

## SAFETY DATA SHEET

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### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

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#### 1.1 PRODUCT IDENTIFIER

Product Name: Enduramark Black Laser Marking Paste  
Product Code: LMS-BLACK

#### 1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Coating used for Laser Marking; Industrial Use Only

#### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

MANUFACTURED BY: VV Materials, LLC (DBA: Enduramark)  
DIVISION: Material Science  
ADDRESS: 14101 W. Hwy 290  
STE 1800  
Austin, TX 78737

#### 1.4 EMERGENCY TELEPHONE NUMBER

CHEMTREC PHONE: 800-424-9300  
PRODUCT INFORMATION: 512-236-6424

**CAS No:** Mixture

**Date of Preparation** 5/31/2017

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### SECTION 2: HAZARDS IDENTIFICATION

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#### 2.1 Classification of the substance or mixture

##### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Eye irritation (Category 2A), H319

Carcinogenicity (Category 2), H351

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335 For the full text of the H-Statements mentioned in this Section, see Section 16.

#### 2.2 GHS Label elements, including precautionary statements



Signal Word-

Danger

##### Hazard statement(s)

H225 Highly Flammable Liquid

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer

##### Precautionary statement(s)

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P223 Keep container tightly close

P241 Use explosion-proof electrical/ventilation/lighting/equipment

P242 Use only non-sparking tools

P243 Take precautionary measures against static discharge

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ eye protection/ face protection.

P281 Use personal protective equipment as required

P303 + P361 + P353 If on skin (or hair): Take off all contaminated clothing. Rinse skin with water/shower

P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

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P337 + P313 If eye irritation persists: Get medical advice/ attention.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol resistant foam to extinguish.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS – none**

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**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

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Component	CAS #	Concentration
Proprietary Hydrated Aluminum Magnesium Molybdenum Silicate	N/A	>=1 - <75%
Ethanol	64-17-5	>=1 - <55%

**Specific chemical identities are being withheld as a trade secret (29 CFR 1910.1200)**

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**SECTION 4: FIRST AID MEASURES**

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**4.1 Description of first aid measures****General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. If symptoms persist, call a physician. Consult a physician.

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

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

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

No data available.

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**SECTION 5: FIRE-FIGHTING MEASURES**

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**5.1 Extinguishing media****Suitable extinguishing media**

Use dry powder or dry sand.

**Unsuitable extinguishing media**

Do NOT use water.

**5.2 Special hazards arising from the substance or mixture**

Carbon oxides

**5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

Use water spray to cool unopened containers.

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**SECTION 6: ACCIDENTAL RELEASE MEASURES**

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**6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

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### 6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Do not let product enter drains.

### 6.3 Methods and materials for containment and cleaning up

Use personal protective equipment. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, properly labeled and closed containers for disposal. Dispose according to local/national regulations (see section 13).

### 6.4 Reference to other sections

For disposal see section 13.

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## SECTION 7: HANDLING AND STORAGE

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### 7.1 Precautions for safe handling

Avoid contact with skin, eyes or clothing. Avoid inhalation of vapor or mist. Use personal protective equipment as necessary. Wash contaminated clothing before reuse. Avoid formation of dust, vapors, mist and aerosols. Further processing of solid materials may result in the formation of combustible dusts. Use explosion-proof equipment. Do not eat or drink when using. Keep away from sources of ignition – No smoking. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Take measures to prevent the build-up of electrostatic charge. For precautions see section 2.2.

### 7.2 Advice on protection against fire and explosions

Keep container tightly closed in a dry and well-ventilated place. Keep in properly labeled containers. Containers that are opened must be carefully resealed and kept upright.

### 7.3 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

### 7.4 Specific End Use

Apart from the uses mentioned in section 1, no other specific uses are stipulated.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 8.1 Control Parameters

Component	CAS-No.	Value	Control Parameters	Basis
Ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
	Remarks	The value in mg/m <sup>3</sup> is approximate.		
		STEL	1,000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		TWA	1,000 ppm 2,400 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans		
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits
		PEL	1,000 ppm 1,900 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Proprietary Hydrated Aluminum Magnesium Molybdenum Silicate		TWA	0.50 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

### 8.2 Exposure Controls

#### Appropriate engineering controls

Showers, eyewash stations, ventilation systems. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### Eye/face protection

Safety glasses with side-shields and face-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Wear protective clothing. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

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Material: Nitrile rubber  
Minimum layer thickness: 0.11 mm  
Break through time: 480 min  
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

### Splash contact

Material: Nitrile rubber  
Minimum layer thickness: 0.11 mm  
Break through time: 480 min  
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

### Body Protection

Impervious clothing, flame-resistant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection must be provided in accordance with current local regulations.

### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

a) Appearance	Form: powder Colour: White to Off-White
b) Odor	No data available
c) Odor Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	No data available
f) Initial boiling point	No data available
g) Flash point	No data available
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or exposure limits	No data available
k) Vapour pressure	No data available
l) Vapour density	No data available
m) Relative density	No data available
n) Water solubility 1 g/l at 20 °C (68 °F)	No data available
o) Partition coefficient: noctanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

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## SECTION 10: STABILITY AND REACTIVITY

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### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Vapors may form explosive mixture with air.

### 10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

### 10.5 Incompatible materials

Bases, strong oxidizing agents, reducing agents, strong acids, oxidizing agents, rubber, various plastics. Acetone reacts violently with phosphorus oxychloride.

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - molybdenum oxides, aluminum oxides, silicon oxides, carbon oxides, sulphur oxides, sodium oxides.

Other decomposition products - No data available

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In the event of fire: see section 5

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### SECTION 11: TOXICOLOGICAL INFORMATION

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#### 11.1 TOXICOLOGICAL INFORMATION:

Toxicological effects for the listed Proprietary Hydrated Aluminum Magnesium Molybdenum Silicate have not been tested but are expected to be similar to the related molybdenum oxide CAS # 1313-27-5. The toxicological data for molybdenum oxide is listed below and should be used as a guideline.

##### Acute toxicity

LD50 Oral - Rat - male - 2,689 mg/kg (OECD Test Guideline 401)  
LD50 Oral - Rat - female - 3,830 mg/kg (OECD Test Guideline 401)  
LC50 Inhalation - Rat - male and female - 4 h - > 5.05 mg/l (OECD Test Guideline 403)  
LD50 Dermal - Rat - male and female - > 2,000 mg/kg (OECD Test Guideline 402)

##### Skin corrosion/irritation

Skin - Rabbit  
Result: No skin irritation - 4 h  
(OECD Test Guideline 404)

##### Serious eye damage/eye irritation

Eyes - Rabbit  
Result: No eye irritation  
(OECD Test Guideline 405)

##### Respiratory or skin sensitisation

Maximisation Test - Guinea pig  
Result: Does not cause skin sensitisation.  
(OECD Test Guideline 406)

##### Germ cell mutagenicity

Ames test  
S. typhimurium  
Result: negative

##### Carcinogenicity

Limited evidence of a carcinogenic effect.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (molybdenum trioxide)

NTP: No component of this product presents at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

##### Reproductive toxicity

No data available

##### Specific target organ toxicity - single exposure

May cause respiratory irritation.

##### Specific target organ toxicity - repeated exposure

No data available

##### Aspiration hazard

No data available

##### Additional Information

RTECS: QA4725000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

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### SECTION 12: ECOLOGICAL INFORMATION

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12.1 Ecological effects for the listed Proprietary Hydrated Aluminum Magnesium Molybdenum Silicate have not been tested but are expected to be similar to the related molybdenum oxide CAS # 1313-27-5. The toxicological data for molybdenum oxide is listed below and should be used as a guideline

##### Toxicity

Toxicity to fish                      static test LC50-Pimephales promelas (fathead minnow) 577mg/l - 96h

Toxicity to daphnia                      static test LC50-Daphnia magna (water flea) 206.8mg/l -48 h

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and other aquatic  
invertebrates

Toxicity to bacteria                      Respiration inhibition EC50-Sludge treatment- 820mg/l – 3 hr (OECD Test Guidelines 209)

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**Other adverse effects**

No data available

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 WASTE DISPOSAL METHOD:****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste-disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Dispose in accordance with Federal, State and Local regulations.

**Contaminated packaging**

Dispose of as unused product. Do not reuse container.

**Other Information**

Waste codes should be assigned by the user based on the application for which the product was used.

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**SECTION 14: TRANSPORT INFORMATION**

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**14.1 TRANSPORT INFORMATION**

<b>UN/ID No:</b>	UN1263
<b>Proper shipping name:</b>	Flammable liquid
<b>Hazard Class:</b>	3
<b>Description:</b>	UN1263, flammable liquid, 3
<b>Packing Group:</b>	2

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**SECTION 15: REGULATORY INFORMATION**

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**SARA 302 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313: Molybdenum trioxide, CAS-No. 1313-27-5

**SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard, Fire Hazard

**California Prop. 65 Components**This product can potentially expose you to chemicals, including Crystalline Silica/Quartz, which are known to the State of California to cause cancer. For more information go to [P65Warnings.ca.gov](http://P65Warnings.ca.gov).**Massachusetts Right to Know Components**

Ethanol

**Pennsylvania Right to Know Components**

Molybdenum trioxide, Ethanol

**New Jersey Right to Know Components**

Ethanol

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**SECTION 16: OTHER INFORMATION**

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. VV Materials, LLC, and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.