SAFETY DATA SHEET

1. Identification

Product identifier
ULTRA-GREEN 80; ULTRA-GREEN 80 W/F

Other means of identification
Brand Code
6229, 0014

Recommended use
For Industrial Use Only

Recommended restrictions
Users should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name
HarbisonWalker International

Address
1305 Cherrington Parkway, Suite 100
Moon Township, Pennsylvania 15108 US

Telephone
General Phone: 412-375-6600

Website
www.thinkHWI.com

Emergency phone number
CHEMTREC 24 HOUR
1-800-424-9300

2. Hazard(s) identification

Physical hazards
Not classified.

Health hazards
Carcinogenicity
Category 1A

Environmental hazards
Not classified.

OSHA defined hazards
Not classified.

Label elements

Signal word
Danger

Hazard statement
May cause cancer.

Precautionary statement

Prevention
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response
If exposed or concerned: Get medical advice/attention.

Storage
Store locked up.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information

Users should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Overexposure to the respirable dust of crystalline silica (quartz or cristobalite, less than or equal to 5 microns in size) may lead to silicosis in humans, which is a progressive and irreversible lung disease. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous)</td>
<td></td>
<td>1344-28-1</td>
<td>40 - 60</td>
</tr>
<tr>
<td>Mullite</td>
<td></td>
<td>1302-93-8</td>
<td>10 - 20</td>
</tr>
</tbody>
</table>

Material name: ULTRA-GREEN 80; ULTRA-GREEN 80 W/F
6229, 0014 Version #: 01 Issue date: 02-22-2018
### Chemical name, Common name and synonyms, CAS number, %

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amorphous Silica</td>
<td>SILICA, AMORPHOUS, FUMED SILICA (CRYSTALLINE FREE)</td>
<td>7631-86-9</td>
<td>2.5 - 10</td>
</tr>
<tr>
<td>Cement, Alumina, Chemicals</td>
<td></td>
<td>65997-16-2</td>
<td>2.5 - 10</td>
</tr>
<tr>
<td>Fumes, Silica</td>
<td></td>
<td>69012-64-2</td>
<td>2.5 - 10</td>
</tr>
<tr>
<td>Diiron Trioxide</td>
<td></td>
<td>1309-37-1</td>
<td>1 - 2.5</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td></td>
<td>13463-67-7</td>
<td>1 - 2.5</td>
</tr>
<tr>
<td>Cristobalite</td>
<td></td>
<td>14464-46-1</td>
<td>0.1 - 1</td>
</tr>
<tr>
<td>Other components below reportable levels</td>
<td></td>
<td></td>
<td>1 - 2.5</td>
</tr>
</tbody>
</table>

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

### 4. First-aid measures

#### Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

#### Skin contact
Wash off with soap and water. Get medical attention if irritation develops and persists.

#### Eye contact
Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.

#### Ingestion
Dusts may irritate the respiratory tract, skin and eyes.

#### Most important symptoms/effects, acute and delayed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

#### Indication of immediate medical attention and special treatment needed
IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire-fighting measures

#### Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials.

#### Unsuitable extinguishing media
Not available.

#### Specific hazards arising from the chemical
Not applicable.

#### Special protective equipment and precautions for firefighters
Not available.

### 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

#### Methods and materials for containment and cleaning up
Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

#### Environmental precautions
Avoid discharge into drains, water courses or onto the ground.

### 7. Handling and storage

#### Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

#### Conditions for safe storage, including any incompatibilities
Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).
## 8. Exposure controls/personal protection

**Occupational exposure limits**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous) (CAS 1344-28-1)</td>
<td>PEL</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Cristobalite (CAS 14464-46-1)</td>
<td>PEL</td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
<tr>
<td>Diiron Trioxide (CAS 1309-37-1)</td>
<td>PEL</td>
<td>0.05 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Titanium Dioxide (CAS 13463-67-7)</td>
<td>PEL</td>
<td>10 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

### US. OSHA Table Z-3 (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous) (CAS 1344-28-1)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Cristobalite (CAS 14464-46-1)</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
<td>Respirable.</td>
</tr>
<tr>
<td>Diiron Trioxide (CAS 1309-37-1)</td>
<td>TWA</td>
<td>1.2 mppcf</td>
<td>Respirable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Mullite (CAS 1302-93-8)</td>
<td>TWA</td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 mppcf</td>
<td>Total dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mppcf</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Titanium Dioxide (CAS 13463-67-7)</td>
<td>TWA</td>
<td>0.8 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Fumes, Silica (CAS 69012-64-2)</td>
<td>TWA</td>
<td>20 mppcf</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.8 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Titanium Dioxide (CAS 13463-67-7)</td>
<td>TWA</td>
<td>0.8 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

### US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous) (CAS 1344-28-1)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Cristobalite (CAS 14464-46-1)</td>
<td>TWA</td>
<td>0.025 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Mullite (CAS 1302-93-8)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Mullite (CAS 1302-93-8)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Mullite (CAS 1302-93-8)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Mullite (CAS 1302-93-8)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
</tbody>
</table>

### US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amorphous Silica (CAS 7631-86-9)</td>
<td>TWA</td>
<td>6 mg/m³</td>
<td>Dust and fume.</td>
</tr>
<tr>
<td>Diiron Trioxide (CAS 1309-37-1)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Dust and fume.</td>
</tr>
<tr>
<td>Components</td>
<td>Type</td>
<td>Value</td>
<td>Form</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Fumes, Silica (CAS 69012-64-2)</td>
<td>TWA</td>
<td>6 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**Biological limit values**  
No biological exposure limits noted for the ingredient(s).

**Exposure guidelines**  
Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

**Appropriate engineering controls**  
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**  
Chemical respirator with organic vapor cartridge, full facepiece, dust and mist filter.

**Skin protection**  
Wear appropriate chemical resistant gloves.

**Hand protection**  
Use of an impervious apron is recommended.

**Respiratory protection**  
Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

**Thermal hazards**  
Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**  
Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

### 9. Physical and chemical properties

**Appearance**

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Powder.</td>
</tr>
<tr>
<td>Color</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Odor**  
Not available.

**Odor threshold**  
Not available.

**pH**  
Not available.

**Melting point/freezing point**  
Not available.

**Initial boiling point and boiling range**  
Not available.

**Flash point**  
Not available.

**Evaporation rate**  
Not available.

**Flammability (solid, gas)**  
Not available.

**Upper/lower flammability or explosive limits**

| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Explosive limit - lower (%) | Not available. |
| Explosive limit - upper (%) | Not available. |
| Vapor pressure                | Not available. |
| Vapor density                 | Not available. |
Relative density
Not available.
Solubility(ies)
Solubility (water)
Not available.
Partition coefficient
Not available.
(n-octanol/water)
Auto-ignition temperature
Not available.
Decomposition temperature
Not available.
Viscosity
Not available.
Other information
Explosive properties
Not explosive.
Oxidizing properties
Not oxidizing.

10. Stability and reactivity
Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability
Material is stable under normal conditions.
Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.
Conditions to avoid
Contact with incompatible materials.
Incompatible materials
Incompatibility is based strictly upon potential theoretical reactions between chemicals and may not be specific to industrial application exposure.
Hazardous decomposition products
No hazardous decomposition products are known.

11. Toxicological information
Information on likely routes of exposure
Inhalation
Dust may irritate respiratory system. Prolonged inhalation may be harmful.
Skin contact
Dust or powder may irritate the skin.
Eye contact
Dust may irritate the eyes.
Ingestion
Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics
Dusts may irritate the respiratory tract, skin and eyes.
Information on toxicological effects
Acute toxicity
Not known.
Skin corrosion/irritation
Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation
Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization
Respiratory sensitization
Not a respiratory sensitizer.
Skin sensitization
This product is not expected to cause skin sensitization.
Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. May cause cancer. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

IARC Monographs. Overall Evaluation of Carcinogenicity

| Amorphous Silica (CAS 7631-86-9) | 3 Not classifiable as to carcinogenicity to humans. |
| Cristobalite (CAS 14464-46-1) | 1 Carcinogenic to humans. |
| Diiron Trioxide (CAS 1309-37-1) | 3 Not classifiable as to carcinogenicity to humans. |
| Fumes, Silica (CAS 69012-64-2) | 3 Not classifiable as to carcinogenicity to humans. |
| Titanium Dioxide (CAS 13463-67-7) | 2B Possibly carcinogenic to humans. |

US. National Toxicology Program (NTP) Report on Carcinogens

Cristobalite (CAS 14464-46-1) Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

Not an aspiration hazard.

Chronic effects

Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability

No data is available on the degradability of this product.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions

This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

Hazardous waste code

Since this product is used in several industries, no Waste Code can be provided by the supplier. The Waste Code should be determined in arrangement with your waste disposal partner or the responsible authority.

Waste from residues / unused products

Not available.

Contaminated packaging

Not available.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.
IMDG
Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.

15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All chemical substances in this product are listed on the TSCA chemical substance inventory where required.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous)</td>
<td>1344-28-1</td>
<td>40 - 60</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations
WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
Quartz (SiO2) (CAS 14808-60-7) Listed: October 1, 1988
Titanium Dioxide (CAS 13463-67-7) Listed: September 2, 2011

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))
Cristobalite (CAS 14464-46-1)
Titanium Dioxide (CAS 13463-67-7)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
</tbody>
</table>
Country(s) or region | Inventory name                                           | On inventory (yes/no) |
---------------------|---------------------------------------------------------|-----------------------|
Japan                | Inventory of Existing and New Chemical Substances (ENCS)| No                    |
Korea                | Existing Chemicals List (ECL)                          | Yes                   |
New Zealand          | New Zealand Inventory                                   | Yes                   |
Philippines          | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | No                     |
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes                     |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date: 02-22-2018
Version #: 01

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

Revision information: This document has undergone significant changes and should be reviewed in its entirety.