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Advanced Surfacing Products & Technology

SAFETY DATA SHEET: OPALINE

SECTION 1: CHEMICAL PRODUCT & COMPANY INFORMATION

APPLICABLE PART #: **BA0083, BA0083NS** IDENTITY: **Opaline**

SUPPLIER: **Universal Photonics, Inc.
85 Jetson Lane
Central Islip, NY 11722** FOR INFORMATION CALL
CUSTOMER SERVICE **(516) 935-4000**
DATE PREPARED: **September 2, 2016**

EMERGENCY TELEPHONE NUMBER: **1.866.519.4752** **3-E COMPANY - ACCT # 3665**

SECTION 2: HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE:
HCS 2012 (29 CFR 1910.1200): **Not a hazardous product according to the OSHA Globally Harmonized System (GHS)**

LABEL ELEMENTS:
HCS 2012 (29 CFR 1910.1200): **Not a hazardous product according to the OSHA Globally Harmonized System (GHS)**

OTHER HAZARDS WHICH DO NOT RESULT IN CLASSIFICATION: **Slightly irritating to eyes. NO particular fire or explosion hazard.**

SECTION 3: COMPOSITION INFORMATION

SUBSTANCE:
CHEMICAL NATURE: **Rare earth(s) oxide(s)**

HAZARDOUS INGREDIENTS AND IMPURITIES: **No ingredients are hazardous.**

NONHAZARDOUS INGREDIENTS AND IMPURITIES:

| CHEMICAL NAME | CAS # | CONCENTRATION % |
|---------------------------------------|------------------|-----------------|
| Cerium Oxide (CeO₂) | 1306-38-3 | > 99 |

MIXTURE: **Not applicable, this product is a substance**

SECTION 4: FIRST AID MEASURES

GENERAL ADVICE: **Show this material safety data sheet to the doctor in attendance**

EYE EXPOSURE: **Rinse with running water while keeping the eyes wide open (at least 15 minutes). If eye irritation persists, consult a physician.**

SKIN EXPOSURE: **Wash off with soap and water. If skin irritation persists, call a physician.**

INHALATION: **If breathed in, move person into fresh air. If symptoms persist, call a physician.**



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INGESTION: **If conscious, drink plenty of water. Never give anything by mouth to an unconscious person. Seek medical advice. Do not leave the victim unattended.**

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED: **Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.**

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: **All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically. There is no specific antidote available.**

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT: **Not Applicable, mineral product**

AUTOIGNITION TEMPERATURE: **> 752 °F (> 400 °C), not auto-flammable, Structure-activity relationship (SAR)**

FLAMMABILITY / EXPLOSIVE LIMIT: **Lower flammability/explosion limit: Not applicable, solid
Upper flammability/explosion limit: Not applicable, solid**

EXTINGUISHING MEDIA:

SUITABLE EXTINGUISHING MEDIA : **Water, foam**
UNSUITABLE EXTINGUISHING MEDIA : **None known**

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS:

Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.

SPECIFIC FIREFIGHTING METHODS: **Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.**

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE: **Not combustible**

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: **Wear suitable protective equipment .**

ENVIRONMENTAL PRECAUTIONS: **No harmful effect to the environment is known or expected under normal conditions of use.
Do not flush into surface water or sanitary sewer system.**

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

METHODS FOR CONTAINMENT: **Dam up**
RECOVERY: **Sweep up and shovel into suitable containers for disposal. Keep in properly labeled containers.**
DECONTAMINATION / CLEANING: **Wash off with plenty of water.**



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SECTION 7: HANDLING & STORAGE

PRECAUTIONS FOR SAFE HANDLING: Avoid contact with skin and eyes. Do not breathe vapors/dust. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

HYGIENE MEASURES: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

- 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
- 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
- 3) Wash exposed skin promptly to remove accidental splashes or contact with material.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

TECHNICAL MEASURES/STORAGE CONDITIONS: Store in a closed container. Keep container tightly closed. Keep away from: No special restrictions on storage with other products.

PACKAGING MATERIAL:

SUITABLE MATERIAL: Plastic materials (polyethylene).

UNSUITABLE MATERIAL: None known

REMARKS: Store in original container.

REQUIREMENTS FOR STORAGE ROOMS AND VESSELS: Stable under recommended storage conditions.

SPECIFIC END USE(S): No data available

SECTION 8: PERSONAL PROTECTION AND EXPOSURE CONTROLS

INTRODUCTORY REMARKS: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

CONTROL PARAMETERS:

COMPONENTS WITH WORKPLACE OCCUPATIONAL EXPOSURE LIMITS:

| INGREDIENTS | VALUE TYPE | VALUE | BASIS |
|--|------------|----------|---|
| PARTICULATES NOT OTHERWISE REGULATED | PEL | 15 mg/m3 | Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants |
| FORM OF EXPOSURE : Total dust | | | |
| PARTICULATES NOT OTHERWISE REGULATED | PEL | 5 mg/m3 | Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants |
| FORM OF EXPOSURE : Respirable fraction | | | |

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CONTROL MEASURES:

ENGINEERING MEASURES: Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures:
Apply technical measures to comply with the occupational exposure limits.
Local exhaust
Dust must be extracted directly at the point of origin.

INDIVIDUAL PROTECTION MEASURES:

RESPIRATORY PROTECTION: When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations. Respirator with a dust filter

HAND PROTECTION: For prolonged or repeated contact use protective gloves.

EYE PROTECTION: Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material. Eye contact should be prevented through the use of: Safety glasses

SKIN AND BODY PROTECTION: Long sleeved clothing

HYGIENE MEASURES: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

- 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
- 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
- 3) Wash exposed skin promptly to remove accidental splashes or contact with material.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday

PROTECTIVE MEASURES: The protective equipment must be selected in accordance with current local standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards, and/or risks that may occur during use. Handle in accordance with good industrial hygiene and safety practice



SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.

APPEARANCE:

FORM: Powder
PHYSICAL STATE: Solid
COLOR: White, creamy-white, yellow



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| | |
|--------------------------------------|--|
| ODOR: | Odorless |
| ODOR THRESHOLD: | No data available |
| PH: | N/A, insoluble product |
| SPECIFIC GRAVITY: | 6.1 at 25 C (77°F) |
| WATER SOLUBILITY: | Insoluble |
| MELTING POINT RANGE: | 2600°C (4712°F) |
| BOILING POINT RANGE: | N/A, solid for which the melting point is > 300 °C / 572° F |
| FLASH POINT: | N/A, mineral product |
| EVAPORATION RATE (BUTYLACETATE=1): | N/A |
| FLAMMABILITY (SOLID, GAS): | The product is not flammable. |
| FLAMMABILITY / EXPLOSIVE LIMIT: | |
| LOWER FLAMMABILITY/EXPLOSION LIMIT: | N/A, solid |
| UPPER FLAMMABILITY/EXPLOSION LIMIT: | N/A, solid |
| AUTOIGNITION TEMPERATURE: | > 752 °F (> 400 °C) Relative self-ignition temperature for solids Method: EU Test Guideline A16 Not auto-flammable, Structure-activity relationship (SAR) |
| VAPOR PRESSURE: | N/A |
| VAPOR DENSITY: | N/A |
| DENSITY: | no data available |
| BULK DENSITY: | 1.400 - 1.900 kg/m3, Tamped product |
| RELATIVE DENSITY: | 6.1 (77 °F (25 °C)) |
| SOLUBILITY: | |
| WATER SOLUBILITY: | < 0.123 µg/l insoluble |
| SOLUBILITY IN OTHER SOLVENTS: | common organic solvents : insoluble |
| THERMAL DECOMPOSITION: | No data available |
| VISCOSITY : | |
| VISCOSITY, DYNAMIC: | N/A, solid |
| VISCOSITY, KINEMATIC: | N/A, solid |
| FLOW TIME: | N/A |
| OCTANOL/WATER PARTITION COEFFICIENT: | N/A, mineral product |
| EXPLOSIVE PROPERTIES: | Not explosive |

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Method : EU Test Guideline A14

negative
Thermal sensitivity
negative
Mechanical sensitivity (shock)

negative
Mechanical sensitivity (friction)

OXIDIZING PROPERTIES: **Oxidizing properties (solids)**
Method: EU Test Guideline A17
Nonoxidizing material according to EC criteria

OXIDATION / REDUCTION POTENTIAL: **Nonoxidizing material according to EC criteria**

SURFACE TENSION: **Not determined**

MOLECULAR WEIGHT: **172.12 g/mol**

SECTION 10: STABILITY & REACTIVITY

REACTIVITY: **Stable under recommended storage conditions**

CHEMICAL STABILITY: **Stable under normal conditions**

CONDITIONS TO BE AVOIDED: **No dangerous reaction known under conditions of normal use. Avoid dust formation**

MATERIALS/CHEMICALS TO BE AVOIDED: **No dangerous reaction known with common products. Strong acids.**

POSSIBILITY OF HAZARDOUS REACTIONS: **Difficult to dissolve in acids. Carry out with caution (consult us).**

HAZARDOUS DECOMPOSITION PRODUCTS: **No data available.**

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

ACUTE ORAL TOXICITY: **LD50 : > 5,000 mg/kg – Rat**
no mortality observed at this dose.
Unpublished internal reports

ACUTE INHALATION TOXICITY: **LC50 - 4 h > 5.05 mg/l - Rat**
No mortality observed at this dose.
Unpublished internal reports

ACUTE DERMAL TOXICITY: **LD50 > 2,000 ppm(m) - Rat**
No mortality observed at this dose.
Unpublished internal reports

ACUTE TOXICITY (OTHER ROUTES OF ADMINISTRATION): **No data available**

SKIN CORROSION/IRRITATION: **Rabbit**
No skin irritation



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Unpublished internal reports

SERIOUS EYE DAMAGE/EYE IRRITATION:

Rabbit
Mild eye irritation

RESPIRATORY OR SKIN SENSITIZATION:

Magnusson and Kligman method - Guinea pig
negative
In case of skin contact
Unpublished internal reports
Local lymph node assay
negative
Unpublished internal reports

MUTAGENICITY:

GENOTOXICITY IN VITRO:

Mutagenicity (Salmonella typhimurium - reverse mutation assay) with and without metabolic activation

negative

Unpublished reports

V79 / HPRT test

Strain: Mammalian cells with and without metabolic activation

negative

Unpublished internal reports

GENOTOXICITY IN VIVO:

In vivo micronucleus test

negative

Unpublished internal reports

CARCINOGENICITY:

No data available

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP

IARC

OSHA

ACGIH

TOXICITY FOR REPRODUCTION AND DEVELOPMENT:

TOXICITY TO REPRODUCTION / FERTILITY:

Reproduction / developmental toxicity screening test - Rat

Oral exposure

NOEL parent: 1,000 mg/kg

no impairment of fertility has been observed

Unpublished internal reports

DEVELOPMENTAL TOXICITY/TERATOGENICITY:

Rat

Oral exposure

NOEL teratogenicity: 1,000 mg/kg

No effect observed on development

Unpublished internal reports

STOT:

STOT-SINGLE EXPOSURE:

The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-REPEATED EXPOSURE:

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

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Inhalation 90 Days - Rat

NOAEL: 5 mg/m³

No systemic toxicity observed.

Unpublished internal reports

Oral exposure 39 Days - Rat , males

NOEL: 1000 mg/kg

Method: OECD Test Guideline 422

No systemic toxicity observed.

Unpublished internal reports

Oral exposure 47 Days - Rat , females

NOEL: 1000 mg/kg

Method: OECD Test Guideline 422

No systemic toxicity observed.

Unpublished internal reports

ASPIRATION TOXICITY:

N/A

SECTION 12: ECOLOGICAL INFORMATION

AQUATIC COMPARTMENT:

ACUTE TOXICITY TO FISH: **LC50 - 96 h : > 100 mg/l - Brachydanio rerio (zebrafish)**
Unpublished internal reports

ACUTE TOXICITY TO DAPHNIA
AND OTHER AQUATIC

INVERTEBRATES: **EC50 - 48 h : > 100 mg/l - Daphnia magna (Water flea)**
Unpublished internal reports

TOXICITY TO AQUATIC PLANTS: **EC50 - 72 h : > 100 mg/l - Desmodosmus subspicatus (green algae)**
Unpublished internal reports

TOXICITY TO MICROORGANISMS: **EC50 - 3 h : > 1,003.8 mg/l - activated sludge**
Unpublished internal reports

CHRONIC TOXICITY TO DAPHNIA
AND OTHER AQUATIC

INVERTEBRATES: **NOEC: > 100 mg/l - 21 d - Daphnia magna (Water flea)**
Unpublished internal reports

TERRESTRIAL COMPARTMENT:

TOXICITY TO SOIL DWELLING
ORGANISMS:

This product does not have any known adverse effect on the soil organisms tested.

NOEC: > 1,000 mg/kg - 14 d - Eisenia fetida (earthworms)

Unpublished internal reports

NOEC: > 1,000 mg/kg - 28 d - soil micro-organisms

Unpublished internal reports

TOXICITY TO TERRESTRIAL
PLANTS:

This product does not have any known adverse effects on the flora tested.

NOEC: > 1,000 mg/l - 17 Days - Avena sativa (oats)

Unpublished internal reports

NOEC: > 1,000 mg/l - 17 Days - Lactuca sativa (lettuce)

Unpublished internal reports

NOEC: > 1,000 mg/l - 18 Days - Brassica rapa



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Unpublished internal reports

PERSISTENCE AND DEGRADABILITY:
 BIODEGRADATION:
 BIODEGRADABILITY: **N/A, mineral product**

BIOACCUMULATIVE POTENTIAL:
 BIOCONCENTRATION FACTOR (BCF): **Not bioaccumulable, Bibliography, By analogy**

MOBILITY IN SOIL:
 KNOWN DISTRIBUTION TO ENVIRONMENTAL COMPARTMENTS: **Ultimate destination of the product: Soil
 Ultimate destination of the product: Sediment**

RESULTS OF PBT AND VPVB ASSESSMENT: **No data available**

OTHER ADVERSE EFFECTS: **No data available**

ACUTE AQUATIC TOXICITY: **This product has no known ecotoxicological effects.**

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL METHOD: **Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material. Dispose of in accordance with local regulations.**

WASTE CODE: **Environmental Protection Agency
 Hazardous Waste – NO**

ADVICE ON CLEANING AND DISPOSAL OF PACKAGING: **Clean with cold water. Dispose of in accordance with local regulations.**

SECTION 14: TRANSPORTATION INFORMATION

US DOT: **Not regulated**

TDG: **Not regulated**

NOM: **Not regulated**

IATA: **Not regulated**

IMDG: **Not regulated**

SECTION 15: REGULATORY INFORMATION

NOTIFICATION STATUS:

| | |
|-----------------------|--------|
| INVENTORY INFORMATION | STATUS |
|-----------------------|--------|



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| | |
|--|---------------------|
| UNITED STATES TSCA INVENTORY | Listed on Inventory |
| CANADIAN DOMESTIC SUBSTANCES LIST (DSL) | Listed on Inventory |
| AUSTRALIA INVENTORY OF CHEMICAL SUBSTANCES (AICS) | Listed on Inventory |
| JAPAN. CSCL - INVENTORY OF EXISTING AND NEW CHEMICAL SUBSTANCES | Listed on Inventory |
| KOREA. KOREAN EXISTING CHEMICALS INVENTORY (KECI) | Listed on Inventory |
| CHINA. INVENTORY OF EXISTING CHEMICAL SUBSTANCES IN CHINA (IECSC) | Listed on Inventory |
| PHILIPPINES INVENTORY OF CHEMICALS AND CHEMICAL SUBSTANCES (PICCS) | Listed on Inventory |

FEDERAL REGULATIONS:
 US. EPA EPCRA SARA TITLE III:
 SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370):

| | |
|-----------------------------------|----|
| FIRE HAZARD | No |
| REACTIVITY HAZARD | No |
| SUDDEN RELEASE OF PRESSURE HAZARD | No |
| ACUTE HEALTH HAZARD | No |
| CHRONIC HEALTH HAZARD | No |

SECTION 313 TOXIC CHEMICALS (40 CFR 372.65):
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SECTION 302 EMERGENCY PLANNING EXTREMELY HAZARDOUS SUBSTANCE THRESHOLD PLANNING QUANTITY (40 CFR 355):
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SECTION 302 EMERGENCY PLANNING EXTREMELY HAZARDOUS SUBSTANCE REPORTABLE QUANTITY (40 CFR 355):
This material does not contain any components with a SARA 302 RQ.

SECTION 304 EMERGENCY RELEASE NOTIFICATION REPORTABLE QUANTITY (40 CFR 355):
This material does not contain any components with a section 304 EHS RQ.



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US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4):

This material does not contain any components with a CERCLA RQ.

STATE REGULATIONS:

US. CALIFORNIA SAFE DRINKING WATER & TOXIC ENFORCEMENT ACT (PROPOSITION 65):

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: OTHER INFORMATION

HMIS RATING: **Health 1, Flammability 0, Reactivity 0, Personal Protection E**

NFPA RATING: **Health 1, Flammability 0, Reactivity 0**



N/A = **Not available**

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