




# Safety Data Sheet

**Section 1**  
**Identification of the Substance and of the Supplier**

Product Name/Identification:	SUL4R-PLUS®
Synonyms:	Gypsum, Flue Gas Desulfurization (FGD) Gypsum, Calcium Sulfate Dihydrate, Calcium lignosulfonate
Recommended Use:	Agricultural amendment and soil conditioner
Restrictions on Use:	Applicability for certain crops and soil types should be verified with state and local agricultural extension agents
Manufacturer:	Charah, Inc.
Address:	12601 Plantside Drive Louisville, KY 40299
Website:	<a href="http://charah.com">http://charah.com</a>
Phone:	877-314-7724
Emergency phone number:	Business hours: 877-314-7724 After hours: 502-410-9295

**Section 2  
Hazards Identification**

GHS Classification:	3
Signal Word:	Warning
	
Hazard Statements:	May cause respiratory irritation.
Precautionary Statements:	<p>Avoid breathing dust.</p> <p>Use only outdoors or in a well-ventilated area.</p> <p>If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>Call a Poison Control Center or physician if accidentally inhaled or ingested.</p> <p>Dispose of contents in accordance with local, regional, national regulations.</p>
Appearance:	This product is a granular pellet, tan/light gray. (See also Section 9.)

**Emergency Overview:**

May cause skin or respiratory irritation based on prolonged or repeated overexposure to high concentrations. Irritation is believed to be mild to moderate and reversible.

This product is not expected to produce any unusual hazards during normal use. Exposure to high dust levels may irritate the skin, eyes, nose, throat, or upper respiratory tract. This product does not present an inhalation, ingestion, or contact health hazard unless subjected to operations such as sawing, sanding or machining which result in the generation of airborne particulate. This product contains quartz (crystalline silica) as a naturally occurring constituent.

**Acute Effects of Exposure:**

- Inhalation:** May cause minor to moderate irritation. Exposure to dust generated during the handling or use of the product may cause temporary irritation to eyes, skin, nose, throat, and upper respiratory tract. Persons subjected to large amounts of this dust will be forced to leave area because of nuisance conditions such as coughing, sneezing and nasal irritation. Labored breathing may occur after excessive inhalation. If respiratory symptoms persist, consult physician.

- **Ingestion:** May cause irritation to the esophagus and stomach, abdominal spasms and pain. Contact Poison Control if swallowed.
- **Skin Contact:** May cause minor irritation.
- **Eye Contact:** Dust can cause temporary mechanical irritation of eyes. If burning, redness, itching, pain or other symptoms persist or develop, consult physician. May cause minor irritation.

**Chronic Effects of Exposure:**

- **Target organs:** Eyes, skin and respiratory system.
- **Symptoms:** Irritation of the eyes, skin, mucous membranes, upper respiratory system; cough, sneezing, rhinorrhea (discharge of thin nasal mucus).
- **Cancer:** Product may contain crystalline silica as a normal environmental constituent. The amount present based on recent tests indicated less than the mandatory reporting level of 0.1% by weight. Exposures to respirable crystalline silica are not expected during the normal use of this product; however, actual levels can be determined by industrial hygiene exposure testing. Prolonged and repeated exposure to airborne free respirable crystalline silica can result in lung disease (i.e., silicosis) and/or lung cancer. The development of silicosis may increase the risks of additional health effects. The risk of developing silicosis is dependent upon the exposure intensity and duration. Note: Many soil types contain more than 0.1% crystalline silica. This product may add an insignificant level to the overall silica exposure.

**Section 3****Composition/Information on Ingredients**

Chemical Name	CAS Number	Amount by Weight %
Synthetic Gypsum (calcium sulfate dihydrate)	10101-41-4	90-95%
Limestone (calcium carbonate)	1317-65-3	<10%
Calcium Lignosulfonate (stabilizer)	8061-52-7	1-5%
Trace metals	--	<1%
Crystalline Silica (quartz)	14808-60-7	<0.1%

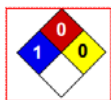
**Section 4**  
**First Aid Measures**

<b>Inhalation:</b>	Remove person to fresh air. If signs/symptoms continue, get medical attention.
<b>Ingestion:</b>	If swallowed, call a poison control center or physician immediately. Do NOT induce vomiting unless directed to do so by a poison control center or physician. Never give anything by mouth to an unconscious person.
<b>Skin Contact:</b>	Wash thoroughly with neutral soap and water. Seek medical attention if skin irritation persists or if skin rashes or dermatitis develop.
<b>Eye Contact:</b>	If the material gets into the eye, flush the eye under running water for at least 15 minutes. If easy to do, remove contact lenses and continue to flush with water.

**Potential Symptoms:** Irritation of the eyes, skin, mucous membranes, upper respiratory system, cough, sneezing, rhinorrhea (discharge of thin nasal mucous), nosebleed.

**Acute ingestion:** GI blockage if material hardens.

**Section 5**  
**Firefighting Measures**



NFPA Rating:

<b>Suitable Extinguishing Media:</b>	This product is not combustible. Use extinguishing media appropriate for fighting surrounding fire.
<b>Unsuitable Extinguishing Media:</b>	None.
<b>Special Protective Equipment and Precautions for Firefighters</b>	None.
<b>Specific Hazards:</b>	This product poses no fire-related hazard.
<b>Hazardous Combustion Products:</b>	Above 1450°C this product can produce sulfur dioxide and calcium oxide (SO <sub>2</sub> and CaO).

**Section 6**  
**Accidental Release Measures**

<b>Personal precautions:</b>	Avoid breathing dust. Stand upwind when pouring and broadcasting.
<b>Protective equipment:</b>	Use personal protective equipment as recommended in Section 8.
<b>Emergency procedures:</b>	Contain spill area and protect from pedestrian or vehicle traffic.
<b>Methods and materials for containment and cleaning up:</b>	Avoid generating dust. Shovel or sweep up spilled material and place in suitable container. Dispose in accordance with federal, state/provincial and local requirements.

**Section 7**  
**Handling and Storage**

Precautions for safe handling:

- Keep container closed when not in use.
- Store in dry place.
- Minimize dust generation and accumulation.

## Section 8

### Exposure Controls/Personal Protection

#### Exposure controls/personal protection

Chemical Name	OSHA PEL (mg/m <sup>3</sup> )	ACGIH TLV (mg/m <sup>3</sup> )
Gypsum (calcium sulfate), total particulate Particles not otherwise specified (PNOS)	15	10
Gypsum (calcium sulfate), PNOS respirable fraction	5	3

Notes :

1. "OSHA" means Occupational Safety and Health Administration.
2. "PEL" means (OSHA) permissible exposure limit.
3. "ACGIH" means American Conference of Governmental Industrial Hygienists.
4. "TLV" means Threshold Limit Value.
5. "TWA" means time-weighted average.

#### Appropriate engineering controls

No specific controls needed. Ventilate to keep airborne concentrations below exposure limits. Use of an enclosed tractor cab with particulate air filtration can reduce the risk of inhaling dusts and soils during application.

#### Personal Protection Equipment (PPE)

**Skin Protection:** Direct skin contact should be avoided by wearing long sleeved shirts and long trousers and gloves (leather or equivalent). Disposable particulate coveralls may be used when conditions warrant.

**Eye Protection:** Safety spectacles or goggles.

**Respiratory Protection:** Occupational Safety and Health Administration (OSHA) Regulations (29 CFR 1910.134 - Respiratory Protection) must be followed whenever work conditions require a respirator. A National Institute for Occupational Safety and Health (NIOSH) approved particulate respirator is recommended when engineering controls are not feasible, or while engineering controls are being instituted, and if an OSHA PEL or ACGIH TLV is exceeded.

**Personal Hygiene:** Work clothing should be washed regularly. Wash hands before eating, drinking, or using tobacco products. Wash exposed skin with soap and water.

Use only with adequate ventilation/personal protection.

**Section 9**  
**Physical and Chemical Properties**

Property	Value	Property	Value
<b>Appearance (physical state, color, etc.):</b>	Granular; tan/light gray	<b>Upper/lower flammability or explosive limits:</b>	Not applicable
<b>Odor:</b>	None	<b>Vapor Pressure:</b>	Not Applicable
<b>Odor threshold:</b>	Not Applicable	<b>Vapor Density:</b>	Not Applicable
<b>pH:</b>	≤ 9 but may be as low as 4 in solution	<b>Specific gravity or relative density:</b>	2.19 g/cc
<b>Melting point/freezing point:</b>	NA	<b>Solubility(ies):</b>	Soluble in water
<b>Initial boiling point and boiling range:</b>	Not Applicable	<b>Partition coefficient: n-octane/water:</b>	Not Applicable
<b>Flash point:</b>	Not Applicable	<b>Auto ignition temperature:</b>	Not Applicable
<b>Evaporation rate:</b>	Not Applicable	<b>Decomposition temperature:</b>	1450°C
<b>Flammability (solid, gas):</b>	Not Applicable	<b>Viscosity:</b>	Not Applicable
<b>Physical state:</b>	Solid	<b>Corrosivity towards steel:</b>	0.56 millimeters per year

## Section 10 Stability and Reactivity

<b>Reactivity:</b>	Avoid contact with strong acids and strong oxidizers.
<b>Chemical Stability:</b>	Stable in dry environments.
<b>Possibility of hazardous reactions:</b>	Contact with strong acids could result in release of carbon dioxide.
<b>Conditions to avoid:</b>	Contact with incompatible materials (see below).
<b>Incompatible materials:</b>	Strong acids, aluminum (at high temperatures), diazomethane.
<b>Hazardous decomposition products:</b>	No hazardous decomposition up to 1450°C. Above 1450°C it could decompose to calcium oxide (CaO) and releases sulfur dioxide (SO <sub>2</sub> ) and various carbon oxides.

## Section 11 Toxicological Information

**Note:** No specific data are available for the product as a whole, so this information pertains to calcium sulfate dihydrate.

### **Human Data (Calcium Sulfate Dihydrate)**

**Likely routes of exposure:** inhalation, ingestion, skin and eye contact.

**Symptoms:** Irritation of the eyes, skin, mucous membrane, upper respiratory system; cough, sneezing, rhinorrhea (discharge of thin nasal mucus), nosebleed.

**Acute ingestion:** Irritation to the esophagus and stomach, abdominal spasms and pain. GI blockage if material hardens.

**Health Effects:** Nuisance particulate (accumulation in lungs).

**Delayed and immediate effects:** None known.

**Chronic effects from short and long-term exposure:** None known.



**Animal Data (Calcium Sulfate Dihydrate)****Acute Oral Toxicity**

Species: Rat (Sprague-Dawley)

Route of Administration: Oral (gavage)

Method: OECD Test Guideline 420 (Acute Oral Toxicity-Fixed dose procedure)

2,000 mg/kg body weight of test substance was administered to 4 female rats during main study (50, 300 and 2,000 mg/kg body weight administered during sighting study).

No mortality, no specific clinical signs observed during test period.

LD50 (Lethal Dose): &gt; 2,000 mg/kg body weight (category 5 under Harmonized Integrated Classification System for Human Health and Environmental Hazards of Chemical Substances and Mixtures).

**Skin Irritation**

Species: Rabbit (New Zealand White)

Test Type: *In vivo*

Method: OECD TG 404 (1991) "Acute Dermal Irritation/Corrosion"

Exposure Period: 4 hours

500 mg/site/rabbit

No erythema, no eschar and no oedema (score of zero under OECD method: grading of skin reaction) was observed at the skin on the backs of three rabbits during test period.

Result: Not irritating

**Skin Sensitization**

Species: Guinea pig (Hartley)

Test Type: Buehler test

Method: OECD TG 406 (1991) "Skin Sensitization"

Exposure Period: hours/week for 3 consecutive weeks

0.4 grams/site/guinea pig was applied topically with an occluded patch to the backs of 40 male guinea pigs. After 6 hours, the material was removed and the skin was examined using the sensitization grading system.

Result: Not sensitizing

**No acute inhalation toxicity, acute dermal toxicity, acute toxicity (other routes of administration), corrosiveness/irritation, or eye irritation corrosion studies are available.****Studies of Mutagenicity and Reproduction/Developmental Toxicity Screening Tests were negative.****Carcinogenicity**

None of the components are listed as a carcinogen or suspected carcinogen in the U.S. National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA. Note: This product may contain small quantities of crystalline silica (&lt;0.1%), which has been identified as a carcinogen by the IARC and U.S. NTP.

## Section 12

### Ecological Information

#### **Ecotoxicity (Calcium Sulfate, Dihydrate)**

##### **Algae**

Method: OECD TG 201, "Alga, Growth Inhibition Test"

Test Species: *Selenastrum capricornutum*

Exposure Period: 72 hours

Endpoint: Growth Rate

E<sub>g</sub>C<sub>50</sub> (Effective growth concentration): > 100 mg/L

E<sub>b</sub>C<sub>50</sub> (Effective biomass concentration) : > 100 mg/L

NOEC<sub>r</sub> (No Observed Effect Concentration – Reproduction): < 100 mg/L

NOEC<sub>b</sub> (No Observed Effect Concentration - Biomass): < 100 mg/L

No significant difference in growth curve between test and control group.

##### **Fish**

Method: OECD TG 203 "Fish, Acute Toxicity Test"

Test Species: *Oryzias latipes*

Type: Static

Exposure Period: 96 hours

LC<sub>50</sub> (Lethal Concentration): >100 mg/L

No mortality or visible abnormality occurred at the test limit of 100 mg/L.

##### **Invertebrates**

Method: OECD TG 202, "*Daphnia* sp., Acute Immobilisation Test and Reproduction Test"

Test Species: *Daphnia magna*

Type: Static

Exposure Period: 48 hours

EC<sub>50</sub> (Effective Concentration) : >100 mg/L

No immobilization or mortality occurred at the test limit of 100 mg/L.

#### **Persistence and degradability**

Not relevant for an inorganic compound.

#### **Bioaccumulative potential**

Bioaccumulation is not expected.

#### **Mobility in soil**

Soluble in water and mobile in soil.

**Data regarding terrestrial organisms or other environmental effects were not identified.**

### Section 13

#### Disposal Considerations

See Sections 7 and 8 above for safe handling and use, including appropriate hygienic practices.

Recover or recycle if possible. Disposal should be in accordance with applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

### Section 14

#### Transport Information

UN number:	Not classified as a hazardous material by USDOT regulations.
UN proper shipping name:	Not applicable.
Transport hazard class(es):	Not applicable.
Packing group, if applicable:	Not applicable.

### Section 15

#### Regulatory Information

Regulatory information: This product is not labeled for sale or use in the State of California, thus no Proposition 65 declarations are required.

### Section 16

#### Other Information, Including Date of Preparation or Last Revision

Date of preparation or last revision: March 27, 2013.

Sources:

- American Conference of Governmental Industrial Hygienists, 2012. TLVs and BEIs Based on The Documentation of The Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices, Cincinnati, Ohio.

- American National Standard for Hazardous Workplace Chemicals, ANSI Z400.1/Z129.1-2010, 2010. Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation.
- International Agency for Research on Cancer (IARC), 2012. Monographs on the Evaluation of Carcinogenic Risks to Humans. Agents Classified by the IARC Monographs, Volumes 1-106. Updated November 7, 2012. Online version retrieved from <http://monographs.iarc.fr/ENG/Classification/index.php>, March 2013.
- National Toxicology Program (NTP), 2011, Report on Carcinogens, Twelfth Edition; U.S. Department of Health and Human Services, Public Health Service. Online version retrieved from <http://ntp.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf>, March 2013.
- NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control Prevention. National Institute for Occupational Safety and Health. Online version retrieved from <http://www.cdc.gov/niosh/npg>, March 2013.
- Occupational Safety & Health Administration (OSHA), 2012. Hazard Communication Standard (HCS). 1910.1200. Online version retrieved from [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=10099](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099), accessed March 2013.
- Organization for Economic Cooperation and Development (OECD), 2003. Screening Information Data Set (SIDS) Initial Assessment Report. Calcium Sulfate, Dihydrate. Online version retrieved from <http://www.chem.unep.ch/irptc/sids/OECD/SIDS/10101414.pdf>, accessed March 2013.
- United Nations Economic Commission for Europe (UNECE), 2011. Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Fourth Revised Edition. Online version retrieved from [http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev04/04files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev04/04files_e.html), accessed March 2013.

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