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

1.1. Product identifier
Trade name or designation of the mixture: MIZZOU CASTABLE PLUS; MIZZOU CASTABLE PLUS W/F
Registration number: -
Synonyms: 5976, 454B, 4622, 433C
Brand Code: 07-November-2016
Issue date: 07-November-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 Limited
Address: Dock Road South
           Bromborough
           Wirral
           UK
Division: United Kingdom
Telephone: General Phone: 44.(0)151.641.5900
e-mail: REACH@thinkhwi.com
Contact person: HWI USA

1.4. Emergency telephone number
+44 (0)151 641 5900 (Office hours 07:30 - 17:00)

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 Regulation (EC) No 1272/2008 as amended
This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Hazard summary
Exposure to powder or dusts may be irritating to eyes, nose and throat. Prolonged exposure may cause chronic effects. Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.

2.2. Label elements
Label according to Regulation (EC) No. 1272/2008 as amended
Hazard pictograms: None.
Signal word: None.
Hazard statements: The mixture does not meet the criteria for classification.
Precautionary statements
Prevention: Observe good industrial hygiene practices.
Response: Wash hands after handling.
Storage: Store away from incompatible materials.
Disposal: Dispose of waste and residues in accordance with local authority requirements.

Supplemental label information: None.

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>2.5 - 10</td>
<td>1344-28-1, 215-691-6</td>
<td>01-2119529248-35-0134</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Classification:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cement, Alumina, Chemicals</td>
<td>2.5 - 10</td>
<td>65997-16-2, 266-045-5</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Classification:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

List of abbreviations and symbols that may be used above

#: This substance has been assigned Union workplace exposure limit(s).
Crystalline silica may be present at typical concentrations of 1-2.5%, most of this is encapsulated in the coarse aggregate.

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**
  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.

4.2. Most important symptoms and effects, both acute and delayed

- Treat symptomatically.

4.3. Indication of any immediate medical attention and special treatment needed

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. Wear appropriate protective equipment and clothing during clean-up. For personal protection, see section 8 of the SDS.

- **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

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.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. 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 prolonged exposure. Practice good housekeeping.

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

UK. EH40 Workplace Exposure Limits (WELs)

<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>4 mg/m³</td>
<td>Respirable dust.</td>
</tr>
<tr>
<td>Amorphous silica (CAS 7631-86-9)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Inhalable dust.</td>
</tr>
<tr>
<td>Cristobalite (CAS 14464-46-1)</td>
<td>TWA</td>
<td>6 mg/m³</td>
<td>Inhalable dust.</td>
</tr>
<tr>
<td>Fumes, Silica (CAS 69012-64-2)</td>
<td>TWA</td>
<td>2.4 mg/m³</td>
<td>Respirable dust.</td>
</tr>
<tr>
<td>Titanium dioxide (CAS 13463-67-7)</td>
<td>TWA</td>
<td>6 mg/m³</td>
<td>Inhalable dust.</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 levels (DNELs)

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

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.

Individual protection measures, such as personal protective equipment

General information

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 suitable protective 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
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 explosive.

Oxidising properties
Not oxidising.

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
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
Dust or powder may irritate the skin.

Eye contact
Dust may irritate the eyes.

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

Symptoms
Dusts may irritate the respiratory tract, skin and eyes.

11.1. Information on toxicological effects

Acute toxicity
Not known.

Skin corrosion/irritation
Due to partial or complete lack of data the classification is not possible.

Serious eye damage/eye irritation
Due to partial or complete lack of data the classification is not possible.

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. Risk of cancer cannot be excluded with prolonged exposure.

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.

- 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
This product has no known adverse effect on human health.

SECTION 12: Ecological information

12.1. Toxicity
Based on available data, the classification criteria are not met for hazardous to the aquatic
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.

Disposal methods/information
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.

SECTION 14: Transport information

ADR
14.1. - 14.6.: Not regulated as dangerous goods.

RID
14.1. - 14.6.: Not regulated as dangerous goods.

ADN
14.1. - 14.6.: Not regulated as dangerous goods.

IATA
14.1. - 14.6.: Not regulated as dangerous goods.

IMDG
14.1. - 14.6.: Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of Marpol 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. 2037/2000 on substances that deplete the ozone layer, Annex I
  Not listed.
- Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II
  Not listed.
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
  Not listed.
- Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
  Not listed.
- Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry
  Not listed.
- Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
  Not listed.

Authorisations
- Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
  Not listed.

Restrictions on use

Material name: MIZZOU CASTABLE PLUS; MIZZOU CASTABLE PLUS W/F
5976, 454B, 4622, 433C  Version #: 01  Issue date: 07-November-2016

SDS UK
Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use
Not regulated.
Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
Not listed.
Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work
Not listed.

Other EU regulations
Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended
Not listed.

Other regulations
The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

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 H-statements not written out in full under Sections 2 to 15
None.

Revision information
None.

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.