

Phase-2 PVC

Industrial/Commercial Siding, Roofing, and Louver Panels



Phase-2 PVC Corrugated Siding, Roofing, and Louver Panels Are Unquestionably The Most Versatile and Widely Used



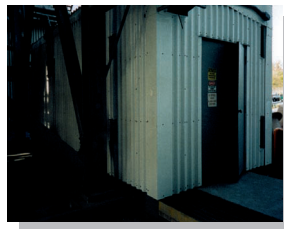
Phase-2 PVC Siding, Roofing, and Louver Panels are solid, heavy gauge Polyvinyl Chloride (PVC) extruded sheets that **maintain color and structural integrity** under the toughest weather conditions and physical abuse. Phase-2 PVC is **Factory Mutual Approved** for unlimited height use, without the need for sprinkler protection, and offers a **Non-Combustible Flame Spread Rating of 12**. Phase-2 PVC also performs exceptionally in **resisting most corrosive conditions** from many organic and inorganic chemical fumes

and liquids. Phase-2 PVC is completely **UV resistant** and **will not yellow or discolor**, and will block out harmful UV radiation.

Industries and Applications:



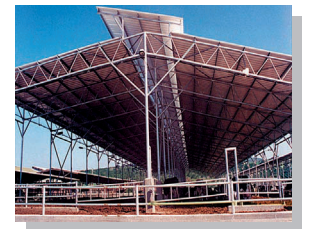
Industrial



Light Industrial



Chemical



Commercial

Other Industries:

- Coal and metal mining
- Food manufacturing
- Government
- Petroleum
- Power plants
- Transportation
- Waste water treatment
- And many more

Other Applications:

- Canopies
- Cooling tower louvers and casing
- Elevator enclosures
- Barriers and partitions
- Lean-to's
- Salt storage facilities
- Skylights, awnings, translucent roofing
- Storage facilities

H & F MANUFACTURING CORP.
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Email: info@hfmfgcorp.com
www.hfmfgcorp.com

Features:

- Widest range of resistance to corrosion
- Low non-combustible flame spread rating of 12
- High UV resistance: will not yellow, discolor, or turn brittle
- High impact strength
- Factory Mutual approved
- Solid PVC, no peeling, denting or loss of structural integrity
- Easy to handle and install
- Operating temperature range -50° F to 150° F

Cooling Towers:

Phase-2 PVC Louver and Casing panels are furnished in a maximum size of 47-7/8" wide and 38' long, while incremental or partial sizes of louvers and casing panels are easily cut-to-order at our plant in Ivyland, PA and shipped from there on the shortest possible notice. They are easily cut at the site of the cooling tower, construction or repair and are easily installed without risk of breaking, cracking, chipping or other possible effects due to rough handling or inclement weather.



PHASE-2 PVC CORRUGATED AND FLAT PANELS

Profile	Configuration Detail	Width	Lengths Up To	Thickness	Colors	Oz./Ft. ²	Conforms To
4.2" x 1-1/16"		42"	38'	3/32" 1/8" 3/16"	White, Gray White, Gray, Clear, Tan, Blue White, Gray	12 16 24	FRP, Asbestos Cement
2.67" x 7/8"		40"	38'	3/32"	White, Gray, Clear	12	FRP, Steel, Aluminum
ASTORIA Box Rib Embossed Surface		40-1/4"	38'	3/32"	White, Tan	12	Proprietary Configuration
7.2" x 1-1/2"		47-7/8"	38'	1/8"	White, Gray, Clear	16	FRP, Steel, Aluminum
AG-TUF Greca Rib		26" or 38"	specific lengths to 20'4"	1/32"	White	4	Box Rib
AG-TUF UV 9' Classic Rib		38"	specific lengths to 20'4"	1mm	White, Tan	5	FRP, Steel, Aluminum
Flat UV Type 1, Type 2		4' x 8' Standard		1/16", 1/8" 1/8", 3/16", 1/4", 1/2"	White, Gray, Clear, Tan, Blue White, Dark Gray	8, 16 16, 24, 32, 48	
Flat Astoria Embossed		4' x 8' Standard		3/32"	White, Tan	12	

Non-standard colors and sizes for all profiles and product lines available upon request.

Table of Physical and Structural Properties

Mechanical Properties

Tensile Strength	.8000 psi
Flexural Modulus	.425000 psi
Flexural Strength	.13000 psi
Compressive Strength	.11000 psi
Impact Strength (Izod) 68°F	.6.0 ft-lb/in
Impact Strength (Izod) 32°F	.0.5 ft-lb/in
Elongation	.65%

Thermal Properties

Thermal Conductivity	.4.2 x 10 ⁻⁴ cal/sec/cm ² /(°C/cm)
Coefficient of Expansion	.3.5 x 10 ⁻⁵ in/in/°F
	.6.3 x 10 ⁻⁵ in/in/°C
K - Factor	.10 ¹⁶ W/m ² °C
Specific Heat	.3 cal/°C/gm

Electrical Properties

Volume Resistivity	.10 ¹⁶ ohm-cm (50% RH + 23°C)
Dielectric Strength	.350 - 500 volts/mil
Dielectric Constant	.3.6 Khz

Approvals and Certifications

- Phase-2 PVC Panels are non-combustible, i.e., they will not support combustion, and have a Flame Spread Rating of 12 (Class 1–Non-Combustible Material of Construction).
- Phase-2 PVC Panels were subjected to the Factory Mutual Wind Uplift Pressure Test (FMRC Standard 4470) and were approved as a Roofing Panel. Phase-2 PVC Panels met the minimum 60 psf FMRC requirement for Class I-60 Windstorm Classification and the 90 psf FMRC requirement for Class I-90 Windstorm Classification.
- Phase-2 PVC Panels have satisfactorily passed the FMRC Simulated Hail Damage Test using the FMRC Class I-MH Simulated Hail Damage Test apparatus.
- Phase-2 PVC Panels with their light colors reflect heat and result in lower "skin" temperatures assuring their proper performance up to 150°F.
- Phase-2 PVC Panels offer excellent resistance against water and a very broad range of chemicals in the forms of solids, liquids, or fumes. (See Chemical Resistance Page.)
- Phase-2 PVC Panels have extremely high impact strength (6 ft. lbs/in Izod), which means that the panels are highly breakage resistant and will not dent due to impact, over the entire temperature range for which these panels are recommended.

The above Applications and Certifications do not pertain to AG-TUF, AG-TUF UV or Palight.

**PHASE-2 PVC PANELS
APPROVAL
as
CLASS 1 CONSTRUCTION MATERIAL
for Unlimited Height Use
Without Sprinkler Protection**

Phase-2 PVC Panels are homogeneous non-reinforced RIGID PVC (Polyvinyl Chloride) sheets in thicknesses from 3/32" to 3/16" and available in various configurations produced by H & F Manufacturing Corporation.

Phase-2 PVC Siding and Roofing Panels have been tested by Factory Mutual Research Corporation under Standard 4880 and have been approved for **unlimited height use** in non-load bearing walls and structures as a **CLASS 1 CONSTRUCTION WALL AND CEILING PANEL** not requiring automatic sprinkler protection, (i.e., material must not produce self-propagating fire to the limits of the structure as evidenced by flaming or material damage, and also must not ignite).

Factory Mutual Approval Index Listing No. **J.I. 1V4AO.AM** August 3, 1992.

Specifications

1. Panels shall be Phase-2 PVC manufactured by H & F Manufacturing Corporation, PO Box 85, Feasterville, PA 19053-0085. Phone: 800.474.2732 Local: 215.355.0250 Fax: 215.355.4066, Email: info@hfmfgcorp.com www.hfmfgcorp.com.
2. PVC Resin content shall not be less than 80% by weight.
3. Nominal thickness shall be 3/32", 1/8", or 3/16". The nominal weight shall be 12, 16, or 24 ounces per square foot respectively, and the corrugation configuration shall be 2.67" x 7/8", 4.2" x 1-1/16", 7.2" x 1-1/2" or ASTORIA box rib.
4. Panels shall have a Class 1 non-combustible flame spread rating of 12 or less.
5. Approval under Factory Mutual Research Corp. Std. 4470, 4471, and 4880.
 - PHASE-2 PVC Panels are approved for unlimited height use in non-load bearing walls and structures as a Class 1 Construction Material not requiring sprinkler protection.
 - PHASE-2 PVC Panels are approved for both wall and roof/ceiling applications for non-combustible occupancies where sprinklers are not required. The panels in and of themselves do not require automatic sprinkler protection when installed on the roof/ceiling or walls. They also would be acceptable in a combustible occupancy when protected by automatic sprinklers as defined by FMRC Loss Prevention Standards.
 - The panel shall meet FMRC Class 1-MH requirements for use outside by the Hail Hazard Boundaries contained in FMRC Data Sheet I-47S.1.
 - When installed in accordance with recommendations of H & F Manufacturing Corp., the panels shall meet the FMRC requirement for Class I-90 Windstorm Classification.
6. Color and surface finish shall be furnished by manufacturer.

The above Applications and Certifications do not pertain to AG-TUF, AG-TUF UV or Palight.

Phase-2 PVC Chemical Resistance

For chemicals and corrosive media not found on this list, please contact your H & F representative. It is important to note that H & F PVC panels are generally not recommended for use with acetone, ketones, ethers, and aromatic and chlorinated hydrocarbons. The information on chemical resistance is based on our research and experience. It serves as a basis for recommendation.

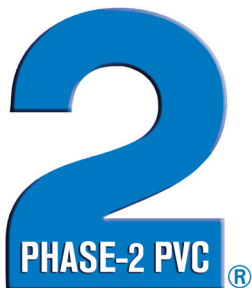
The table on pages 5 and 6 use the following key:

R — Resistant LR — Limited Resistance N — Not Resistant

Chemical	Concentration %	Resistance	Chemical	Concentration %	Resistance
Aluminum Chloride	Saturated	R	Ferrous Sulfate	–	R
Aluminum Fluoride	–	R	Fluorine Gas	–	LR
Aluminum Hydroxide	–	R	Fluoroboric Acid	–	R
Aluminum Sulfate	Saturated	R	Formaldehyde	–	LR
Ammonia (Gas)	–	R	Hydrobromic Acid	20	R
Ammonia (Liquid)	–	N	Hydrochloric Acid	35	R
Ammonium Acetate	–	R	Hydrofluoric Acid	48	LR
Ammonium Bifluoride	–	R	Hydrofluoric Acid	70	LR
Ammonium Bisulfate	–	R	Hydrogen Peroxide	50	R
Ammonium Chloride	–	R	Hydrogen Sulfide	–	R
Ammonium Fluoride	25	LR	Iodine	–	N
Ammonium Hydroxide	10	R	Magnesium Carbonate	–	R
Ammonium Hydroxide	28	R	Magnesium Chloride	–	R
Ammonium Nitrate	–	R	Magnesium Hydroxide	–	R
Ammonium Sulfate	Saturated	R	Magnesium Sulfate	–	R
Ammonium Sulfide	Saturated	R	Nickel Sulfate	–	R
Antimony Trichloride	–	R	Nitric Acid	60	R
Aqua Regia (3 part HCL/1 part HNO ₃)	–	N	Nitrous Oxide	–	R
Arsenic Acid	80	R	Ozone	–	R
Barium Chloride	–	R	Perchloric Acid	70	LR
Barium Sulfate	–	R	Phosphoric Acid	85	R
Boric Acid	–	R	Phosphorous (Yellow)	–	R
Bromic Acid	–	R	Phosphorous Pentoxide	–	R
Bromine (Liquid)	–	N	Phosphorous Trichloride	–	N
Bromine (Water)	–	LR	Plating Solutions	–	R
Calcium Chloride	Saturated	R	Potassium Bichromate	–	R
Calcium Hydroxide	–	R	Potassium Bromate	–	R
Calcium Hypochlorite	–	R	Potassium Bromide	Saturated	R
Calcium Nitrate	–	R	Potassium Chloride	–	R
Calcium Sulfate	–	R	Potassium Chlorate	–	R
Carbon Disulfide	–	N	Potassium Chromate	–	R
Carbon Tetrachloride	–	N	Potassium Cyanide	–	R
Chlorine Dioxide	15	R	Potassium Dichromate	–	R
Chlorine Gas (Dry)	–	R	Potassium Ferricyanide	–	R
Chlorine Gas (Wet)	–	LR	Potassium Fluoride	–	R
Chlorine Water	2	R	Potassium Hydroxide	50	R
Chromic Acid	10	R	Potassium Nitrate	–	R
Citric Acid	Saturated	R	Potassium Perborate	–	R
Copper Nitrate	–	R	Potassium Perchlorate	–	R
Copper Sulfate	–	R	Potassium Permanganate	10	R
Ferric Chloride	Saturated	R	Potassium Persulfate	–	R
Ferric Nitrate	–	R	Potassium Sulfate	–	R
Ferric Sulfate	–	R	Selenic Acid	–	R
Ferrous Chloride	–	R	Silicic Acid	–	R

R — Resistant **LR** — Limited Resistance **N** — Not Resistant

Chemical	Concentration %	Resistance	Chemical	Concentration %	Resistance
Silver Nitrate	–	R	Sodium Nitrite	–	R
Sodium Acetate	–	R	Sodium Perchlorate	–	R
Sodium Benzoate	–	R	Sodium Peroxide	–	R
Sodium Bicarbonate	–	R	Sodium Sulfate	–	R
Sodium Bichromate	–	R	Sodium Sulfide	–	R
Sodium Bisulfate	–	R	Sodium Sulfite	–	R
Sodium Bisulfite	–	R	Sodium Thiosulfate	–	R
Sodium Carbonate	–	R	Stannic Chloride	–	R
Sodium Chlorate	–	R	Stannous Chloride	–	R
Sodium Chloride	–	R	Sulfur Dioxide (Gas)	Dry	R
Sodium Chlorite	–	N	Sulfuric Acid	80	R
Sodium Cyanide	–	R	Tartaric Acid	Saturated	R
Sodium Dichromate	–	R	Trisodium Phosphate	–	R
Sodium Ferricyanide	–	R	Urea	–	R
Sodium Ferrocyanide	–	R	Zinc Chloride	–	R
Sodium Fluoride	–	R	Zinc Nitrate	–	R
Sodium Hydroxide	50	R	Zinc Sulfate	–	R
Sodium Hypochlorite	16 Chlorine	R			



In as much as H & F Manufacturing Corporation's material has many approved uses, any non-standard use should be tested by the user to determine its suitability. Proper installation techniques must be in accordance with H & F Manufacturing Corporation's procedures and H & F will not be liable for damages due to improper installation. In accordance with our company's continual product development, you are advised to check with your H & F supplier to ensure that you have the most up-to-date information.