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

1.1. Product identifier
- Trade name or designation of the mixture: ZIRMUL 160 PATCH
- Registration number: -
- Synonyms: None.
- Brand Code: 8518
- Issue date: 13-October-2016
- Version number: 01

1.2. Relevant identified uses of the substance or mixture and uses advised against
- Identified uses: For Industrial Use Only
- Uses advised against: 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.

1.3. Details of the supplier of the safety data sheet
- Supplier Company name: HarbisonWalker International
- Address: 1305 Cherrington Parkway, Suite 100
- Moon Township, PA 15108, USA
- United States
- Division
- Telephone: General Phone: 412-375-6600
- CHEMTREC 24 HOUR: 1-800-424-9300
- EMERGENCY #: 1-703-527-3887
- e-mail: REACH@thinkHWI.com
- Contact person: HWI USA
- Not available.

1.4. Emergency telephone number
- Not available.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
- The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended
- This preparation does not meet the criteria for classification according to Directive 1999/45/EC as amended.

Classification according to Regulation (EC) No 1272/2008 as amended
- Health hazards
  - Skin corrosion/irritation: Category 2
  - Serious eye damage/eye irritation: Category 2
  - H315 - Causes skin irritation.
  - H319 - Causes serious eye irritation.

Hazard summary
- Physical hazards: Not classified for physical hazards.
- Health hazards: Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.
- Environmental hazards: Not classified for hazards to the environment.
- Specific hazards: For additional information on inhalation hazards, see Section 11 of this safety data sheet.
- Main symptoms: Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.

2.2. Label elements
Label according to Regulation (EC) No. 1272/2008 as amended

Hazard pictograms

Signal word
Warning

Hazard statements

H315  Causes skin irritation.
H319  Causes serious eye irritation.

Precautionary statements

Prevention

P264  Wash thoroughly after handling.
P280  Wear protective gloves.
P280  Wear eye/face protection.

Response

P302 + P352  IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313  If skin irritation occurs: Get medical advice/attention.
P337 + P313  If eye irritation persists: Get medical advice/attention.
P362 + P364  Take off contaminated clothing and wash it before reuse.

Storage
Store away from incompatible materials.

Disposal
Dispose of waste and residues in accordance with local authority requirements.

Supplemental label 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.

2.3. Other hazards
None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>%</th>
<th>CAS-No. / EC No.</th>
<th>REACH Registration No.</th>
<th>INDEX No.</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous)</td>
<td>50 - &lt; 60</td>
<td>1344-28-1, 215-691-6</td>
<td>01-2119529248-35-0134</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Classification: DSD: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CLP: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zircon</td>
<td>30 - &lt; 40</td>
<td>14940-68-2, 239-019-6</td>
<td>-</td>
<td>-</td>
<td></td>
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<td>Classification: DSD: -</td>
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<td></td>
<td></td>
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<tr>
<td>CLP: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthophosphoric Acid</td>
<td>5 - &lt; 10</td>
<td>7664-38-2, 231-633-2</td>
<td>015-011-00-6</td>
<td>#</td>
<td></td>
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<td>Classification: DSD: C;R34</td>
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<td></td>
<td></td>
<td>B</td>
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<tr>
<td>CLP: Skin Irrit. 2;H315, Eye Irrit. 2;H319</td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

Other components below reportable levels 1 - < 3

List of abbreviations and symbols that may be used above

DSD: Directive 67/548/EEC.
M: M-factor
vPvB: very persistent and very bioaccumulative substance.
PBT: persistent, bioaccumulative and toxic substance.
#: This substance has been assigned Community workplace exposure limit(s).

Composition comments
The full text for all R- and H-phrases is displayed in section 16.
SECTION 4: First aid measures

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

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

Skin contact
Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact
Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.

4.3. Indication of any immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards
Not available.

5.1. Extinguishing media

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

Unsuitable extinguishing media
Not available.

5.2. Special hazards arising from the substance or mixture
Not available.

5.3. Advice for firefighters

Special protective equipment for firefighters
Not available.

Special fire fighting procedures
Not available.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8.

For emergency responders
Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

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

6.3. Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Absorb in vermiculite, dry sand or earth and place into containers. Collect dust using a vacuum cleaner equipped with HEPA filter.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13 of the SDS.
SECTION 7: Handling and storage

7.1. Precautions for safe handling
Minimise dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)
Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Oxide (Non-Fibrous) (CAS 1344-28-1)</td>
<td>VME</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Orthophosphoric Acid (CAS 7664-38-2)</td>
<td>VLE</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td></td>
<td>VME</td>
<td>0,5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0,2 ppm</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthophosphoric Acid (CAS 7664-38-2)</td>
<td>STEL</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

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

Recommended monitoring procedures
Follow standard monitoring procedures.

Derived no-effect level (DNEL)
Not available.

Predicted no effect concentrations (PNECs)
Not available.

Exposure guidelines
Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled. Zirconium silicates (zircon sands) contain trace amounts (106-120 pCi/g) of naturally occurring radioactive uranium and thorium. Overexposure by inhalation to respirable dust containing uranium and thorium may cause lung cancer. Eye contact with the dust may cause eye irritation. Measurements made by Dupont during the use of a similar mineral sand indicated the observance of the 5 mg/m³ OSHA PEL for respirable dust and/or the PEL for quartz ensures the user is below the exposure limits established for uranium and thorium. No LD50 or LC50 can be found for zircon sand.

8.2. Exposure controls

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 OEL (occupational exposure limit), 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. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

General information
Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection
- Hand protection
Wear appropriate chemical resistant gloves.
- Other
  Wear appropriate chemical resistant clothing.

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.

Hygiene measures
  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.

Environmental exposure controls
  Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
  Physical state: Solid.
  Form: Solid. Powder.
  Colour: Not available.
  Odour: Not available.
  Odour 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.
  Vapour pressure: Not available.
  Vapour density: Not available.
  Relative density: Not available.
  Solubility(ies)
    Solubility (water): Not available.
    Solubility (other): Not available.
  Partition coefficient (n-octanol/water): Not available.
  Auto-ignition temperature: Not available.
  Decomposition temperature: Not available.
  Viscosity: Not available.
  Explosive properties: Not available.
  Oxidizing properties: Not available.
  9.2. Other information
    No relevant additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity
  The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
  Material is stable under normal conditions.

10.3. Possibility of hazardous reactions
  No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid
  Contact with incompatible materials.
10.5. Incompatible materials
Acids. Chlorine.
Incompatibility is based strictly upon potential theoretical reactions between chemicals and may not
be specific to industrial application exposure.

10.6. Hazardous
decomposition products
No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information
Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation
Dust may irritate respiratory system. Prolonged inhalation may be harmful.

Skin contact
Causes skin irritation.

Eye contact
Causes serious eye irritation.

Ingestion
May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of
occupational exposure.

Symptoms
Severe eye irritation. Dusts may irritate the respiratory tract, skin and eyes. Symptoms may include
stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

11.1. Information on toxicological effects

Acute toxicity
No data available.

Skin corrosion/irritation
Causes skin irritation.

Serious eye damage/eye irritation
Causes serious eye irritation.

Respiratory sensitisation
Due to partial or complete lack of data the classification is not possible.

Skin sensitisation
Due to partial or complete lack of data the classification is not possible.

Germ cell mutagenicity
Due to partial or complete lack of data the classification is not possible.

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.
Occupational exposure to respirable dust and respirable crystalline silica should be monitored and
controlled. Due to partial or complete lack of data the classification is not possible.

Reproductive toxicity
Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity
- single exposure
Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity
- repeated exposure
Due to partial or complete lack of data the classification is not possible.

Aspiration hazard
Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information
No information available.

Other information
Not available.

SECTION 12: Ecological information

12.1. Toxicity
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.

12.2. Persistence and
degradability
No data is available on the degradability of this product.

12.3. Bioaccumulative
potential
No data available.

Partition coefficient
n-octanol/water (log Kow)
Not available.

Bioconcentration factor (BCF)
Not available.

12.4. Mobility in soil
No data available.
12.5. Results of PBT and vPvB assessment
Not available.

12.6. 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.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Residual waste Not available.
Contaminated packaging Not available.
EU waste code Not available.

SECTION 14: Transport information

ADR Not regulated as dangerous goods.
RID Not regulated as dangerous goods.
ADN Not regulated as dangerous goods.
IATA Not regulated as dangerous goods.
IMDG Not regulated as dangerous goods.

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

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
EU regulations
Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 Not listed.
Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 Not listed.
Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V Not listed.

Authorisations

Restrictions on use
Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work Not listed.
Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding
Not listed.

Other EU regulations
Directive 96/82/EC (Seveso II) on the control of major-accident hazards involving dangerous substances
Not listed.
Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Orthophosphoric Acid (CAS 7664-38-2)
Directive 94/33/EC on the protection of young people at work
Orthophosphoric Acid (CAS 7664-38-2)

Other regulations
The product is classified and labelled in accordance with EC directives or respective national laws.
This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

National regulations
Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment
No Chemical Safety Assessment has been carried out.

SECTION 16: Other information
List of abbreviations
Not available.

References
Not available.

Information on evaluation method leading to the classification of mixture
Not available.

Full text of any statements or R-phrases and H-statements under Sections 2 to 15
R34 Causes burns.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Revision information
Composition / Information on Ingredients: Disclosure Overrides
Toxicological Information: Toxicological Data
GHS: Classification

Training information
Not available.

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.