SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
1.1.1 Commercial Product Name
SpectraFlair Bright Silver HSA Pigment (wetted)

1.1.2 Product code
Bright Silver HSA

Components: See also section 3
REACH registration is not applicable for mixtures. The components of the mixture will be registered latest according to the 1 to 10 tonnes deadline.

1.2 Relevant identified uses of the substance or mixture and uses advised against
1.2.1 Recommended use
Colouring agents, pigments

1.3 Details of the supplier of the safety data sheet
1.3.1 Supplier
REACHLaw Ltd. (Only Representative)
Street address
Vänrikinkuja 3 JK 21
Postcode and post office
02600 Espoo
Finland
Telephone
+358(0) 9 412 3055
Telefax
+358(0) 9 412 3049
Email
SDS@reachlaw.fi, webpage: www.reachlaw.fi

1.3.3 Identification of the non-community manufacturer
Viavi Solutions
1402 Mariner Way
95407-7307 Santa Rosa
USA
Telephone: 1(707) 525-9200
Email: ospcustomerservice@viavisolutions.com

1.4 Emergency telephone number
1.4.1 Telephone number, name and address
EU-wide emergency number: 112
See section 16.6 for the list of telephone numbers of poison centers in the European Economic Area.

SECTION 2. HAZARDS IDENTIFICATION


2.1 Classification of the substance or mixture
1272/2008 (CLP)
Flam. Sol. 1, H228
Skin Irrit. 2, H315
Eye Irrit. 2, H319
STOT SE 3, H335

2.2 Label elements
1272/2008 (CLP)
GHS02 - GHS07
Signal word
Danger
Hazard Statements
SpectraFlair Bright Silver
Viavi Solutions

HSA Pigment (wetted)

Date 07/10/2015
Previous date: 09/02/2015

2.3 Other hazards
This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures
This product is a microscopic 3-layer multilayer flake having a sandwich structure with aluminum in the core surrounded on each side by a layer of magnesium fluoride. 1-propoxypropan-2-ol is present as a wetting agent to reduce the generation of airborne dusts.

<table>
<thead>
<tr>
<th>CAS/EC and Reg.number</th>
<th>EINECS</th>
<th>Chemical name of the substance</th>
<th>Concentration</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>7429-90-5</td>
<td>231-072-3</td>
<td>Aluminium</td>
<td>22.5-27.5 %</td>
<td>CLP: Water-react. 2; H261, Flam. Sol. 1; H228</td>
</tr>
<tr>
<td>7783-40-6</td>
<td>231-995-1</td>
<td>Magnesium Fluoride</td>
<td>42.5-47.5 %</td>
<td>CLP: Eye Irrit. 2; H319, Skin Irrit. 2; H315, STOT SE 3; H335</td>
</tr>
<tr>
<td>1569-01-3</td>
<td>216-372-4</td>
<td>1-propoxypropan-2-ol</td>
<td>30 %</td>
<td>CLP: Flam. Liquid 3; H226, Eye Irrit. 2; H319</td>
</tr>
</tbody>
</table>

Other information
This product is a mixture. Health hazard information is based on its components. Physical hazards: flammable.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
Consult a physician. Show this safety data sheet to the doctor in attendance.

4.1.2 Inhalation
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

4.1.3 Skin contact
Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Consult a physician.

4.1.4 Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

4.1.5 Ingestion
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
Causes eye and skin irritation. Itching. Difficulty in breathing.
4.3 Indication of immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media
5.1.1 Suitable extinguishing media
Alcohol-resistant foam; Dry powder; Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.1.2 Extinguishing media which must not be used for safety reasons
Halons; Carbon dioxide (CO2)

5.2 Special hazards arising from the substance or mixture
Contact with water liberates extremely flammable gases. - Gives off hydrogen by reaction with metals. Decomposition products - Hydrogen fluoride metal oxides. Container may explode if heated. Water in the container will lead to increased pressure and risk of explosion. Burning produces noxious and toxic fumes.

5.3 Advice for firefighters
Wear suitable protective equipment. Wear full protective clothing and self-contained breathing apparatus. Immediately evacuate personnel to safe areas. Do not allow run-off from fire fighting to enter drains or water courses.

5.4 Specific methods
No information available.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid contact with skin, eyes and clothing. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Keep away from sources of ignition - No smoking. Keep away from flames and sparks. Avoid dust formation. Avoid breathing vapours, mist or gas.

6.2 Environmental precautions
Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Try to prevent the material from entering drains or water courses.

6.3 Methods and materials for containment and cleaning up
Prevent further leakage or spillage if safe to do so. Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly. Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal. - Caution: Water in the container will lead to increased pressure and risk of explosion. Dispose of as hazardous waste in compliance with local and national regulations.

6.4 Reference to other sections
See also section 8.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Ensure adequate ventilation, especially in confined areas. Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Avoid breathing vapours, mist or gas.

Hygiene measures
When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Regular cleaning of equipment, work area and clothing.
7.2 **Conditions for safe storage, including any incompatibilities**
Keep away from heat and sources of ignition. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labelled containers. Keep at temperatures below 49 °C. Never allow product to get in contact with water during storage.

7.3 **Specific end use(s)**
Colouring agents, pigments.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 **Control parameters**
Mixture Threshold limits Values See also section 8.1.3

8.1.1 **Threshold limits**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Compound</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7429-90-5</td>
<td>Aluminium, poeder</td>
<td>15 mg/m³ (8 h) OSHA PEL, total dust</td>
</tr>
<tr>
<td>7429-90-5</td>
<td>Aluminium, poeder</td>
<td>5 mg/m³ (8 h) OSHA PEL, respirable fraction</td>
</tr>
<tr>
<td>7783-40-6</td>
<td>Magnesium Fluoride</td>
<td>2.5 mg/m³ (8 h) TWA, Mixtures of inorganic fluorides and hydrogen fluoride</td>
</tr>
</tbody>
</table>

8.1.2 **Other information on limit values**
No information available.

8.1.3 **Limit values in other countries**
Exposure controls / (Biological occupational exposure limits):

**Aluminium, poeder (CAS 7429-90-5):**

Austria : STEL 20 mg/m³; MAK: 10 mg/m³
Germany : MAK: 4 mg/m³ ; MAK: 1.5 mg/m³ / (200 μg/L Urine EOS)
Denmark : TWA: 10 mg/m³, TWA: 10 mg/m³
Finland : TWA: 2 mg/m³
France : VME: 10 mg/m³, VME: 5 mg/m³; VME: 5 mg/m³
Ireland : TWA: 10 mg/m³; TWA: 4 mg/m³
Norway : TWA: 5 mg/m³
Poland : NDS: 2.5 mg/m³; NDS: 1.2 mg/m³
Portugal : TWA: 10 mg/m³
Switzerland : MAK: 3 mg/m³ / (60 μg/g Creatinine Urine, no restrictions)
United Kingdom : STEL: 30 mg/m³; STEL: 12 mg/m³; TWA: 10 mg/m³; TWA: 4 mg/m³
Spain : VLA-ED: 10 mg/m³

**Magnesium fluoride (CAS 7783-40-6)**

EU : TWA: 2.5 mg/m³
Denmark : TWA: 2.5 mg/m³
Finland : TWA: 2.5 mg/m³
France : VME: 2.5 mg/m³ / (3 mg/g Creatinine Urine: BOS; 10 mg/g Creatinine Urine: EOS)
Germany : MAK: 1 mg/m³
Ireland : TWA: 2.5 mg/m³
Italy : TWA: 2.5 mg/m³ / (3 mg/g Creatinine Urine: BOS; 10 mg/g Creatinine Urine: EOS)
Netherlands : STEL: 2 mg/m³
Norway : TWA: 0.5 mg/m³ ; STEL: 1.5 mg/m³
Poland : NDSCh: 3 mg/m³; NDS: 1 mg/m³
Portugal : TWA: 2.5 mg/m³
Spain : VLA-ED: 2.5 mg/m³
United Kingdom : TWA: 2.5 mg/m³

8.1.4 DNELs
No information available.

8.1.5 PNECs
No information available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls
Avoid exceeding of the given occupational exposure limits (see section 8). Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Ensure that eyewash stations and safety showers are close to the workstation location.

8.2.2 Individual protection measures

8.2.2.1 Respiratory protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

8.2.2.2 Hand protection
Neoprene; Rubber; Latex gloves.

8.2.2.3 Eye/face protection
Safety glasses with side-shields.

8.2.2.4 Skin protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
8.2.3 Environmental exposure controls
Do not allow material to contaminate ground water system.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Important Health Safety and Environmental Information
9.1.1 Appearance
grey paste
9.1.2 Odour 1-propoxypropan-2-ol used as a wetting agent has an ether-like odor.
9.1.3 Odour threshold No information available.
9.1.4 pH Not applicable.
9.1.5 Melting point/freezing point 1263 °C
9.1.6 Initial boiling point and boiling range 2260 °C. 140-160 °C for 1-propoxypropan-2-ol.
9.1.7 Flash point Not applicable. 46.4 °C (115.5 °F) for 1-propoxypropan-2-ol.
9.1.8 Evaporation rate No information available.
9.1.9 Flammability (solid, gas) Flammable
9.1.10 Explosive properties
9.1.10.1 Lower explosion limit No information available.
9.1.10.2 Upper explosion limit No information available.
9.1.11 Vapour pressure No information available.
9.1.12 Vapour density No information available.
9.1.13 Relative density No information available.
9.1.14 Solubility(ies)
9.1.14.1 Water solubility Insoluble
9.1.14.2 Fat solubility (solvent - oil to be specified) No information available.
9.1.15 Partition coefficient: n-octanol/water Not applicable. Log Pow = 0.621 @ 20 °C (pH 7) for 1-propoxypropan-2-ol.
9.1.16 Auto-ignition temperature No data is available on the product itself. 252 °C for 1-propoxypropan-2-ol.
9.1.17 Decomposition temperature No information available.
9.1.18 Viscosity Not applicable.
9.1.19 Explosive properties Not explosive
9.1.20 Oxidising properties The substance or mixture is not classified as oxidizing.
9.2 Other information
No information available.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No information available.
10.2 Chemical stability
Stable up to 200 °C.
10.3 Possibility of hazardous reactions
Hazardous polymerisation does not occur.
10.4 Conditions to avoid
Avoid dust formation.
SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Acute toxicity
Not classified.

11.1.2 Irritation and corrosion
Causes eye and skin irritation.

11.1.3 Sensitisation
Not classified.

11.1.4 Subacute, subchronic and prolonged toxicity
Not classified.

11.1.5 STOT-single exposure
Not classified.

11.1.6 STOT-repeated exposure
Not classified.

11.1.7 Aspiration hazard
Not applicable.

11.1.8 Other information on acute toxicity
No information available.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Aquatic toxicity
Not classified. Environmentally hazardous. Aquatic toxicity is unlikely due to low solubility.

12.1.2 Toxicity to other organisms
No information available.

12.2 Persistence and degradability

12.2.1 Biodegradation
The methods for determining biodegradability are not applicable to inorganic substances.

12.2.2 Chemical degradation
Not applicable.

12.3 Bioaccumulative potential
No information available.

12.4 Mobility in soil
Adsorbs on soil.

12.5 Results of PBT and vPvB assessment
This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

12.6 Other adverse effects
No information available.
SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Dispose of as hazardous waste in compliance with local and national regulations. Contaminated packaging should be emptied as far as possible. Handle in accordance with good industrial hygiene and safety practice. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal. Waste must be classified and labelled prior to recycling or disposal. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number 3175
14.2 UN proper shipping name SOLID CONTAINING FLAMMABLE LIQUIDS, N.O.S. (Contains 1-propoxypropan-2-ol, Aluminium)
14.3 Transport hazard class(es) 4.1
14.4 Packing group II
14.5 Environmental hazards Not classified.
14.6 Special precautions for users No information available.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulation (EC) No. 1907/2006 (REACH)
Annex XIV - List of substances subject to authorisation, Substances of very high concern: N/A
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles: N/A
15.2 Chemical safety assessment
Not applicable. A Chemical Safety Assessment is not required for this substance.

SECTION 16. OTHER INFORMATION

16.1 Additions, Deletions, Revisions
Version 2.0
16.2 Key or legend to abbreviations and acronyms
SAFETY DATA SHEET

SpectraFlair Bright Silver
Viavi Solutions

HSA Pigment (wetted)

Date 07/10/2015

Previous date: 09/02/2015

16.3 Key literature references and sources for data
Material Safety Data Sheet SpectraFlair® pigment Version 10-11-2011

16.4 Classification procedure
Classification according to Regulation (EU) 1272/2008 with the correlation table 67/548/EEC or 1999/45/EC (Annex VII of CLP)

16.5 List of relevant R phrases, hazard statements, safety phrases and/or precautionary statements
H226 Flammable liquid and vapour.
H261 In contact with water releases flammable gases.

16.6 Emergency telephone number
Europe-wide emergency number: 112

Contact a poison control centre. List of Telephone Numbers:
Austria (Vienna Wien) +43 1 406 43 43; Belgium (Brussels Bruxelles) +32 70 245 245; Bulgaria (Sofia) +359 2 9154 409; Czech Republic (Prague Praha) +420 224 919 293; Denmark (Copenhagen) 82 12 12 12; Estonia (Tallinn) 112; Finland (Helsinki) +358 9 471 977; France (Paris) +33 1 40 054 48 48; Germany (Berlin) +49 30 19240; Greece (Athens Athenai) +30 10 779 3777; Hungary (Budapest) 06 80 20 11 99; Iceland (Reykjavik) +354 552 515; Ireland (Dublin) +353 1 8379964; Italy (Rome) +39 06 305 4343; Latvia (Riga) +371 704 2468; Lithuania (Vilnius) +370 5 236 20 52 or +370 687 53378; Malta (Valletta) 2425 0000; Netherlands (Bilthoven) +31 30 274 88 88; Norway (Oslo) 22 591300; Poland (Gdansk) +48 58301 65 16 or +48 58 349 2831; Portugal (Lisbon Lisboa) 808 250 143; Romania (Bucharest) +40 21 3183606 Slovakia (Bratislava) +421 2 54 77 4166; Slovenia (Ljubljana) + 386 41 650 500; Spain (Barcelona) +34 93 227 98 33 or +34 93 227 54 00 bleep 190; Sweden (Stockholm) 112 or +46 8 33 12 31 (mon-fri 9.00-17.00); United Kingdom (London) 112 or 0845 4647 (NHS Direct).