alcohol...400 ppm (2013 Version)
Engineering Measures	: In an indoor, inadequately ventilated workplace, provide local or general ventilation equipment. Install a face-washer and safety shower. Facilities must be such that no equipment that reaches high temperatures or that could act as an ignition source will be installed near the place where this material is handled.
Protective Equipment	: Wear the following protective equipment as needed.
Respiratory System Protection	: Organic gas masks, air-supplied respirators, breathing equipment, etc.
Hand Protection	: Protective gloves (solvent resistant, impermeable)
Eye Protection	: Eye protection, face protection.
Skin and Body Protection	: Oil-resistant (impermeable, anti-static) apron, (anti-static) protective wear, electrically conductive boots, etc.

## 9. Physical and Chemical Properties

	Contained liquid	Spraying agent (LPG)
Physical state	Liquid	Under atmospheric pressure: gas, in pressurized container: liquid
Color	White dispersion	Colorless and transparent
Odor	Alcohol smell	odorless
Melting point/ freezing point	-89.5°C (IPA)	-187.7--138.4°C
Boiling point or initial boiling point and boiling range	82.4°C (IPA)	-42.1--0.5°C
Flammability	Flammable	Flammable
Lower and upper explosion limit / flammability limit	2.0-12.7vol% (IPA)	1.8-9.5vol%
Flash point	11.7°C (TAG Closed cup IPA)	-104.4--73.8°C
Auto-ignition temperature	456°C (IPA)	405-550°C
Decomposition temperature	No data available	No data available
pH	No data available	No data available
Kinematic viscosity	2.37 mPa·s (20°C IPA)	No data available
Solubility	No data available	Slightly soluble in water
Partition coefficient n-octanol/water (log value)	No data available	No data available
Vapor pressure	4.44 kPa (20°C IPA)	0.44 MPa (40°C)
Density and/or relative density	0.805 (20°C)	0.539 (20°C)
Relative vapor density	2.1 (Air = 1 IPA)	1.895-2.538 kg/m <sup>3</sup> (1 MPa 15.6°C)
Particle characteristics	0.02 - 6 μm	No data available

## 10. Stability and Reactivity

- Chemical Reactivity and Stability : May rupture at 40°C or higher.  
Internal pressure at ambient temperature: approx. 0.52 MPa  
May catch fire and explode by electrostatic discharge.
- Possibility of Hazardous Reactions : May rupture by heat and impact.  
May cause fire and explosion if mixed with oxidizing agents or other hazardous reactive chemicals.  
Corrodes aluminum at high temperature. Damages various plastics.  
A flammable liquefied gas and readily forms an explosive gas when mixed with air.
- Conditions to Avoid : Storage in hot, humid spots and usage near fire.
- Incompatible Materials : Strong acids, strong alkalis, strong oxidizing agents.
- Hazardous Decomposition Products : May generate toxic gases (CO, NO<sub>x</sub>, etc.) by burning.

## 11. Toxicological Information

Acute Toxicity (oral)	: LD <sub>50</sub> = 4,384–5,840 mg/kg (rat): IPA
Acute Toxicity (dermal)	: LD <sub>50</sub> = 12,870 mg/kg (rabbit) (EHC 103 (1990), (PATTY (6th, 2012), (SIDS(2002))): IPA
Acute Toxicity (inhalation)	: gas... LC <sub>50</sub> > 55,000 ppm/2 h (guinea pig): propane LC <sub>50</sub> > 55,000 ppm/4 h (guinea pig): propane LC <sub>50</sub> > 27,7374 ppm/4 h (rat): n-butane Vapor... LC <sub>50</sub> = 68.5–72.6 ppm/4 h (rat): IPA LC <sub>50</sub> > 277,374 ppm/4 h (rat): n-butane
Skin Corrosion and Skin Irritation	: Reported as "A rabbit skin irritation test causes no or slight irritation but EHC 103 (1990) skin test for treatment of human volunteers and alcoholic patients causes no irritation": IPA
Serious Eye Damage or Eye Irritation	: Described as "There is a report of light to severe irritation in a rabbit eye irritation test": IPA
Respiratory Sensitization or Skin Sensitization	: Respiratory sensitization: No data available Skin sensitization: No data available
Germ Cell Mutagenicity	: No data available.
Carcinogenicity	: Described as "Classified as group 3 by IARC and group A4 by ACGIH": IPA
Reproductive Toxicity	: Described as "Observed decrease in copulation rate of male parent animal, low weight and increase in mortality rate of child animals after birth by providing parent animals with dosage having general toxic impact (weight change accompanied by liver and kidney tissue change). Described as "A reproduction test by oral administration to pregnant female rats showed only slight effects (low weight and skeletal mutation) on fetuses but no deformities, but a dosage with mother animal toxicity (unstable walking, lethargy, and decreases in food consumption and animal weight gain) showed reproductive toxicity such as implantation failure and complete embryo resorption": IPA
Specific Target Organ Toxicity, Single Exposure	: In humans, causes central nervous depression (lethargy, coma, respiratory depression), gastrointestinal irritation (nausea, vomiting), effects on circulatory system including blood pressure, low body temperature and irregular heartbeat, and other systemic adverse effects. Description in (EHC 103 (1990), Ministry of the Environment Risk Assessment, Vol. 6 (2005)): IPA "Causes irritation to nose and throat (coughing, sore throat) by inhalation exposure" Description in ACGIH and Japan Society for Occupational Health Recommendation: n-butane "Has anesthetic effect or depresses central nervous system in humans by high-concentration inhalation"
Specific Target Organ Toxicity, Repeated Exposure	: Description in EHC 103 (1990): IPA "A vapor inhalation exposure test on rats for four months causes a depressed white blood cell count at 100 mg/m <sup>3</sup> (concentration converted to guidance value: 0.067 mg/L/6 h) or more and causes pathologic effects on respiratory organs (lungs and bronchi), liver and spleen at 500 mg/m <sup>3</sup> (concentration converted to guidance value: 0.33 mg/L/6 h)"

Aspiration Hazard : No data available

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## 12. Ecological Information

Ecotoxicity : EC<sub>50</sub> > 1000 mg/L/72 h (Alga *Pseudokirchneriella subcapitata*): IPA  
EC<sub>50</sub> > 1000 mg/L/48 h (Crustacea *Daphnia magna*): IPA  
LC<sub>50</sub> > 100 mg/L/96 h (Fish Killifish): IPA

Persistency/Degradability : No data available

Bioaccumulative Potential : No data available

Mobility in Soil : No data available

Hazardous to the Ozone Layer : No data available

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## 13. Disposal Considerations

Dispose of after complete degassing.

Have contents/container disposed of by an industrial waste disposal contractor licensed by the prefectural governor.

Dispose of or have waste generated from effluent treatment or incineration disposed of by a waste disposal contractor in accordance with the Waste Management and Public Cleansing Act and other related laws.

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## 14. Transport information

UN Hazard Class : 2.1

UN No. : 1950

Follow other related laws and regulations.

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## 15. Regulatory Information

Comply with the applicable laws and regulations regarding this product in each country/region.

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## 16. Other Information

This Safety Data Sheet was prepared in accordance with JIS Z 7253:2019 to provide users of this product with reference information to ensure safe handling. Users are responsible for taking appropriate measures for individual handling conditions with reference to this SDS.

This SDS does not represent any guarantee of safety.

Major references

Safety Data Sheets (SDS) provided by raw material manufacturers

Japanese Standards Association (JIS) JIS Z 7253:2019 "Hazard communication of chemicals based on GHS"

NITE Chemical Risk Information Platform (CHRIP)

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