

# MEMO

March 6, 2018

Job **Harmonite EU REACH Support**  
 Client **The Dupps Company**  
 To **Ken Thomas**  
 From **Salvatore T. Giolando, Ph.D.**  
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**Statement of EU REACH Article 33 "Substances of Very High Concern"  
 communication requirements for Harmonite® products manufactured by RSS,  
 LLC., a wholly owned subsidiary of The Dupps Company.**

To support the introduction of the Harmonite product line into the European Union (EU) by customers of The Dupps Company, a company headquartered in the United States, Ramboll was engaged to assess their EU REACH compliance obligations with a focus on whether customers would need to divulge any EU REACH Candidate List substances aka "substances of very high concern" in products formulated with Harmonite and shipped to the EU.

Harmonite products are manufactured from a selective family of used residential shingles (upwards of 25 years since original installation) which are members of a common family of asphalt roofing shingles as described via the SDS in Appendix A, and which are known to be asbestos free. Upon recovery, the used shingles are processed at the RSS factory through a patented and proprietary thermomechanical process that does not drive any chemical reactions or transformations among the shingle constituents, and which are then sieved to achieve a variety of particle size ranges and packaged for placement on the market, primarily to customers in North America. Harmonite products are incorporated into a wide variety of products including industrial coatings, adhesives, sealants and elastomeric compounds as used in flashing tapes, rubber floor mats, gaskets, and other related materials found in construction, automotive and other industries.

The key constituents known to be formulated into these asphalt roofing shingles and that are present in the Harmonite product have been evaluated to determine any EU REACH supply chain reporting obligations. Importantly, none of these constituents are currently listed on the EU REACH Candidate List, Annex XIV, or Annex XVII. Furthermore, process prototypical samples of Harmonite have been tested in 3<sup>rd</sup> party certified laboratories to determine the presence or absence of various chemical families including phthalates, heavy metals, SVOC's and PAH's. None exceeded EU REACH thresholds and most were below limits of detection. At this time, there are no EU REACH Article 33 or other downstream user communication obligations or restrictions associated with importation of Harmonite containing products into the EU.

The Dupps Company will continue to review the routine additions to the EU REACH Candidate List, and Annexes XIV or XVII and will determine whether or not additional new EU REACH supply chain reporting obligations apply in the future.

## Appendix A: US SDS for Harmonite® family of products



## Safety Data Sheet

Revision date: August 28, 2017

### Section 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Covered Products:** Harmonite-40, Harmonite-70, Harmonite-100, Harmonite C  
**Synonyms:** RAS / Asphalt fiberglass shingle powder  
**Chemical family:** Not Applicable  
**Formula:** Composite

**Producer:** Recycled Shingle Solutions (RSS, llc.)  
6075A Lees Mills Road  
Forest Park, GA 30297

Robert Horton 937-510-5870 Available 24 hours  
Keith Little 937-479-2796 Information only - Available 24 hours

### Section 2. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Harmonite powders are composed of recycled asphalt and fiberglass-based roofing material manufactured in a high temperature thermal/mechanical process. If Harmonite powder becomes airborne, it may comprise crystalline silica, oxidized asphalt, limestone, or glass fiber-containing dust which can be hazardous if inhaled. Harmonite powder is a class St-1 combustible dust. Material handling, storage, and housekeeping operations should be consistent with effective controls to minimize the hazard of a combustible dust fire or explosion.

#### OSHA-GHS Hazard Classification and Hazard Statements (Warning Label):

**DANGER — H 350 May cause cancer (category1)**  
**WARNING — H 320 Causes eye irritation (category2B)**



#### Precautionary Statements and Symptoms

P 201 Obtain specific instructions before use.  
P 202 Do not handle until all safety precautions have been read and understood.  
P264 Wash hands thoroughly after handling.  
P308 + P313 If exposed or concerned, get medical advice.  
P305 + P351 + 338 If in eyes, remove contact lenses if present and easy to do so, rinse cautiously with water for several minutes.  
P337 + P338 +313: If eye irritation persists. Continue rinsing. Get medical attention  
P405 Store locked up.  
P 280 Wear eye protection.

**Inhalation:** Exposure to dust and asphalt fume is irritating to the nose, throat, and respiratory system. Asphalt fume may also cause eye irritation.  
**(Acute):** In high concentrations in excess of applicable exposure limits, dust may be narcotic and may cause headache, fatigue, dizziness, nausea, breathing disorders and lung damage. Exposure to asphalt fumes may result in irritation. Inhaled limestone dust and fiberglass particles may cause mechanical irritation of the nose, throat, and respiratory tract.



**(Chronic):** Restrictive and/or obstructive lung function changes may result from chronic exposure to crystalline silica (quartz). Repeated exposure in excess of exposure limits may cause silicosis, a progressive lung disease resulting in fibrosis (scarring) of the lungs. Silicosis is a serious and irreversible disease; it may be progressive even after exposure has ceased, and can lead to disability and death. Chronic tobacco smoking may further increase the risk of developing chronic lung problems. Respirable crystalline silica (quartz) is a known human carcinogen based on sufficient evidence of carcinogenicity from studies in humans, indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

**Ingestion:** Small amounts (a tablespoonful) swallowed during normal handling are not likely to cause injury. Ingestion of large amounts may cause irritation of the mouth, throat, and stomach.

**Skin contact:** Dust from this product may cause irritation by mechanical abrasion.

**Eye contact:** Direct contact with dust may cause irritation by mechanical abrasion. Conjunctivitis may occur.

### Section 3. MATERIAL COMPOSITION / INFORMATION ON INGREDIENTS

Name	CAS No.	Weight %
Limestone	1317-65-3	25% - 45%
Oxidized Asphalt	64742-93-4	10% - 36%
Crystalline Silica	14808-60-7	< 10%
Aluminum Oxide	1344-28-1	< 7%
Glass Fiber – Wool (Fiberglass)	65997-17-3	1% - 3%
Titanium Dioxide	13463-67-7	< 4%
Kaolin Clay	1332-58-7	< 2%
Water	7732-18-5	< 1%
Non-Hazardous Ingredients	NA	Balance

**NOTE:** The above are represented in ranges as estimates. Due to different sources of raw materials, components of Harmonite vary. Asphalt content determined by an independent lab using ASTM D6307.

### Section 4. FIRST AID MEASURES

**Inhalation:** Move affected person(s) to fresh air. If not breathing, breathing is difficult, or if no heartbeat, give artificial respiration and cardiopulmonary resuscitation (CPR) and/or administer oxygen as needed by trained personnel. Immediately call a physician.

**Skin contact:** Wash with soap and large amounts of tepid water (not to exceed 90°F). Remove and isolate contaminated shoes and clothing. Wash clothing and clean shoes thoroughly before reuse. If symptoms or irritation occur, call a physician.

**Ingestion:** If swallowed, do not induce vomiting and do not give liquids. Rinse mouth with water to remove material from the throat. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Immediately call a physician.



**Eye contact:** Check for and remove any contact lenses. Flush eyes with large amounts of tepid water for at least 15 minutes. Do not rub or scratch eyes. If symptoms or irritation occur, call a physician.

**Notes to Physician:** This material, if aspirated into the lungs, may cause chemical pneumonitis. Treat the affected person appropriately.

**Section 5. FIREFIGHTING MEASURES**

**Flammability classification** Combustible dust.

**Suitable extinguishing media:** Class B fire-extinguishing media such as carbon dioxide, dry chemical, or foam.

**Hazardous combustion products:** Carbon dioxide and carbon monoxide.

**Recommended firefighting procedures:** Firefighting may result in potential exposure to high heat, smoke or toxic byproducts of combustion. A self-contained breathing apparatus (SCBA) with full-face piece and full protective firefighting clothing should be worn.

**NFPA rating:**

**Health: 2\*; Flammability: 1; Instability/reactivity: 0 \*chronic health effects**

**Section 6. ACCIDENTAL RELEASE MEASURES**

**Small Spills** Pick up large pieces. Avoid contact with skin and eyes. If using dry clean-up procedures, avoid creating dusts during clean up. Wear protective clothing, gloves, safety glasses and a dust respirator.

**Large Spills** Follow applicable OSHA regulations (29 CFR 1910.120). Clear the area of personnel and move upwind. Control personal exposure by using protective equipment and a dust respirator. Pick up large pieces and recover the product whenever possible. Avoid generating dust and wet with water to prevent dusting. Put residues in labeled plastic bags or other containers for re-use or disposal. After product recovery, wash down the spill area with water and prevent runoff into drains.

**Section 7. HANDLING AND STORAGE**

Handle and store as a class St-1 combustible dust. See Section 9.

**Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Occupational exposure limits:**

Name	CAS No.	OSHA – PEL (mg/m <sup>3</sup> )	ACGIH® TLV® (mg/m <sup>3</sup> )	NIOSH REL (mg/m <sup>3</sup> )
Limestone	1317-65-3	5 respirable; 15 total	3 respirable; 10 total	NE
Oxidized Asphalt	64742-93-4	NE	0.5 (inhalable fraction, as benzene-soluble aerosol)	5 Ceiling (15 minutes as fume)
Crystalline Silica	14808-60-7	10 mg/m <sup>3</sup> respirable % SiO <sub>2</sub> +2	0.025 respirable	0.05 respirable
Aluminum Oxide	1344-28-1	5 respirable; 15 total	NE	NE

Name	CAS No.	OSHA – PEL (mg/m <sup>3</sup> )	ACGIH® TLV® (mg/m <sup>3</sup> )	NIOSH REL (mg/m <sup>3</sup> )
Titanium Dioxide	13463-67-7	15 total	10 total	NE
Glass Fiber – Wool (fiberglass)	65997-17-3	1 fiber/ cubic centimeter; respirable	1 fiber/ cubic centimeter; respirable	5 total fibers
Kaolin Clay	1332-58-7	5 respirable; 15 total	3 respirable; 10 total	NE

All exposure limits listed are 8-hour time weighted average (TWA) — except where noted otherwise.

<b>Engineering measures:</b>	Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is intrinsically safe or explosion-proof for combustible dust.
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### PERSONAL PROTECTIVE EQUIPMENT:

**Respiratory protection:** Use NIOSH-approved respirators as specified by an Industrial Hygienist or Safety Professional. Respirators should be used if operating conditions create airborne concentrations that exceed exposure limits for any individual components. Observe respirator protection factor criteria cited in OSHA.

**Skin and body protection:** Use canvas or leather gloves when handling. Wear dust-impervious coveralls if airborne dust concentrations exceed limits cited in this section.

**Eye protection:** Wear safety glasses with side shields.

**Hygiene measures:** Wash hands before eating, drinking, or smoking. Promptly remove contaminated clothing and laundry before reuse.

### Section 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Finely divided powder
<b>Physical state (solid/liquid/gas):</b>	Solid
<b>Substance type (pure/mixture):</b>	Mixture
<b>Color:</b>	Grey to Black
<b>Odor:</b>	None
<b>Molecular weight:</b>	Not determined
<b>pH:</b>	Not Applicable
<b>Specific gravity:</b>	1.8 - 2.4 (H <sub>2</sub> O = 1)
<b>Bulk Density (average):</b>	42 - 48 lbs/ft <sup>3</sup>
<b>Softening Point (composite powder):</b>	220 - 240°C
<b>Softening Point (extracted asphalt):</b>	126 - 146°C
<b>Solubility:</b>	Partially Soluble in petroleum solvents & aromatic hydrocarbons. Insoluble in water & alcohols.
<b>Silica (total):</b>	< 10%
<b>Silica (respirable):</b>	0.01% - 0.36%
<b>Deflagration Index, (K<sub>st</sub>)<sup>1,2</sup>:</b>	101 bar•meter/second
<b>Hazard Class of Dust Deflagration<sup>1,2</sup>:</b>	St-1
<b>Maximum Pressure Output, (P<sub>max</sub>)<sup>1,2</sup>:</b>	100 psig (6.9 bar)
<b>Maximum Pressure Rise Rate, dP/dt:</b>	5,365 psi/second (370 bar/second)
<b>Minimum Ignition Energy of a Dust Cloud in Air<sup>1</sup>:</b>	42-45milli-Joules



**Hot-Surface Ignition Temperature of Dust Layers** <sup>1</sup>:

No ignition was observed up to the set temperature of 450° C

**Minimum Auto-ignition Temperature of Dust Cloud (MAIT)** <sup>1</sup>:

440° C

**Minimum Explosible Concentration (MEC)** <sup>1,3</sup>:

90 g/m<sup>3</sup> (Igniter Energy 5,000J);  
185 g/ m<sup>3</sup> (Igniter Energy 2,500J)

<sup>1</sup> Refer to: National Fire Protection Association (NFPA) 654: "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids".

<sup>2</sup> Refer to: American Society for Testing and Materials (ASTM) E1226 "Test Method for Pressure and Rate of Pressure Rise for Combustible Dusts"

<sup>3</sup> Refer to: ASTM E 1515 "Standard Test Method for Minimum Explosible Concentration [MEC] of Combustible Dusts"

## Section 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Airborne dust may ignite or explode, see Section 9.
<b>Polymerization:</b>	Will not occur.
<b>Hazardous decomposition products:</b>	Combustion produces carbon monoxide, carbon dioxide, hydrogen sulfide, ozone and other compounds
<b>Materials to avoid:</b>	Strong oxidizing agents
<b>Conditions to avoid:</b>	Sources of heat or ignition if airborne dust is created.

## Section 11. TOXICOLOGICAL INFORMATION

### Acute toxicity:

**Product information** Component analysis (toxicological data does not exist for this mixture): Overexposure to limestone (calcium carbonate) may result in irritation to eyes, skin, and respiratory system. Acute ingestion may result in mild gastrointestinal distress while chronic exposure may result in hypercalcemia, alkalosis and renal impairment. Approximately 70-80% of inhaled limestone dust was retained in the lungs. Animal studies suggest that inhalation of limestone dusts may enhance susceptibility to respiratory infection.

### Chronic toxicity:

The NTP has classified respirable crystalline silica (quartz) as a known human carcinogen (Group 1) based on sufficient evidence of carcinogenicity from studies in humans, indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

### Carcinogenic

The International Agency for Research on Cancer (IARC) has identified inhaled crystalline silica in the form of quartz or cristobalite as a known human carcinogen. The IARC has determined that occupational exposure to oxidized asphalt and its emissions are probably carcinogenic to humans. The National Toxicology Program (NTP) has identified crystalline silica as a known human carcinogen. The American Conference of Governmental Industrial Hygienists (ACGIH) has identified crystalline silica as a suspected human carcinogen. The ACGIH has identified oxidized asphalt and titanium dioxide as a cause for concern that they could be carcinogenic for humans, but which cannot be assessed conclusively because of a lack of data. The National Institute for Occupational Safety and Health (NIOSH) has collected sufficient evidence to identify crystalline silica in the form of quartz or cristobalite, and roofing asphalt fumes as a potential occupational carcinogens.





Name	IARC:	NTP:	ACGIH — carcinogens:	NIOSH — carcinogens:
Crystalline Silica (quartz and cristobalite) 14808-60-7 & 14464-46-1	Group 1 – Carcinogenic to Humans	Group K – Known Human Carcinogen	A2 – Suspected Human Carcinogen	Potential occupational carcinogen
Oxidized Asphalt 64742-93-4	Group 3 – Not Classifiable as a Human Carcinogen		A4 – Not Classifiable as a Human Carcinogen	Potential occupational carcinogen
Titanium Dioxide 13463-67-7	Group 2B – Possibly Carcinogenic to Humans		A4 – Not Classifiable as a Human Carcinogen	Potential occupational carcinogen

Name	CAS No.	Inhalation:	Dermal:	Oral:
Quartz	14808-60-7	LC <sub>Lo</sub> 0.3 mg/m <sup>3</sup> /10 hrs (human)	N/A	LD <sub>50</sub> 500 mg/kg

**Summary of health effect information on the product: refer to Hazard Section 2**

#### Section 12. ECOLOGICAL INFORMATION

**Ecotoxicity effects:** No information is available.

#### Section 13. DISPOSAL CONSIDERATIONS

**Cleanup considerations:** This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261).

#### Section 14. TRANSPORT INFORMATION

**Transport information:** This product is not regulated by the U.S. Department of Transportation (DOT) and the International Air Transport Association (IATA) as a hazardous material.

**Proper shipping name:** NA  
**UN/Identification no.:** NA  
**Hazard class:** NA  
**Packing group:** NA  
**DOT reportable quantity (lbs):** N/A





**Section 15. REGULATORY INFORMATION**

**U.S. federal regulatory information:**

<b>OSHA Hazard Communication Standard:</b>	This product has been evaluated and determined to be hazardous as defined in the OSHA Hazard Communication Standard.	
<b>US TSCA Chemical Inventory Section 8(b):</b>	This product and/or its components are listed on the TSCA Chemical Inventory.	
<b>CERCLA/SARA 302</b>	None	
<b>CERCLA/SARA 304</b>	None	
<b>CERCLA/SARA 313</b>	Aluminum oxide	
<b>SARA 311/312 Hazard Categories</b>	<b>ACUTE:</b>	HEALTH HAZARD
	<b>CHRONIC:</b>	HEALTH HAZARD
	<b>FIRE:</b>	No
	<b>REACTIVE:</b>	No
	<b>SUDDEN RELEASE:</b>	No

<b>California Proposition 65</b>	This product contains a chemical known to the state of California to cause cancer, birth defects, or other reproductive harm. Cancer: crystalline silica and titanium dioxide.
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**NOTE:** User must consult with applicable state and local agencies for special specifics, determinations or compliance obligations regarding this product.

**Section 16. OTHER INFORMATION**

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the date compiled. However, no representation, warranty or guarantee, expressed or implied, is made as to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his particular use. We do not accept liability for any loss or damage that may occur from the use of this information. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending a license of valid patents.