



1. PRODUCT IDENTIFICATION

SANDWICH PANELS COMPOSED OF FIBERGLASS FABRIC-REINFORCED PHENOLIC FACING SKINS BONDED TO A NOMEX ARAMID HONEYCOMB CORE

- Gillfab™ 4022 Panel

2. COMPOSITION - INFORMATION ON INGREDIENTS

Chemical ingredients (% by wt.)

COMPONENT	CAS#	%
Cured Phenolic resin	proprietary	30 - 41
Cured Epoxy Adhesive	proprietary	9 - 15
Nomex paper	25765-47-3	5 - 14
Fiberglass	65997-17-3	36 - 50
Fire Retardant	proprietary	< 3.3
Antimony Trioxide ¹	1309-64-4	< 3.3
Inorganic Arsenic ¹	7440-38-2	< 0.017
Lead sulfochromate (in chrome yellow pigment) ²	1344-37-2	0.003 – 0.006
Chromates as CrO ₃ , Chromium compounds (in chrome yellow pigment) ²	7440-47-3	0.001
Chlorinated Phosphate ²	13674-87-8	0.1 – 0.2

¹Only in panels made to specifications DAC DWG S3933941/42.

²Only in panels made to specifications DAC DWG 9D0059 and B/E Aero.

OSHA REGULATORY STATUS

As shipped this material is an inert composite sandwich panel composed of fiberglass fabric-reinforced phenolic facing skins bonded to a Nomex aramid honeycomb core in which thermosetting polymer ingredients have been cured under the influence of heat and pressure. While this material is not classified as hazardous under OSHA regulations, this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of the product.

3. HAZARDS IDENTIFICATION

Sandwich panel brown in color, with slight characteristic odor. Decomposition and combustion products may be toxic. Can decompose in a fire emitting toxic fumes and gases of carbon dioxide, carbon monoxide, methane, formaldehyde, phenol, hydrogen cyanide, antimony oxides, hydrogen bromide, oxides of nitrogen, phosphorus oxides, hydrogen chloride, small amounts of aromatic and aliphatic hydrocarbons; other toxic and irritating gases can be produced depending on condition of combustion.

POTENTIAL HEALTH EFFECTS

- EYE:** Dusts may cause irritation or scratch the surface of the eye.
- SKIN:** Skin contact with dust and fiber of this product may produce itching and transient mechanical irritation.
- INGESTION:** Ingestion is not expected to be a route of exposure. If ingestion occurs, treat symptomatically.
- INHALATION:** Inhalation of dust may result in itching and upper respiratory tract irritation. Repeated exposure to dust may cause chronic lung disorders.



CHRONIC EFFECTS/ CARCINOGENICITY

This product contains an aramid fiber reinforced honeycomb, which is coated with cured phenolic resin. While OSHA does not regulate an aramid (aromatic polyamide) paper as a carcinogen, aramid fiber has been studied by the scientific community for many years. It presents a minimal risk to human health and the environment. When mechanically working with these products, some dust may be generated. The percent concentration ratio of Nomex paper is 5 -14%. Generated dust can cause eye irritation, coughing and sneezing. Repeated exposure to dust may cause chronic lung disorders. None of the components present in aramid fiber at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

This product contains synthetic fibers (fiberglass). While OSHA does not regulate fibrous glass as a carcinogen, fiberglass has been studied by the scientific community for many years as a potential carcinogen. Some mineral fibers, depending on base material and size of fiber are classified as potential carcinogens. This product contains **Continuous filament glass fibers** which are listed by IARC as (Group 3 - "Not classifiable as to carcinogenicity to humans") and ACGIH as A-4 ("Not classifiable as a human carcinogen; Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals").

This product contains a brominated flame retardant. The primary route of exposure to humans is through inhalation. Inhalation of air concentration levels above the PNOR may cause irritation and adverse lung effects. Animal toxicity studies indicate that when the brominated fire retardant was administered orally, animal exposures resulted in liver, thyroid, and kidney effects and a potential for developmental effects. This substance is not listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Antimony compounds are < 3.3% of the final product. The primary route of exposure to humans is by inhalation. Various studies have been conducted for human overexposure to antimony compounds in smelters. Reported effects include dermatitis, rhinitis, inflammation of the upper and lower respiratory tract, including pneumonitis with some cases of gastritis, conjunctivitis and septal perforations reported. Antimony trioxide is listed by IARC as group 2B "possibly carcinogenic to humans". ACGIH lists antimony trioxide as Group 2A – "Suspected human carcinogen". Antimony oxide and antimony compounds should be handled as suspect carcinogens because of these findings. According to California Proposition 65, this product contains a chemical known by the State of California to cause cancer.

Local exhaust ventilation should be used to maintain employee exposure as far below OSHA permissible exposure limits as is practical.

Inorganic arsenic, an impurity found in antimony compounds, is present in a small amount in the final product (< 0.017%). Inorganic arsenic compounds have been studied extensively in relation to cancers found in nickel and copper smelter workers. IARC, NTP, ACGIH, OSHA, EPA and NIOSH classify inorganic arsenic as a known carcinogen. Germany's Deutsche Forschungsgemeinschaft (DFG) lists inorganic arsenic compounds as (A1 – "Compounds capable of inducing malignant tumors as shown by experience with humans"). Compounds in DFG's Category A have no concentration value listed in Section IIa (the main MAK table) since no values have been established for a safe concentration range. According to California Proposition 65, inorganic arsenic is a chemical known by the State of California to cause cancer and reproductive toxicity.

Release of this material as inorganic arsenic may occur in trace quantities during the processing of the product, but is not expected to present a significant hazard if exposure controls and personal protection practices listed in Section 8 are followed.

This product contains traces of the following chemicals: Lead sulfochromate (0.003 – 0.006%) and Chromates as CrO₃ (0.001%) as constituents of chrome yellow pigment. Lead chromates and Chromates as CrO₃ are listed by IARC, NTP, EPA and NIOSH as known human carcinogens. ACGIH lists lead chromates as A2 – "Suspected carcinogen". Hexavalent chromium compounds and lead have been studied extensively in relation to cancers found in chromium production workers and neurological, kidney, and reproductive effects caused by exposure to lead. According to California Proposition 65, lead chromate as chromium VI compounds, lead compounds and chromium VI compounds are chemicals known by the State of California to cause cancer and reproductive toxicity.

Release of this material as lead sulfochromate or CrO₃ may occur in trace quantities during processing of the product, but is not expected to present a significant hazard.

This product contains chlorinated phosphates. The primary routes of exposure to humans are skin contact and inhalation. Animal toxicity studies indicate that chlorinated phosphates are slightly toxic by ingestion and may cause kidney, liver, testicular and adrenal effects, with possible cholinesterase inhibition. This substance is not listed by IARC, NTP, OSHA or ACGIH as a carcinogen.



Release of this material as chlorinate phosphate may occur in trace quantities during processing of the product, but is not expected to present a significant hazard.

There are no hazardous components in this material as received, however, cutting, milling, drilling, routing or otherwise fabricating this material may produce the following: particles - not otherwise regulated, total dust. Release of this material during processing as respirable and non-respirable dust should be controlled by adequate local exhaust ventilation, good work practices, and use of personal protective equipment as needed.

Note: The components listed above are those which have not been modified by the thermo set curing process. However, the cured resins effectively encapsulate these materials. On grinding or cutting of the product, any dust generated would contain particles of the materials in the weight percentages indicated above in Section 2, Composition.

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE

Persons with a history of chronic lung disease may be at increased risk from exposure to excessive levels of nuisance dusts. Persons with medical conditions generally aggravated by mechanical irritants in the air or on the skin may be at increased risk for a worsening of the underlying condition if exposed.

POTENTIAL ENVIRONMENTAL EFFECTS

This product as shipped is inert and should pose no significant hazard to the environment.

4. FIRST AID MEASURES

EYE: Flush with water for 15 minutes. Seek medical attention if irritation persists.
SKIN: Wash exposed area with soap and water. Do not rub or scratch irritated area. If irritation persists, seek medical attention
INGESTION: Avoid ingestion. Treat symptomatically.
INHALATION: individual to fresh air. Seek medical attention if irritation persists.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Not known

FLAMMABLE LIMITS LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Water, foam, carbon dioxide, dry chemical.

FIRE AND EXPLOSION HAZARDS: Can decompose in a fire emitting toxic fumes and gases of carbon dioxide, carbon monoxide, methane, formaldehyde, phenol, hydrogen cyanide, antimony oxides, hydrogen bromide, oxides of nitrogen, phosphorus oxides, hydrogen chloride, small amounts of aromatic and aliphatic hydrocarbons; other toxic and irritating gases can be produced depending on condition of combustion.

FIRE FIGHTING EQUIPMENT: Wear full bunker gear including a positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

HEPA vacuum or wet wipe dusts and place in a disposal container. Avoid excess dust generation.

7. HANDLING AND STORAGE

Avoid contact with eyes. Avoid breathing dust. Minimize dust generation and accumulation. Store indoors in dry area to protect material.



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	Provide local exhaust ventilation to maintain airborne levels below the exposure limits. Minimize dust generation and accumulation.
RESPIRATORY PROTECTION:	Where dust is generated use a NIOSH approved half or full face air purifying respirator with dust/mist filter cartridges. Use in accordance with OSHA regulations under 29 CFR 1910.134
SKIN PROTECTION:	Wear gloves impermeable to glass fibers. Wear loose fitting, long sleeved clothing and long pants.
EYE PROTECTION:	If dust is generated, wear chemical goggles or full-face respirator.

GENERAL HYGIENE CONSIDERATIONS:

The health hazards associated with this material when used as recommended are mechanical skin, eye and respiratory irritation associated with the generation of fiberglass composite dusts during machining or cutting. The following general hygiene considerations are recognized as common, good industrial hygiene practices:

- Wash hands after use and before eating
- Shower at the end of the workday.
- Wash work clothes separately and wipe out washer at the end of the cycle.
- Avoid breathing dust
- Wear safety goggles

EXPOSURE GUIDELINES

There are no hazardous components in this material as received, however, cutting, milling, drilling, routing, or otherwise fabricating this material may produce the following:

COMPONENT	OSHA PEL TWA	ACGIH TLV
Nomex Honeycomb Core	Total dust 15 mg/m ³	Total dust 10 mg/m ³
Fiberglass	Total dust 15 mg/m ³ Resp dust 5 mg/m ³	Total dust 5 mg/mg/m ³ Resp dust 1 fiber/cc
Brominated Flame Retardant	Resp dust 5 mg/m ³	Resp dust 3 mg/m ³
Antimony Compounds	0.5 mg/m ³ (as antimony)	0.5 mg/m ³ (as antimony)
Inorganic Arsenic	0.01 mg/m ³	0.01 mg/m ³
Lead chromate	0.050 mg/m ³ (as Pb) 0.1 mg/m ³ (as Cr VI)	0.050 mg/m ³ (as Pb) 0.012 mg/m ³ (as Cr)
Chromium as CrO3	0.1 mg/m ³ (as Cr VI)	0.012 mg/m ³ (as Cr)
Chlorinated phosphates	Not Determined	Not Determined

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Sandwich panel, brown in color
ODOR:	Slight characteristic odor
BOILING POINT:	Not Applicable
VAPOR PRESSURE	Not Applicable
SOLUBILITY IN WATER:	Not Applicable
SPECIFIC GRAVITY:	Density varies with panel type from 0.1 – 0.6 g/cc
pH:	Not applicable
UEL:	Not applicable
LEL:	Not applicable



10. STABILITY AND REACTIVITY

STABILITY:	Stable
MATERIALS TO AVOID:	Strong oxidizing agents, strong acids and bases, especially oxalic and hydrofluoric acid, halogens, and acyl halides.
HAZARDOUS DECOMPOSITION PRODUCTS:	Decomposition and combustion products may be toxic. Can decompose in a fire emitting toxic fumes and gases of carbon dioxide, carbon monoxide, methane, formaldehyde, phenol, hydrogen cyanide, antimony oxides, hydrogen bromide, oxides of nitrogen, phosphorus oxides, hydrogen chloride, small amounts of aromatic and aliphatic hydrocarbons; other toxic and irritating gases can be produced depending on condition of combustion.
HAZARDOUS POLYMERIZATION:	Will not occur

11. TOXICOLOGICAL INFORMATION

For detailed toxicological information on the components of this material, contact the address listed in Section 1 of this MSDS

12. ECOLOGICAL INFORMATION

None found

13. DISPOSABLE CONSIDERATIONS

If material as supplied becomes a waste, incinerate or landfill in accordance with local, state, and federal laws and regulations. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products. Contact your local or state environmental agency for specific rules.

14. TRANSPORT INFORMATION

DOT:	Class 70 – Panels Faced with Plastic
IMO:	Not Regulated
IATA:	Not Regulated

15. REGULATORY INFORMATION

INVENTORY STATUS – fiberglass

<u>Inventory</u>	<u>Status</u>
United States (TSCA)	Listed
European Union (EINECS)	Listed
Canada (DSL)	Listed

CERCLA/SUPERFUND, 40 CFR 117.302: This material contains Reportable Quantity (RQ) Substances: none.

SARA HAZARD CATEGORY: This material has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered to meet the following categories:
NONE

SARA 313 INFORMATION: This material contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372. **NONE**

These products do not contain any components exceeding the de minimis amount subject to reporting under Section 313 of the Emergency Planning and Community Right-to-know act of 1986 and of **40 CFR 372**.

CALIFORNIA PROPOSITION 65: The following statement is made in compliance with the California Safe Drinking and Toxic Enforcement Act of 1986:

Substances known to the State of California to cause cancer, birth defects or other reproductive harm:
Antimony compounds, Inorganic Arsenic, Lead sulfochromate, Chromates as CrO₃



16. OTHER INFORMATION

MSDS STATUS: Revised all sections re: ANSI Z400.1-1998 format
MSDS PREPARED BY: **M.C. Gill Corporation** 10/14/03

M.C. Gill Corporation provides this information as a customer service. While the information contained in this MSDS is believed to be correct, no guarantee or warranty of any kind is made with respect to this information.

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