SAFETY DATA SHEET

Section 1: Identification

Product Name:	**WHOLE GRAIN**
SDS Number:	SDSGrain1
Synonyms/Other Means of Identification:	Includes corn, soybeans, wheat, sorghum, rice, oats, canola, barley, rye, sunflower seeds, and related grains, oilseeds, and pulses
Intended Use:	Food ingredient, feed ingredient, and some non-food applications
Manufacturer / Importer / Supplier / Distributor:	Cargill, Incorporated PO Box 5396 Minneapolis, MN
Emergency Health and Safety Number:	CHEMTREC -- CCN3873 1-800-424-9300 or +1 703-527-3887
Additional SDS Information:	Phone: 952-742-7575 E-mail: inquiry@cargill.com URL: www.cargill.com

Section 2: Hazard(s) identification

Classification: Combustible Dust/Respiratory Hazard

Label Elements:
Signal Word: Warning

Hazard Statement(s): Class 2B eye irritant. May cause breathing difficulties if inhaled.

Whole grain is not classified as hazardous per OSHA's revised hazard communication standard, 1910.1200. However, small particles i.e. fumes, dust – combustible or otherwise may be generated during individual customer processing or handling.

Precautionary Statement(s): Dust from particulates may be mechanical eye irritant. Rinse eyes with water for several minutes. Avoid breathing dust. Excessive inhalation may affect nose throat, and lungs. Grain dust may burn if suspended in air and may create a flash fire/ explosion hazard. Avoid ignition sources.

Emergency Overview: Dust from particulates may be mechanical irritant to eyes. Excessive inhalation of grain dusts may affect nose throat, and lungs. May form combustible dust concentration in air; see "Explosion Hazard" below.

Explosion Hazard: Grain is generally considered not hazardous but dust generated through downstream activities that may reduce its particle size (e.g., shipping, handling, transfer to bins, etc.) may create a hazardous condition.

If exposed to an ignition source, grain dust may burn. Airborne dust in sufficient concentrations when exposed to an ignition source may flash or, in a confined situation, may fuel an explosion.

Section 3: Composition/Information on ingredients

Component	CASRN	Concentration
Whole grains		up to 100%
Foreign material (such as organic plant material)		0-5%
Grain dust		0-5%

Section 4: First-aid measures

Inhalation: Remove person from exposure. Seek medical attention for any breathing difficulty.

Ingestion: If swallowed, give several glasses of water to dilute. Never give anything by mouth to an unconscious person.

Skin Contact: Wash affected skin with soap and water.

Eye Contact: Flush eyes with water. Seek medical attention as needed.

Section 5: Fire Fighting Measures

Flash Point (method): N/A
Flammable Limits: Variable **LEL:** Variable **UEL:** Variable
Autoignition Temperature: unknown
Hazardous Combustion Products: Oxides of carbon

Special Fire Fighting Procedures: Extinguish with water fog, dry chemical powders or foam. Do not use strong streams of water or dry chemical if dust can be dispersed into the air. Dust placed in suspension with an ignition sources present may flash or explode.

Unusual Fire and Explosion Hazards: **Whole grain is not explosive.** Explosion hazard may exist for combustible dusts of certain particle size and moisture content when suspended in air at certain concentrations and subjected to an ignition source.

Section 6: Accidental release measures

Clean up with soft bristle broom(s) or a vacuum approved for a Class II Hazardous Location. Dust deposits should be maintained to a minimum on surfaces, as these could form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., cleaning dust surfaces with compressed air in the presence of ignition source should not be allowed).

Section 7: Handling and storage

If improperly handled, stored and/or exposed to an ignition source, this material may burn. Airborne dust in sufficient concentrations, when confined and exposed to a sufficient ignition source, can explode.

Avoid dispensing dust in air and exposure to potential ignition sources. Remove grain dust from area/processing equipment prior to using any heat producing equipment such as arc welders, cutting torches and spark/heat producing tools such as portable surface grinders. According to 1910.272(f)

a hot work permit is required.

Section 8: Exposure controls/personal protection

Respiratory Protection: Wear an approved NIOSH dust respirator whenever dust concentrations in the work area are above ACGIH TLV/OSHA PELS

Wheat, Oat and Barley

OSHA	ACGIH
10 mg/m3 None	4mg/m3*

Other Grains

OSHA	ACGIH
15 mg/m3 (total) 5 mg/m3 (respirable)	10 mg/m3*

** This TLV applies to nuisance particulates.*
The grain industry believes there is currently inadequate data to support this TLV.

Ventilation: Local exhaust: If needed
Mechanical (General): If needed

Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work areas. Use only appropriately classified electrical equipment and powered industrial trucks.

Protective Gloves: N/A

Eye Protection: Safety glasses / goggles suggested in dusty conditions

Work/ Hygienic Practices: Good personal hygiene practices should be followed.
Avoid excessive dust accumulation and control ignition sources. Where appropriate, employ grounding, venting, and explosion relief provisions in accordance with accepted engineering practices in processes capable of generating dust and/or static electricity

Section 9: Physical and chemical properties

Appearance: Natural grain color – whole grain
Grain dust - Light, grayish or brown powder

Upper/lower flammability or explosive limits: When dispersed into the air in sufficient concentrations grain dust can explode in the presence of an ignition sources. Do not allow dust to become dispersed into the air, even by the extinguishing agent. Minimum explosive concentration is 55 *mg/m3*. However, moisture content, particle size, caloric properties, and specific ingredients also affect the explosiveness of grain dust.

The flash point and flammable limits are accurate because grain dust has no flash point, LEL, or UEL due to its properties. The firefighting measures listed are in accord with other similar SDS's.

In order for an explosion to occur, four conditions must exist. First, oxygen must be present. Second,

there must be an ignition source (i.e. electrical short, static electricity, sparks, etc.). Third, there must be fuel (i.e. grain dust). Fourth, there must be containment (i.e. silo, vessel, etc.). Although an explosion will not occur if there is no containment, the dust can still ignite, resulting in a fire.

Explosions are also dependent upon the concentration of the grain dust suspended in the air. The minimum explosive concentration (MEC) for grain dust is around 55 mg/m3 The MEC varies according to the particle size and caloric properties of the product. In addition, the specific ingredients of the grain dust will affect the MEC. Therefore, the listed MEC range would be appropriate. (Ia, /2)

The following insert taken from "Preventing Grain Dust Explosions" explains explosive limits for grain dust:

"A Texas A &M University dust control scientist suggests that the MEC range is about 50 to 150 grams per cubic meter, depending on the type of dust and the size of particles (Parnell, 1998). This equates to the same MEC level used by the National Grain and Feed Association (NGFA). NGFA states that the broad, generally accepted MEC for grain dust explosions is about 0.05 ounces per cubic foot of volume. They say that the optimum explosive concentration (DEC) is about 0.5 to 1.0 ounces per cubic foot - about 10 times the MEC (Gillis, 1985, p. 43)."

Odor: No distinct odor (Out of condition products may be sour or musty)

Vapor pressure: N/A **Odor threshold:** N/A **Vapor density:** N/A

pH: N/A **Relative density:** N/A **Melting point/freezing point:** N/A

Solubility(ies): N/A **Initial boiling point and boiling range:** N/**A**

Partition coefficient n-octanol/water: N/A

Flash point: N/A **Auto-ignition temperature:** N/A

Evaporation rate: N/A **Decomposition temperature:** N/A

Flammability (solid, gas): See above

Viscosity: N/A

Section 10: Stability and reactivity

Stability: **Unstable:**

Stable: X

Condition to Avoid: Dispersing dust in air, above MEC, and exposure to potential ignition sources

Incompatibility (materials to avoid): None known

Hazardous Decomposition or Byproducts: CO2 H2S under improper storage conditions.

Hazardous Polymerization: May Occur: **Condition to Avoid:** N/A

Will not occur: X

Section 11: Toxicological information

Routes of Exposure: **Inhalation:** X **Skin:** X **Eyes:** X **Ingestion:** Unlikely

Carcinogenicity: **NTP:** No **ARC Monographs:** No **OSHA Regulated:** No

Acute: May be mechanical irritant to skin and eyes. Excessive inhalation of grain dusts may affect the nose, throat, and lungs.

Chronic: Repeated and prolonged exposure to grain dusts may affect the respiratory system or cause sensitization. Smokers have an increased risk of respiratory effects.

Signs and Symptoms of Exposure: Irritation to the skin, eyes, nose or throat may occur. Some people may occasionally experience coughing.

Medical Conditions Generally Aggravated by Exposure: Allergies and respiratory ailments.

Section 12: Ecological Information: (non-mandatory)

Section 13: Disposal Considerations: (non-mandatory)

Section 14: Transport Information: (non-mandatory)

Section 15: Regulatory Information: (non-mandatory)

All electrical equipment must be suitable for use in hazardous atmospheres involving combustible dust in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement.

Combustible dust is a "Hazard, Other Than Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Section 16: Other Information

This Safety Data Sheet covers grain in its natural state and does not include chemicals that may be applied by subsequent handlers and/or distributors of this product. The information in this SDS was obtained from sources which we believe are reliable; however, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.