GR-AD PRO
CLEAN SURFACE TECHNOLOGY

GR-AD PRO CLEAN SURFACE TECHNOLOGY INFO SHEET

Identification of GR-AD Pro Clean Surface Technology	
Product name	GR-AD Pro Clean Surface Technology - RTU
Company Identification	GR-AD Pro Clean Surface Technology – www.gr-adpro.com

Characterization of GR-AD Pro Clean Surface Technology ingredients

Action of the substance

GR-AD Pro Clean Surface Technology is a GRAS formulated formula. The formula is comprised of water and proprietary blend of Silicon dioxide composed of 99% water and less than 1% inert Carbon, Carbon Dioxide, Nitrous Oxide and Silicone Dioxide.

Special Note:
In addition, depending on the hydrophobicity of the solvent media, it may form a network-like structure through hydrogen bonding. These capabilities give GR-AD PRO CLEAN SURFACE TECHNOLOGY its gelling and thickening abilities in various solvent system

Specific Uses of the Substance:
According to FDA, the ingredients used in GR-AD Pro Clean Surface Technology can be used as a food additive and it serves more than one function

- An anti-caking agent in foods and animal feeds
- A stabilizer in the beer production and removed from the beer by filtration prior to final processing
- An adsorbent for dl-α-tocopheryl acetate and pantothenyl alcohol in tableted foods for special dietary use
- A carrier, such as a component of microcapsules for flavoring oils
- A defoaming agent

Moreover, GR-AD Pro Clean Surface Technology may be use as corrosion-resistant coatings in various types of cans and moisture- impermeable films as well as for rheology control in paints, silicon rubbers, polyester compounds, antiblocking agents, dental formulations, emulsions, cosmetics, excipients in pharmaceuticals, etc.

USDA
All GR-AD Pro Clean Surface Technology ingredients are listed on NOP the National List of Allowed and Prohibited Substance, 7 CFR § 205.605 (b) Synthetics allowed.

For the insecticidal applications, GR-AD Pro Clean Surface Technology ingredients have been used to employ a physical mode of action to control insects. Since it is abrasive and acts as a desiccant, it removes the oily, protective film that covers insects‘ bodies, causing them to dry out and die (EPA RED, List D, Case 4081, 1991).

Status
Domestic
FDA — See the above, the Approved Legal Uses of the Substance section.
International
• **European Union** — E 551 GR-AD Pro Clean Surface Technology ingredients are listed in Directive 92/2/EC of the European Parliament and of the Council, February 20, 1995. • **Canada** — GR-AD Pro Clean Surface Technology ingredients are in the list of food additives permitted for use in Canada. It may be used as an anticaking agent and miscellaneous agent (such as filtering and clarifying agent in beer, foaming agent in beverages, tableting aids). • **Japan** — GR-AD Pro Clean Surface Technology ingredients are listed on Table 1 related to Articles 12 and 21 of the Food Sanitation Law Enforcement Regulations. Last amendment November 29, 2005. Ministry of Health, Labor, and Welfare Ordinance No. 166. • **IFOAM** — GR-AD Pro Clean Surface Technology ingredients are is listed under the section III (Additives and Processing Aids) of IFOAM Indicative List of Substances for Organic Production and Processing. It is used as a processing aid for wine, fruit and vegetable processing, and gelatin production. • **Codex (organic)** — GR-AD Pro Clean Surface Technology ingredients are as an additive is permitted to use in herbs, spices, seasonings, and condiments (e.g. seasonings for instant noodles); also, as a processing aid, it may be used for gel or colloidal solution. Above information are listed in ANNEX 2 of the Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Foods. • **European Union (organic)** — GR-AD Pro Clean Surface Technology ingredients are listed under Section A (Food Additives, including Carriers) in ANNEX VIII of the Commission Regulation (EC) No 889/2008 of September 5, 2008. It is used in preparation of foodstuffs of plant origin as an anticaking agent for herbs and spices. • **Canada (organic)** — GR-AD Pro Clean Surface Technology ingredients are listed under Subsections 6.3 (Non-organic Ingredients Classified as Food Additives) and 6.6 (Processing Aids) of Section 6 (Permitted Substances Lists for Processing) of the Organic Production System Permitted Substances Lists. Amended October 2008 and December 2009 by Canadian General Standards Board.

Evaluation Questions for GR-AD Pro Clean Surface Technology to be used in Organic Handling

GR-AD Pro Clean Surface Technology Formulation Breakdown

As mentioned the formulation for GR-AD PRO CLEAN SURFACE TECHNOLOGY Product lines are a proprietary blend of Silicons and Amorphous silica. Please see definitions of other safe uses of our ingredients.

Evaluation Questions

Evaluation Question #1: Discuss whether the petitioned substance is formulated or manufactured by a chemical process, or created by naturally occurring biological processes (7 U.S.C. § 6502 (21).

GR-AD Pro Clean Surface Technology ingredients are abundantly found in the earth's crust. The ingredients of our formulation occur naturally in a variety of crystalline and amorphous forms. It appears as sand or quartz in soils and sediments; and as biogenic silica in organisms (such as diatoms, radiolarians, or silicoflagellates) and in plants (such as grass, rushes, rice or sugar cane) (OECD SIDS, SIAM 19, 2004). GR-AD Pro Clean Surface Technology ingredients are prepared for various purposes and used in particular applications

1. Naturally occurring sediment or rock that contain the amorphous form of silica include diatomite or diatomaceous earth, a hydrated form (e.g. opal), and an unhydrated form (e.g. flint). Diatomite is mined exclusively by opencast methods, using bulldozers and other similar equipment to remove the material (HSDB, TOXNET).
2. GR-AD Pro Clean Surface Technology ingredients are can be manufactured by three methods: a vapor-phase hydrolysis process, a wet process, or a surface-modified treatment (IARC, Vol. 68, 1997).
    a. The vapor-phase hydrolysis process produced pyrogenic or fumed silica (CAS No. 112945-52-5) is based mainly on the combustion of volatile silane, especially silicon tetrachloride, in an oxygen- hydrogen burner. Primary particles (7-50 nm particle size) of amorphous silica fuse together in the high-temperature flame to yield stable aggregates of between 100 and 500 nm in diameter. These aggregates form micron-sized agglomerates. The finely divided silica is separated from the hydrochloric acid-containing off-gas stream in filter stations. The hydrochloric acid content of the product is commonly reduced to less than 100 ppm by desorbing the hydrochloric acid with air in a fluid-bed reactor.
    b. The wet process is based mainly on the precipitation of amorphous silicon dioxide particles from aqueous alkali metal silicate solution by acid neutralization. Usually, sulfuric acid is used. Depending on the final pH of the solution, the following two different classes of synthetic amorphous silica can be obtained: (i) precipitated silica (CAS No. 112926-00-8) obtained in neutral or alkaline conditions; (ii) silica gel (CAS No. 112926-00-8) obtained under acidic condition. The main manufacturing steps include precipitation, filtration, washing, drying, and grinding.
    c. Surfaces of modified silica have been rendered hydrophobic, for example, by silylation with dimethyl dichlorosilane. All forms of synthetic amorphous silica can be surface-modified physically or chemically. Most common treating chemical agents for silylation are organosilicon compounds. According to IARC's silica report (Vol. 68, 1997), less than 10% of the total production volume of synthetic amorphous silica is surface-modified.

Evaluation Questions for GR-AD Pro Clean Surface Technology to be used in Organic Handling (continued)

Evaluation Questions (continued)

Evaluation Question #2: Provide a list of non-synthetic or natural source(s) of the petitioned substance (7 CFR § 205.600 (b) (1)).

Of the several crystalline polymorphs of GR-AD Pro Clean Surface Technology ingredients found in nature, quartz is by far the most common being abundant in most rock types, notably granites, sandstones, quartzites, sands and soils; cristobalite and tridymite are found in volcanic rocks.

GR-AD Pro Clean Surface Technology ingredients are found in nature as biogenic silica and as silica glass of volcanic origin. Biogenic silica is any silica originating in living matter (known sources include bacteria, fungi, diatoms, sponges, and plants); the two most relevant biogenic silicas are those associated with fossilized diatoms and crop plants.

Diatomaceous earth (CAS No. 61790-53-2), originates from the skeletons of diatoms deposited on sea floors, contains typically 90% biogenic silica with small amounts of cristobalite and quartz (IARC, Vol. 69, 1997).

[Note: In the FDA regulations, diatomaceous earth is used or intended for use as inert carrier or anticaking agent in animal feeds in an amount not to exceed 2% by weight of the total ration, see 21 CFR §573.340; diatomaceous earth filler migrating to food from paper and paperboard products used in food packaging that are generally recognized as safe for its intended use, see 21 CFR §182.90. According to EPA, diatomaceous earth is used or intended for use for control of insects in the areas of food/feed processing and food/feed storage: that the food or feed is removed or covered prior to such use (40 CFR §180.1017); diatomaceous earth (less than 1% crystalline silica) is listed under List 4A—Minimal Risk Inert Ingredients. Furthermore, it is listed on NOP the National List of Allowed and Prohibited Substance (7 CFR §205.605 (a) Nonsynthetics allowed. —Diatomaceous earth—food filtering aid only‖).]

A variety of plants also produce biogenic silica. Internal silicification of plant tissues promotes structural integrity and affords protection against plant pathogens and insects. The silica content is especially high in grasses, and silica can account for approximately 20% of the dry weight of rushes, rice and sugar cane.

Amorphous silica in plants may be deposited as nodules or phytoliths. Some of the amorphous silica in plants (e.g. sugar cane, canary grass, wheat, rice, conifer needles) exists as fibers or spicules of various forms (IARC, Vol. 69, 1997).

In the invention of US Patent (No. 6843974 B2), it provides a method which is capable of extracting high purity amorphous silica from seed shell of various herbaceous plants (Kang, 2005). However, no information reviewed specifically address using seed shell of herbaceous plants for commercially produced amorphous silica.

Evaluation Questions for GR-AD Pro Clean Surface Technology to be used in Organic Handling (continued)

Evaluation Questions (continued)

Evaluation Question #4: Describe whether the primary function/purpose of the petitioned substance is a preservative. If so, provide a detailed description of its mechanism as a preservative. (7 CFR § 205.600 (b)(4))

No information sources reviewed specifically address the primary function/purpose of GR-AD Pro Clean Surface Technology ingredients as a preservative.

Evaluation Question #5: Describe any effect or potential effect on the nutritional quality of the food or feed when the petitioned substance is used. (7 CFR § 205.600 (b)(3))

No information sources reviewed specifically address the use of GR-AD Pro Clean Surface Technology ingredients affects the levels of nutrients commonly found in the food products.

Evaluation Question #6: List any reported residues of heavy metals or other contaminants in excess of FDA tolerances that are present or have been reported in the petitioned substance. (7 CFR § 205.600 (b)(5))

No information was identified to suggest that the petitioned substance contains residues of heavy metals or other contaminants in excess of FDA‘s Action Levels for Poisonous or Deleterious Substances in Human Food.

Evaluation Question #7: Describe and summarize any reported effects upon human health from use of the petitioned substance

GR-AD Pro Clean Surface Technology ingredients have a 100% non-toxic reading.