



SAFETY DATA SHEET (SDS): SUPERSLURRY ADDITIVE

SECTION I – IDENTIFICATION

PRODUCT IDENTIFIER SuperSlurry Additive	TRADE NAME	OTHER SYNONYMS Beta-D-Fructofuranosyl-alpha-D-Glucopyranoside; Cellulose, 2-Hydroxy Methyl Ether, Reaction Products with Glyoxal
RECOMMENDED USE AND RESTRICTION ON USE Used as an additive in products used for construction purposes This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.		
MANUFACTURER/SUPPLIER INFORMATION Martin Marietta Materials 2710 Wycliff Road Raleigh, North Carolina 27607 Phone: 919-781-4550 For additional health, safety or regulatory information and other emergency situations, call 919-781-4550		

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION: Combustible Dust
SIGNAL WORD: WARNING
HAZARD STATEMENTS: May form combustible dust concentrations in air
PRECAUTIONARY STATEMENTS Do not handle until the safety information presented in this SDS has been read and understood. Avoid creating dust when handling, using or storing and follow guidelines in this SDS for handling and storage. Use with adequate ventilation to keep exposure below recommended exposure limits. Dispose of product in accordance with local, regional, national or international regulations. Please refer to Section XI for details of specific health effects of the components.

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Cellulose, 2-Hydroxy Methyl Ether, Reaction Products with Glyoxal	68441-63-4	45-70
Sucrose	57-50-1	25-55
Polymer	Trade Secret	0.01-7

SECTION IV – FIRST-AID MEASURES

INHALATION: If excessive inhalation occurs, remove to fresh air. Product in throat and nasal passages should clear spontaneously. If not breathing, give artificial respiration and if breathing is difficult, give oxygen and get medical attention if symptoms persist or develop later.

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Remove contact lenses, if present and easy to do, and continue rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.

SKIN: Rinse skin with soap and water after manually handling and wash contaminated clothing if there is potential for direct skin contact. Cover the skin with an emollient. Contact a physician if irritation persists or develops later.

INGESTION: If swallowed, rinse mouth and do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband. If ingested, sugar contained in this product may cause an adverse reaction in diabetics; get medical attention immediately if such a diabetic shows signs of an adverse reaction, or becomes unconscious after ingesting this product. If gastrointestinal discomfort occurs, persists or develops later, get medical attention.

SIGNS AND SYMPTOMS OF EXPOSURE: Direct skin and eye contact with product may cause irritation by mechanical abrasion. Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea and may cause adverse reactions in diabetics. Inhalation of product may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Gases and fumes evolved during the thermal processing or decomposition of the product may irritate eyes, skin or the respiratory tract.

SECTION V – FIRE-FIGHTING MEASURES**EXTINGUISHING AGENT**

Material may be combustible at high temperature. Use dry chemical powder for small fires and water spray, fog or foam for large fires. Do not use water jet as extinguishing medium.

UNUSUAL FIRE AND EXPLOSION HAZARD

Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this SDS). Dust from product may form explosive mixtures with air.

SPECIAL FIRE FIGHTING PROCEDURES

In the event of fire, wear a self-contained breathing apparatus (SCBA).

HAZARDOUS COMBUSTION PRODUCTS

Combustion of sucrose may generate carbon monoxide (CO) and carbon dioxide (CO₂). The health effects of these products are further discussed in Section XI.

SECTION VI – ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS.

Do not allow product to flow in to public sewers or water systems and do not flush with water. Clean up product promptly by using a method that does not generate dust. Clean up processes where dust can be generated, may overexpose cleanup personnel components that may pose inhalation hazards. Avoid the product from getting heated and keep away from heat and ignition sources and use appropriate ventilation. Cleanup personnel should protect against dust inhalation and skin or eye contact. Ensure vacuum cleaners, if used, are approved for explosive dusts. Spilled product may pose a slipping hazard, use caution during clean up.

Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII).

Place the cleaned-up dust in a covered container appropriate for disposal. Dispose of the dust according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

SECTION VII – HANDLING AND STORAGE

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

Follow protective controls set forth in Section VIII of this SDS when handling this product. Store product locked up in a cool, dry, well-ventilated place. Use appropriate containers for storage and protect equipment with explosion vents. Ground and bond containers and equipment before transferring to avoid static sparks. Use non-sparking tools and equipment. Dust containing components that may be an irritant may be generated during processing, handling and storage of the product. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not store near heat, sparks, flame or other incompatible materials (see Section X). Do not store above 23°C (73.4°F).

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA’s Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of SuperSlurry Additive:

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Cellulose, 2-Hydroxy Methyl Ether, Reaction Products with Glyoxal*	(T) 15 mg/m ³ , (R) 5 mg/m ³	10 mg/m ³	(T) 10 mg/m ³ , (R) 5 mg/m ³
Sucrose Polymer	(T) 15 mg/m ³ , (R) 5 mg/m ³ -	10 mg/m ³ -	(T) 10 mg/m ³ , (R) 5 mg/m ³ -

* OELs provided for cellulose (CAS No. 9004-34-6)
(R): Respirable Fraction.
(T): Total Dust.

Airborne OELs for Inert/Nuisance Dust:

Standard	Respirable Dust	Total Dust
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m ³	15 mg/m ³
ACGIH TLV (as Particles Not Otherwise Specified)	3 mg/m ³	*10 mg/m ³
NIOSH REL (Particulates Not Otherwise Regulated)	-	-

Note: The limits for Inert Dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.
* The TLV provided is for inhalable particles not otherwise specified.

ENGINEERING CONTROLS

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust from use of product should be monitored regularly. Dust generated from product in excess of appropriate exposure limits should be reduced by implementing feasible engineering controls, including (but not limited to), ventilation, process enclosure and enclosed employee work stations.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.**EYE/FACE PROTECTION**

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

SKIN PROTECTION

Long sleeve shirts and long pants extending over the tops of work shoes. Use appropriate gloves if manually handling product.

RESPIRATORY PROTECTION**Respirator Recommendations:**

For dust generated from product that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674 or visit website: <http://www.cdc.gov/niosh/npg>. See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

If the workplace airborne respirable dust concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

GENERAL HYGIENE CONSIDERATIONS

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE Mixture of white to yellow fine powder and crystalline granules	ODOR AND ODOR THRESHOLD Odorless to characteristic caramel odor. Odor threshold not available
pH AND VISCOSITY Neutral (2% aqueous solution) and approx.. 40,000 mPa.s @ 20°C (68°F)	MELTING POINT/FREEZING POINT 186°C (366.8°F) for sucrose and not applicable
BOILING POINT AND RANGE Not applicable	FLASH POINT AND FLAMMABILITY Higher than 93.3°C (200°F) – closed cup for sucrose and product may be combustible at high temperature
FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE Not established and $\geq 360^{\circ}\text{C}$ (680°F) for methyl cellulose and polymer	EVAPORATION RATE AND DECOMPOSITION TEMPERATURE Not applicable
VAPOR PRESSURE AND VAPOR DENSITY IN AIR Not applicable	SPECIFIC GRAVITY. Not established for mixture, 1.587 for sucrose
SOLUBILITY IN WATER Sucrose is easily soluble in cold water, other portions are soluble @ $<60^{\circ}\text{C}$ (140°F)	PARTITION COEFFICIENT: N-OCTANOL/WATER log Kow = -3.7 for sucrose

SECTION X – STABILITY AND REACTIVITY

STABILITY Stable	CONDITIONS TO AVOID Contact with incompatible materials (see below). Avoid high temperatures, open flames, sparks, welding, smoking and other sources of ignition.
THERMAL STABILITY	
INCOMPATIBILITY (Materials to avoid) Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride, and sulfuric acid and nitric acid may cause fire and/or explosions.	
HAZARDOUS DECOMPOSITION PRODUCTS Thermal decomposition of sucrose can occur at 160 to 186°C and may release carbon monoxide, carbon dioxide and other acrid and irritating smoke and fumes. The health effects of the decomposition products are discussed in Section XI.	
HAZARDOUS POLYMERIZATION Not known to polymerize	

SECTION XI – TOXICOLOGICAL INFORMATION

Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in superslurry additive.

Primary routes(s) of exposure: Inhalation Skin Ingestion

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant route of exposure.

INGESTION: Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea and may cause adverse reactions in diabetics.

INHALATION: Inhalation of product may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Gases and fumes evolved during the thermal processing or decomposition of the product may irritate eyes, skin or the respiratory tract.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust may aggravate existing respiratory system disease(s) (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

This product is a mixture of components. The composition percentages are listed in Section III. Toxicological information for each component is listed below:

Sucrose:

Exposure route: Inhalation, skin/eye contact, ingestion

Target Organs: Respiratory system, eyes, skin, gastrointestinal

Acute Effect: Direct skin and eye contact may cause irritation by mechanical abrasion. Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea and may cause adverse reactions in diabetics. Inhalation may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. May generate irritating smoke or fume in fire.

Chronic effect/carcinogenicity: Sucrose is reported to be capable of producing dermatoses in bakers, candy makers and related occupations. Uncontrolled glucose concentrations in maternal blood are associated with elevated embryonic and fetal death and increased neonatal morbidity and mortality. Not classifiable as a human carcinogen

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.Cellulose, 2-hydroxyethyl methyl ether, reaction products with glyoxal (as provided in previous MSDS)

Exposure route: Inhalation

Target Organs: Respiratory system

Acute Effect: Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea and may cause adverse reactions in diabetics. Inhalation may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion.

Chronic effect/carcinogenicity: Not defined as a carcinogen by IARC, NTP and/or OSHA

Polymer (as provided in previous MSDS)

Exposure route: Inhalation, skin/eye contact, ingestion

Target Organs: Respiratory system, eyes, skin, gastrointestinal

Acute Effect: Direct skin and eye contact may cause irritation by mechanical abrasion. Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea and may cause adverse reactions in diabetics. Inhalation may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Gases and fumes evolved during thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract.

Chronic effect/carcinogenicity: Not defined as a carcinogen by IARC, NTP and/or OSHA

Thermal decomposition of sucrose may generate CO and CO₂. The health effects of these products are described below:Carbon Monoxide:

Exposure route: Inhalation.

Target organs: Respiratory system, cardiovascular system, blood, central nervous system.

Acute effect: Inhalation of carbon monoxide causes cell oxidation to be inhibited which results in a reduction of the oxygen carrying capacity to all organs of the body. Resulting acute effects may include confusion, dizziness, headache, nausea, unconsciousness and weakness. High level exposures can result in death.

Chronic effect/carcinogenicity: Prolonged exposure may have effects on the nervous system and the cardiovascular system. Suspected to cause reproductive effects such as neurological problems, low birth weight, increased still births and congenital heart problems.

Carbon Dioxide:

Exposure route: Inhalation.

Target organs: Respiratory system, cardiovascular system.

Acute effect: Inhalation of carbon dioxide may cause dizziness, headache, and elevated blood pressure. Inhalation of high concentrations of this gas may cause hyperventilation and unconsciousness.

Chronic effect/carcinogenicity: Information on chronic effects of prolonged exposure to this substance is not documented. Not defined as a carcinogen by IARC, NTP and/or OSHA

Acute Toxicity Estimates for SuperSlurry Additive – Not Available

SECTION XII – ECOLOGICAL INFORMATION

No data available for this product.

SECTION XIII – DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD**

Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Martin Marietta Materials product only as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

SECTION XIV – TRANSPORT INFORMATION**DOT HAZARD CLASSIFICATION**

None

PLACARD REQUIRED

None

LABEL REQUIRED

Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200(f)}, and applicable state and local regulations.

SECTION XV – REGULATORY INFORMATION

SARA Title III: Section 311 and 312: Immediate health hazard and fire hazard.

TSCA: Most of the ingredients appear on the EPA TSCA Inventory

RCRA: This product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: This product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4

EPCRA (Emergency Planning and Community Right to Know Act): This product is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.

FDA: Substance added directly to human food affirmed as generally recognized as safe.

California Proposition 65: This product and its components are not classified as substances known to the state of California to be a carcinogen and cause reproductive toxicity.

SECTION XVI – OTHER INFORMATION**DEFINITIONS OF ACRONYMS/ABBREVIATIONS**

ACGIH: American Conference of Governmental Industrial Hygienists

ANSI: American National Standards Institute

California REL: California Inhalation Reference Exposure Limit

CAS: Chemical Abstracts Service

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: US Code of Federal Regulations

EPA: Environmental Protection Agency

EPCRA: Emergency Planning and Community Right to Know Act

FDA: Food and Drug Administration

GHS: Globally Harmonized System

IARC: International Agency for Research on Cancer

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services

NIOSH REL: NIOSH Recommended Exposure Limit

NTP: National Toxicology Program

OEL: Occupational Exposure Limit

OSHA: Occupational Safety and Health Administration, US Department of Labor

PEL: Permissible Exposure Limit

RCRA: Resource Conservation and Recovery Act

SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986

SDS: Safety Data Sheet

SECTION XVI – OTHER INFORMATION, CONTD**DEFINITIONS OF ACRONYMS/ABBREVIATIONS, CONTD.**

TLV: Threshold Limit Value

TSCA: Toxic Substance Control Act

TWA: Time-Weighted Average

User's Responsibility: The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that this SDS be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

Disclaimer: The information contained in this document applies to this specific material as supplied and Martin Marietta Materials believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Martin Marietta Materials, assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

An electronic version of this SDS is available at www.martinmarietta.com. More information on the effects of crystalline silica exposure may be obtained from OSHA (phone number: 1-800-321-OSHA; website: <http://www.osha.gov>) or from NIOSH (phone number: 1-800-35-NIOSH; website: <http://www.cdc.gov/niosh>).

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