# Safety data sheet
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

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

· **1.1 Product identifier**

· **Trade name: UV-1127 UV Curable Glossy Dielectric**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Sector of Use** SU16 Manufacture of computer, electronic and optical products, electrical equipment
· **Application of the substance / the mixture** Functional electronic insulating ink

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Kayaku Advanced Materials, Inc.
200 Flanders Road
Westborough, MA 01581
Tel: (617) 965-5511
Fax: (617) 965-5818

· **Further information obtainable from:**
Product Safety
Email: productsafety@kayakuAM.com
· **1.4 Emergency telephone number:**
Kayaku Advanced Materials : 617-965-5511
Chemtrec USA Emergency : 800-424-9300 (24 hr)
Chemtrec International Emergency : 703-527-3887 (24 hr)

## SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS08 health hazard

| | |
|---|---|
| Muta. 1B | H340 May cause genetic defects. |
| Carc. 1B | H350 May cause cancer. |

GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

GHS07

| | |
|---|---|
| Skin Irrit. 2 | H315 Causes skin irritation. |
| Eye Irrit. 2 | H319 Causes serious eye irritation. |
| Skin Sens. 1 | H317 May cause an allergic skin reaction. |
| STOT SE 3 | H335 May cause respiratory irritation. |

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 1)*

· ***Hazard pictograms***

GHS07 GHS08 GHS09

· ***Signal word*** *Danger*

· ***Hazard-determining components of labelling:***
*Urethane acrylate oligomer*
*Proprietary Resin*
*Proprietary Defoamer*
*Proprietary Dye*

· ***Hazard statements***
*H315 Causes skin irritation.*
*H319 Causes serious eye irritation.*
*H317 May cause an allergic skin reaction.*
*H340 May cause genetic defects.*
*H350 May cause cancer.*
*H335 May cause respiratory irritation.*
*H411 Toxic to aquatic life with long lasting effects.*

· ***Precautionary statements***

| | |
|---|---|
| *P210* | *Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.* |
| *P261* | *Avoid breathing dust/fume/gas/mist/vapours/spray.* |
| *P273* | *Avoid release to the environment.* |
| *P280* | *Wear protective gloves/protective clothing/eye protection/face protection.* |
| *P302+P352* | *IF ON SKIN: Wash with plenty of soap and water.* |
| *P304+P340* | *IF INHALED: Remove person to fresh air and keep comfortable for breathing.* |
| *P305+P351+P338* | *IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.* |
| *P308+P313* | *IF exposed or concerned: Get medical advice/attention.* |
| *P312* | *Call a POISON CENTER/doctor if you feel unwell.* |
| *P321* | *Specific treatment (see on this label).* |
| *P362+P364* | *Take off contaminated clothing and wash it before reuse.* |
| *P333+P313* | *If skin irritation or rash occurs: Get medical advice/attention.* |
| *P337+P313* | *If eye irritation persists: Get medical advice/attention.* |
| *P391* | *Collect spillage.* |
| *P403+P233* | *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 regulations.* |

· ***Additional information:***
*Restricted to professional users.*

· ***2.3 Other hazards***

· ***Results of PBT and vPvB assessment***

· ***PBT:*** *Not applicable.*

· ***vPvB:*** *Not applicable.*



*(Contd. on page 3)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 2)*

## SECTION 3: Composition/information on ingredients

· ***3.2 Chemical characterisation: Mixtures***
· ***Description:*** *Mixture of substances listed below with nonhazardous additions.*

| · ***Dangerous components:*** | | |
|---|---|---|
| | *Urethane acrylate oligomer*<br>*Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1B, H317* | *40-60%* |
| | *Proprietary Resin*<br>*Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335* | *25-50%* |
| | *Proprietary photoinitiator*<br>*Aquatic Acute 1, H400; Aquatic Chronic 2, H411* | *1-5%* |
| | *Acrylic leveling agent*<br>*Skin Irrit. 2, H315; Eye Irrit. 2, H319* | *1-5%* |
| | *Surface additive*<br>*Aquatic Acute 1, H400; Aquatic Chronic 1, H410* | *1-5%* |
| | *Proprietary Dye*<br>*Eye Irrit. 2, H319; Skin Sens. 1A, H317* | *<1%* |
| *CAS: 119-61-9*<br>*EINECS: 204-337-6* | *Benzophenone*<br>*Carc. 2, H351; Aquatic Acute 1, H400; Aquatic Chronic 1, H410* | *<1%* |
| | *Proprietary Defoamer*<br>*Flam. Liq. 3, H226; Acute Tox. 3, H331; Muta. 1B, H340; Carc. 1B, H350; Asp. Tox. 1, H304* | *<1%* |

· ***Additional information:*** *For the wording of the listed hazard phrases refer to section 16.*

## SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information:*** *Immediately remove any clothing soiled by the product.*
· ***After inhalation:***
*Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.*
· ***After skin contact:*** *Immediately wash with water and soap and rinse thoroughly.*
· ***After eye contact:***
*Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.*
· ***After swallowing:*** *If symptoms persist consult doctor.*
· ***4.2 Most important symptoms and effects, both acute and delayed*** *No further relevant information available.*
· ***4.3 Indication of any immediate medical attention and special treatment needed*** *Treat symptomatically.*

## SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:***
*Alcohol resistant foam*
*Fire-extinguishing powder*
*ABC powder*

*(Contd. on page 4)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 3)*

· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet*
· ***5.2 Special hazards arising from the substance or mixture*** *No further relevant information available.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Wear self-contained respiratory protective device.*

## *SECTION 6: Accidental release measures*

· ***6.1 Personal precautions, protective equipment and emergency procedures***
*Wear protective equipment. Keep unprotected persons away.*
*Ensure adequate ventilation*
*Keep away from ignition sources.*
· ***6.2 Environmental precautions:***
*Inform respective authorities in case of seepage into water course or sewage system.*
*Do not allow to enter sewers/ surface or ground water.*
· ***6.3 Methods and material for containment and cleaning up:***
*Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).*
*Ensure adequate ventilation.*
· ***6.4 Reference to other sections***
*See Section 7 for information on safe handling.*
*See Section 8 for information on personal protection equipment.*
*See Section 13 for disposal information.*

## *SECTION 7: Handling and storage*

· ***7.1 Precautions for safe handling***
*Ensure good ventilation/exhaust at the workplace.*
*Open and handle receptacle with care.*
*Prevent formation of aerosols.*
· ***Information about fire - and explosion protection:***
*Keep ignition sources away - Do not smoke.*
*Protect against electrostatic charges.*
*Keep respiratory protective device available.*

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and containers:*** *No special requirements.*
· ***Information about storage in one common storage facility:***
*Do not store together with oxidising and acidic materials.*
*Do not store together with alkalis (caustic solutions).*
· ***Further information about storage conditions:***
*Store in cool, dry conditions in well sealed containers.*
*Protect from heat and direct sunlight.*
*Store receptacle in a well ventilated area.*
· ***7.3 Specific end use(s)*** *No further relevant information available.*

## *SECTION 8: Exposure controls/personal protection*

· ***Additional information about design of technical facilities:*** *No further data; see item 7.*

*(Contd. on page 5)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 4)*

· ***8.1 Control parameters***
· ***Ingredients with limit values that require monitoring at the workplace:***
*The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.*
· ***Additional information:*** *The lists valid during the making were used as basis.*

· ***8.2 Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
*Keep away from food and beverages.*
*Immediately remove all soiled and contaminated clothing*
*Wash hands before breaks and at the end of work.*
*Store protective clothing separately.*
*Avoid contact with the eyes and skin.*
· ***Respiratory protection:***
*In case of low exposure use cartridge respirator. In case of intensive or longer exposure use self-contained respiratory protective device.*
· ***Protection of hands:***

*Protective gloves*

*The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.*
· ***Material of gloves*** *Nitrile rubber, NBR*
· ***Penetration time of glove material***
*The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.*
· ***Eye protection:***

*Tightly sealed goggles*

## *SECTION 9: Physical and chemical properties*

| | |
|---|---|
| · ***9.1 Information on basic physical and chemical properties*** | |
| · ***General Information*** | |
| · ***Appearance:*** | |
| ***Form:*** | *Liquid* |
| ***Colour:*** | *Green, Blue* |
| · ***Odour:*** | *Sweetish* |
| · ***Odour threshold:*** | *Not determined.* |
| · ***pH-value:*** | *Not determined.* |
| · ***Change in condition*** | |
| ***Melting point/freezing point:*** | *Undetermined.* |
| ***Initial boiling point and boiling range:*** | *Undetermined.* |
| · ***Flash point:*** | *93 °C* |

*(Contd. on page 6)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 5)*

| | |
|---|---|
| · **Flammability (solid, gas):** | Not applicable. |
| · **Decomposition temperature:** | Not determined. |
| · **Auto-ignition temperature:** | Product is not selfigniting. |
| · **Explosive properties:** | Not determined. |
| · **Explosion limits:** | |
| **Lower:** | Not determined. |
| **Upper:** | Not determined. |
| · **Vapour pressure:** | Not determined. |
| · **Density:** | Not determined. |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not determined. |
| · **Evaporation rate** | Not determined. |
| · **Solubility in / Miscibility with water:** | Not miscible or difficult to mix. |
| · **Partition coefficient: n-octanol/water:** | Not determined. |
| · **Viscosity:** | |
| **Dynamic:** | Not determined. |
| **Kinematic:** | Not determined. |
| · **Solvent content:** | |
| **Organic solvents:** | 0.0 % |
| **Solids content:** | 100 % |
| · **9.2 Other information** | No further relevant information available. |

## SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability** Stable
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions** No dangerous reactions known.
· **10.4 Conditions to avoid**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
· **10.5 Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
· **10.6 Hazardous decomposition products:** Carbon monoxide and carbon dioxide

## SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.

| · **LD/LC50 values relevant for classification:** | | |
|---|---|---|
| **Proprietary Defoamer** | | |
| Oral | LD50 | > 6000 mg/kg (Rat) |

*(Contd. on page 7)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 6)*

| | | |
|---|---|---|
| *Dermal* | *LD50* | *> 3000 mg/kg (rabbit)* |
| *Inhalative* | *LC50/4 h* | *> 7.8 mg/l (Rat)* |

· ***Primary irritant effect:***
· ***Skin corrosion/irritation***
*Causes skin irritation.*
· ***Serious eye damage/irritation***
*Causes serious eye irritation.*
· ***Respiratory or skin sensitisation***
*May cause an allergic skin reaction.*
· ***CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)***
· ***Germ cell mutagenicity***
*May cause genetic defects.*
· ***Carcinogenicity***
*May cause cancer.*
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*
· ***STOT-single exposure***
*May cause respiratory irritation.*
· ***STOT-repeated exposure*** *Based on available data, the classification criteria are not met.*
· ***Aspiration hazard*** *Based on available data, the classification criteria are not met.*

## *SECTION 12: Ecological information*

· ***12.1 Toxicity***

| · ***Aquatic toxicity:*** | |
|---|---|
| ***Proprietary photoinitiator*** | |
| *EC50/48 h* | *26 mg/l (daphnia magna)* |

· ***12.2 Persistence and degradability*** *No further relevant information available.*
· ***12.3 Bioaccumulative potential*** *No further relevant information available.*
· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***Ecotoxical effects:***
· ***Remark:*** *Toxic for fish*
· ***Additional ecological information:***
· ***General notes:***
*Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water*
*Do not allow product to reach ground water, water course or sewage system.*
*Danger to drinking water if even small quantities leak into the ground.*
*Also poisonous for fish and plankton in water bodies.*
*Toxic for aquatic organisms*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*
· ***12.6 Other adverse effects*** *No further relevant information available.*

## *SECTION 13: Disposal considerations*

· ***13.1 Waste treatment methods***
· ***Recommendation***
*Must not be disposed together with household garbage. Do not allow product to reach sewage system.*

*(Contd. on page 8)*

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

**Trade name: UV-1127 UV Curable Glossy Dielectric**

(Contd. of page 7)

*Disposal must be made in accordance with International, National, and regional regulations.*

· **Uncleaned packaging:**
· **Recommendation:** *Disposal must be made according to official regulations.*

## SECTION 14: Transport information

| | |
|---|---|
| · **14.1 UN-Number** | |
| · **ADR, IMDG, IATA** | *UN3082* |
| · **14.2 UN proper shipping name** | |
| · **ADR, IATA** | *ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.* |
| · **IMDG** | *ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2,2-dimethoxy-2-phenylacetophenone, Benzophenone), MARINE POLLUTANT* |
| · **14.3 Transport hazard class(es)** | |
| · **ADR, IMDG, IATA** |  |
| · **Class** | *9 Miscellaneous dangerous substances and articles.* |
| · **Label** | *9* |
| · **14.4 Packing group** | |
| · **ADR, IMDG, IATA** | *III* |
| · **14.5 Environmental hazards:** | *Product contains environmentally hazardous substances: Omnirad BDK* |
| · **14.6 Special precautions for user** | *Warning: Miscellaneous dangerous substances and articles.* |
| · **EMS Number:** | *F-A,S-F* |
| · **Stowage Category** | *A* |
| · **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** | *Not applicable.* |
| · **Transport/Additional information:** | |
| · **ADR** | |
| · **Limited quantities (LQ)** | *5L* |
| · **Excepted quantities (EQ)** | *Code: E1*<br>*Maximum net quantity per inner packaging: 30 ml*<br>*Maximum net quantity per outer packaging: 1000 ml* |
| · **IMDG** | |
| · **Limited quantities (LQ)** | *5L* |
| · **Excepted quantities (EQ)** | *Code: E1*<br>*Maximum net quantity per inner packaging: 30 ml*<br>*Maximum net quantity per outer packaging: 1000 ml* |

(Contd. on page 9)

**Safety data sheet**
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

***Trade name: UV-1127 UV Curable Glossy Dielectric***

*(Contd. of page 8)*

· ***UN "Model Regulation":*** *UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III*

## *SECTION 15: Regulatory information*

· ***15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***

· ***Directive 2012/18/EU***
· ***Named dangerous substances - ANNEX I*** *None of the ingredients is listed.*
· ***Seveso category*** *E2 Hazardous to the Aquatic Environment*
· ***Qualifying quantity (tonnes) for the application of lower-tier requirements*** *200 t*
· ***Qualifying quantity (tonnes) for the application of upper-tier requirements*** *500 t*
· ***REGULATION (EC) No 1907/2006 ANNEX XVII*** *Conditions of restriction: 28, 29*

· ***National regulations:***

· ***Information about limitation of use:***
*Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.*

· ***Other regulations, limitations and prohibitive regulations***
*Kayaku Advanced Materials has confirmed with our precious metal suppliers that they do not use conflict minerals, as outlined in the Dodd-Frank Wall Street Reform and Consumer Protection Act in Title XV, Section 1502.*
· ***15.2 Chemical safety assessment:*** *A Chemical Safety Assessment has not been carried out.*

## *SECTION 16: Other information*

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· ***Relevant phrases***
*H226 Flammable liquid and vapour.*
*H304 May be fatal if swallowed and enters airways.*
*H315 Causes skin irritation.*
*H317 May cause an allergic skin reaction.*
*H319 Causes serious eye irritation.*
*H331 Toxic if inhaled.*
*H335 May cause respiratory irritation.*
*H340 May cause genetic defects.*
*H350 May cause cancer.*
*H351 Suspected of causing cancer.*
*H400 Very toxic to aquatic life.*
*H410 Very toxic to aquatic life with long lasting effects.*
*H411 Toxic to aquatic life with long lasting effects.*
· ***Classification according to Regulation (EC) No 1272/2008***
*Art. 9(1) of Regulation (EC) No. 1272/2008 was used for classification purposes.*

· ***Department issuing SDS:*** *Product safety department*
· ***Contact:*** *Tom Cole, EHS Manager (tcole@kayakuAM.com)*
· ***Revision History:*** *The manufacturer information in Section 1 has been updated.*

*(Contd. on page 10)*

# Safety data sheet
**according to 1907/2006/EC, Article 31**

*Printing date 30.03.2020* *Version number 2* *Revision: 30.03.2020*

**Trade name: UV-1127 UV Curable Glossy Dielectric**

(Contd. of page 9)

· **Abbreviations and acronyms:**
*ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)*
*IMDG: International Maritime Code for Dangerous Goods*
*IATA: International Air Transport Association*
*GHS: Globally Harmonised System of Classification and Labelling of Chemicals*
*EINECS: European Inventory of Existing Commercial Chemical Substances*
*ELINCS: European List of Notified Chemical Substances*
*CAS: Chemical Abstracts Service (division of the American Chemical Society)*
*LC50: Lethal concentration, 50 percent*
*LD50: Lethal dose, 50 percent*
*PBT: Persistent, Bioaccumulative and Toxic*
*vPvB: very Persistent and very Bioaccumulative*
*Flam. Liq. 3: Flammable liquids – Category 3*
*Acute Tox. 3: Acute toxicity - inhalation – Category 3*
*Skin Irrit. 2: Skin corrosion/irritation – Category 2*
*Eye Irrit. 2: Serious eye damage/eye irritation – Category 2*
*Skin Sens. 1: Skin sensitisation – Category 1*
*Skin Sens. 1A: Skin sensitisation – Category 1A*
*Skin Sens. 1B: Skin sensitisation – Category 1B*
*Muta. 1B: Germ cell mutagenicity – Category 1B*
*Carc. 1B: Carcinogenicity – Category 1B*
*Carc. 2: Carcinogenicity – Category 2*
*STOT SE 3: Specific target organ toxicity (single exposure) – Category 3*
*Asp. Tox. 1: Aspiration hazard – Category 1*
*Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1*
*Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1*
*Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2*