

A Safety Data Sheet is not legally required for this product under the Workplace Hazardous Materials Information System (WHMIS). The following information is provided as a courtesy service to our customers.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING**1.1 Product identifier**

Trade name: **SCALEGUARD® IV**
Registration number: None
Synonym(s): Release-Controlled, Infused Ceramic Proppant; Semi-Crystalline Alumina Silicate; Sintered Kaolinite
Preparation/Revision date: 28 August 2014

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Proppant for oil and natural gas well hydraulic fracturing and scale inhibition
Uses advised against: None known

1.3 Details of the supplier of the safety data sheetManufacturer / Supplier

Company name: CARBO Ceramics Inc.
Address: 575 N. Dairy Ashford Road, Suite 300
Houston, Texas 77079, USA
Customer service: +1-337-367-6151

1.4 Emergency telephone number

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300

SECTION 2: HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture**

This product is an article that contains a chemical additive intended for time-release after delivery of the proppant into the well. Human and environmental exposure to the chemical additive is not anticipated under normal handling and storage conditions. The following information is provided as a courtesy in case of incidental exposure. This article has been assessed and/or tested for its physical, health and environmental hazards and the following classifications apply.

Classification according to WHMIS (Canada)

Classification: Not controlled

SECTION 2: HAZARDS IDENTIFICATION (CONT'D)**2.2 Label elements**

Contains:	None
Hazard pictogram:	None
Signal word:	None
Hazard statement:	None
Precautionary statements:	
- Prevention:	None
- Response:	None
- Storage:	None
- Disposal:	None
Supplemental label information:	None

2.3 Other hazards None

Hazard summary

Physical hazards:	Not classified for physical hazards.
Health hazards:	While the use of this product as intended generally does not create respirable dusts, small amounts may form from transport or conveyance. Prolonged inhalation of insoluble, respirable (less than 10 micron) dusts can lead to pulmonary damage. Use standard hygienic practices to minimize exposure to dusts that may form. While use of this product as intended does not result in exposure to chemical additives, the chemical additive is harmful if swallowed and exposure may cause irritation of the skin, eyes, nose, throat and mucous membranes.
Environmental hazards:	Not classified for hazards to the environment.
Main symptoms:	Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. The chemical additive is harmful if swallowed. Exposure to the chemical additive may cause irritation of the skin, eyes, nose, throat and mucous membranes. Use of the product as intended does not result in exposure to dust or chemical additives.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

ARTICLE

3.1 Mixture

Chemical Name	Percent	CAS No.	Notes
Substrate			
Ceramic materials and wares, chemicals	85-90	66402-68-4	-
Semi-permeable coating	0-5	Trade Secret	-
Chemical Additive			
Potassium salt of maleic acid co-polymer	5-15	Trade Secret	-

#: This substance has workplace exposure limit(s)

Composition comments: All concentrations are in percent by weight unless ingredients are a gas. Gas concentrations are in percent by volume.

SECTION 4: FIRST AID MEASURES

General Information

Show this Safety Data Sheet to the medical professional in attendance. Exposure is not anticipated with use of this product as intended. If symptoms occur, follow first aid measures as appropriate.

4.1 Description of first aid measures

Inhalation:	Remove to fresh air. Get medical attention if irritation or symptoms persist.
Skin contact:	Wash with soap and water. Get medical attention if irritation develops or persists.
Eye contact:	Rinse immediately with plenty of water, including under the eyelids, for at least 15 minutes. Get medical attention if irritation or symptoms persist.
Ingestion:	Rinse mouth. Do not induce vomiting. Get medical attention.
Notes to Physician:	None specified

4.2 Most important symptoms and effects, both acute and delayed

Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. The chemical additive is harmful if swallowed. Exposure to the chemical additive may cause irritation of the skin, eyes, nose, throat and mucous membranes. Use of the product as intended does not result in exposure to dust or chemical additives.

SECTION 4: FIRST AID MEASURES (CONT'D)

4.3 Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptoms as needed.

SECTION 5: FIRE FIGHTING MEASURES

General fire hazards Product may ignite if exposed to open flame or other ignition sources.

5.1 Extinguishing Media

Suitable extinguishing media: CO₂, dry chemical, foam or water

Unsuitable extinguishing media: Not applicable

5.2 Special hazards arising from the substance or mixture Not applicable

5.3 Advice for firefighters

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus

Special firefighting procedures: Not applicable

Special remarks on fire hazards: None

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel: Avoid dust formation. Avoid exposure to chemical additives. Wear suitable protective clothing. Avoid contact with skin and eyes.

For emergency responders: Use personal protection recommended in Section 8 of the SDS.

6.2 Environmental Precautions None known

6.3 Methods and materials for containing and cleaning up Sweep up spilled substance and remove to safe place. Pick up and arrange for disposal without creating dust. Spilled material can reduce traction and may present a slip hazard. Collect and dispose of spillage as indicated in Section 13.

6.4 Reference to other Sections For personal protection, see Section 8.
For waste disposal, see Section 13.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION (CONT'D)

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

Form	Solid spheres	Explosive properties	Not applicable
Color	Pale green to pale yellow	Explosive limit	Not applicable
Odor	Odorless	Vapor pressure	Not applicable
Odor threshold	Not applicable	Vapor density	Not applicable
pH	Not applicable	Evaporation rate	Not applicable
Melting/freezing point	185-203°F / 85-95°C (Estimated – Coating) 4,000°F / 2,204°C (Estimated - Substrate)	Relative density	2.58 (water = 1)
Boiling point, initial boiling point and boiling range	Not applicable	Partition coefficient (n-octanol/water)	No data available
Flash point	Not applicable	Solubility (water)	Insoluble in water
Auto-ignition temperature	Not applicable	Decomposition temperature	No data available
Flammability (solid, gas)	Not applicable	Bulk density	98 lb/ft ³ (1,570 kg/m ³)
Flammability limit-lower%	Not applicable	Viscosity	Not applicable
Flammability limit-upper%	Not applicable	VOC (weight %)	0 %
Oxidizing properties	Not applicable	Percent volatile	Not applicable

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.

SECTION 10: STABILITY AND REACTIVITY (CONT'D)

- 10.3 Possibility of hazardous reactions** Hazardous polymerization does not occur under normal conditions.
- 10.4 Conditions to avoid** Not specified
- 10.5 Incompatible materials** Strong oxidizers
- 10.6 Hazardous decompositions products** Thermal decomposition may produce oxides of carbon, oxides of nitrogen, ammonia, aldehydes or other materials.

SECTION 11: TOXICOLOGICAL INFORMATION

General information on likely routes of exposure

- Ingestion:** May cause discomfort if swallowed. The chemical additive is harmful if swallowed.
- Inhalation:** Inhalation of dust or chemical additives may cause respiratory irritation. Use of this product as intended does not result in exposure to dust or chemical additives.
- Skin contact:** Dust and chemical additives may irritate skin. Use of this product as intended does not result in exposure to dust or chemical additives.
- Eye contact:** Dust and chemical additives may irritate eyes. Use of this product as intended does not result in exposure to dust or chemical additives.
- Symptoms:** Exposure to dust may cause irritation of eyes, nose, throat and mucous membranes. Prolonged contact with skin may cause irritation. The chemical additive is harmful if swallowed. Exposure to the chemical additive may cause irritation of the skin, eyes, nose, throat and mucous membranes. Use of the product as intended does not result in exposure to dust or chemical additives.

11.1 Information on toxicological effects

Acute Toxicity: No data were identified for the product as a whole. Data are for constituents:

Product / ingredient name	Result	Species	Dose	Exposure
Ceramic materials and wares, chemicals	No data	N/A	N/A	N/A
Potassium salt of maleic acid co-polymer	LD ₅₀	No data	200 – 2,000 mg/kg	Oral

- Serious Eye Damage/Irritation:** No data were identified for this product or its constituents.
- Skin corrosion/Irritation:** No data were identified for this product or its constituents.

SECTION 11: TOXICOLOGICAL INFORMATION (CONT'D)

Respiratory/Skin Sensitization: No data were identified for this product or its constituents. None of the components of this product are known or anticipated to be sensitizers.

Germ Cell Mutagenicity: No data were identified for this product or its constituents.

Carcinogenicity: No data were identified for this product or its constituents.

Reproductive Toxicity: No data were identified for this product or its constituents.

Developmental Effects: No data were identified for this product or its constituents.

STOT – Single Exposure: No data were identified for this product or its constituents.

STOT – Repeated Exposure: No data were identified for this product or its constituents. While the use of this product as intended generally does not create respirable dusts, small amounts may form from transport or conveyance. Prolonged inhalation of insoluble, respirable (less than 10 micron) dusts can lead to pulmonary damage. Use standard hygienic practices to minimize exposure to dusts that may form.

Aspiration Hazard: Not relevant based on physical form of the product.

Conclusion/Summary This product is not expected to produce toxic effects.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity / Aquatic Ecotoxicity No data were identified for this product as a whole. Data are for constituents

Product / ingredient name	Result	Species	Dose	Exposure
Potassium salt of maleic acid co-polymer (based on similar product)	EC ₅₀	<i>Cyprinodon variegatus</i> (sheepshead minnow)	>1,000 mg/L	N/A

12.2 Persistence and degradability Product is not biodegradable with low solubility in water and is not expected to decompose in the environment. The chemical additive is expected to exhibit < 20% degradation according to OECD Test Guideline 306, based on data for similar product.

12.3 Bioaccumulative potential Product is not biodegradable with low solubility in water and is not expected to accumulate in the environment.

12.4 Mobility No data available

12.5 Results of PBT and vPvB assessment Not a PBT or vPvB material

12.6 Other adverse effects This product is not classified as hazardous to the environment.

SECTION 12: ECOLOGICAL INFORMATION (CONT'D)**Conclusion/Summary**

Ecotoxicity data from comparable products indicates that this product is non-toxic in the environment.

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Residual waste:	Dispose of in accordance with all applicable regulations.
Contaminated packaging:	Empty containers should be taken to an approved waste handling site for recycling or disposal.
Disposal methods/information:	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local, regional, national, international regulations.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number	Not applicable, not regulated as hazardous for transport.
14.2 UN proper shipping name	Not applicable, not regulated as hazardous for transport.
14.3 Transport hazard class(es)	Not applicable, not regulated as hazardous for transport.
14.4 Packing group	Not applicable, not regulated as hazardous for transport.
14.5 Environmental hazards	Not applicable, not regulated as hazardous for transport.
14.6 Special precautions for user	Not applicable, not regulated as hazardous for transport.
14.7 Transport in bulk according to Annex II MARPOL73/78 and the IBC Code	Not applicable, not regulated as hazardous for transport.

The transport regulation may vary based on the country of use. Check for the appropriate regulations in the country of transport or usage of this product.

SECTION 15: REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Canadian Regulations**

WHMIS (Canada):	This product has been classified according to the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.
WHMIS Ingredient Disclosure List (Canada):	Not listed
CEPA (DSL):	All components are listed or exempted.
CEPA (NPRI):	Not listed

Other Regulations

None specified

SECTION 16: OTHER INFORMATION**Label Requirements**

None

List of abbreviations

CAS	Chemical Abstract Service
EC50/90	Effective Concentration (median / 90 th percentile)
LC50/90	Lethal Concentration (median / 90 th percentile)
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
WHMIS	Workplace Hazardous Materials Information System (Canada)

References

ChemAdvisor List of Lists (LOLI)
IARC Monographs. Overall Evaluation of Carcinogenicity
IUCLID DATA Set
Supplier Safety Data Sheet

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details refer to Sections 9, 11 and 12.

Full test of any statements or R-phrases and H-phrases under Section 2 to 12

None

Training information

Follow training instructions when handling this material.

SECTION 16: OTHER INFORMATION (CONT'D)**SDS Revisions**

SDS prepared on 28 August 2014.

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.