SENSACRYL® FP

CELL CAST ACRYLIC SHEET
HIGH IMPACT SANITARYWARE

CHEMCAST®

UNIGEL

INTRODUCTION

Acrylic sheet is well known for its excellent properties in weather ability, durability and gloss, result-ing in its
superior performance in a wide variety of applications.

In addition to the generally recognized quality of acrylic sheet, Sensacryl FP, a cross linked cell cast acrylic sheet, has outstanding properties, allowing the thermoformer to archive very good results in sanitary appliances such as bath tubs, shower trays, vanities, etc.

This catalog contains basic information about Sensacryl FP and is a guide to the customer for the proper vacuum forming and fiber glassing processes.

PRODUCT INFORMATION

THE PRODUCT

Sensacryl F.P. is a cross linked cell cast acrylic sheet with outstanding thermoforming properties, chemical and stain resistance and has been developed for sanitary ware applications.

The typical values for the most important properties of the material are shown in Table 1.

Sensacryl F.P. can be produced in whites, pastels and marbles in a wide variety of sizes and thick-nesses. Color matching and cut-to-size for specific requirements are available upon request. (See Table 2 for details).

PLUMBINGWARE PROPERTY REQUIREMENTS

Sensacryl F.P. acrylic sheet has been submitted to an approved outside laboratory for compliance to the ANSIZ

124.1, ,BS 7015:1989 and UL94HB standards for plastic materials used in hot tubs and associated equipment.

The test results exhibited excellent chemical and stain resistance, accelerated aging resistance, cigarette resistance and low water absorption.

THERMOFORMING PROPERTIES

Sensacryl F.P. shows better thermoforming properties than the general purpose cell cast acrylic sheet. Among the advantages that the Sensacryl F.P shows are:

a. It can be thermoformed much more easily since it takes less force to thermoform.
b. It will stretch considerably further without rupturing.
c. It has improved thermal stability which allows a more flexible thermoforming process.

THERMOFORMING TEMPERATURES AND CYCLES

Sensacryl F.P. is ideally thermoformed in a temperature range of 180-210°C (381-435°F) and with a cycle of 10-

14 minutes in a hot air circulating oven. The actual cycle temperature setting and technique most suitable for a particular job are best determined in the customer's own equipment.

Figures 1 and 2 give a general guideline about heating times as a function of the sheet thickness for air circulating ovens and infrared heating.

PHYSICAL AND MECHANICAL PROPERTIES

PROPERTY	TYPICAL VALUE (1)	UNITS	TEST METHOD
MECHANICAL	65	Mpa	ASTMD-638
Tensile Streght (psi)	10000-11000	Psi	
Elongation at Rupture (%)	2-6	%	ASTMD638
Modulus of Elasticity (psi)	370,000	Psi	ASTMD790
Impact Strength (ft lb/in)	0.3-0.4	Ft-lb/in	ASTMD-256
Flexural Strength (psi)	13000-15000	Psi	ASTMD-790
Rockwell Hardness	95-100	M	ASTMD-785
Barcol Hardness	48-52	barcol	ASTMD-2583
	1.19	gr/cm3	---
THERMAL			
Formingtemperature	180-210	C	
	356-410	F	
DeflectionTemperature Under Load (264 psi) 1.52 Mpa	91	C	ASTM648
	196	F	
MISCELLANEOUS			
Flamability rate	15	mm/min	ASTMD-635
Flamability grade	94HB	---	UL94
Chemical resistance	OK	---	ANSIZ124.1
Cigarrete resistance	OK	---	ANSIZ124.1
Stain resistance	OK	---	ANSIZ124.1
Weather resistance (1000 hrs.Xeno test)	No evidence of degradation	---	ANSIZ124.1
Water absorption (24 hrs.at 23 C -73 °F)	35		
	0.2 - 0.3	mg	ASTM570
		%	
	No evidence of blisters,crazes,crack or discoloration	---	EN263 Sec.9

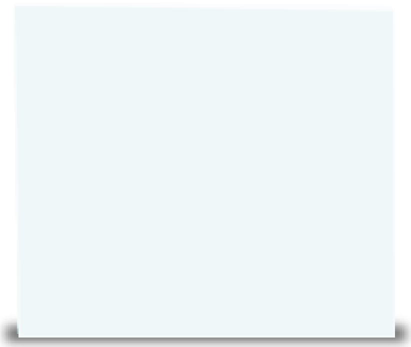
(1) All values refered to 3.0 mm (0.118") acrylic sheet.
These values are typical and should not be taken as specifications.

PRODUCT RANGE

BASICS SIZES	SHEET THISCKNESS
1220 x 1830 (48"x72")	
1220 x 2440 (48"x96")	3.0 mm (0.118")
1295 x 2540 (51"xlOO")	3.2 mm (0.125")
1524 x 2440 (60"x96")	4.0 mm (0.157")
1700 x 2440 (67"x96")	4.5 mm (0.177")
1830 x 1830 (72"x72")	5.0 mm (0.197")
1830 x 2440 (72"x96")	8.0 mm (0.312")
2000 x 2000 (79"x79")	

Cut to size is offered considering customer’s blank request.

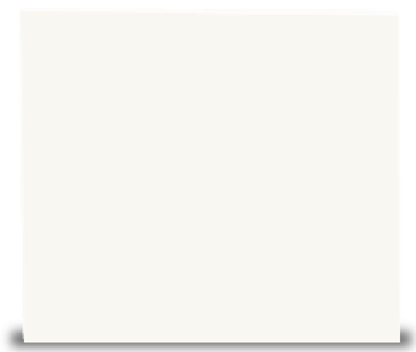
COLORS



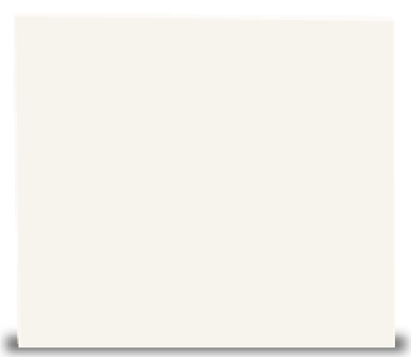
F-208
WHITE

F-255
VISON

F-252
SOFT CREAM

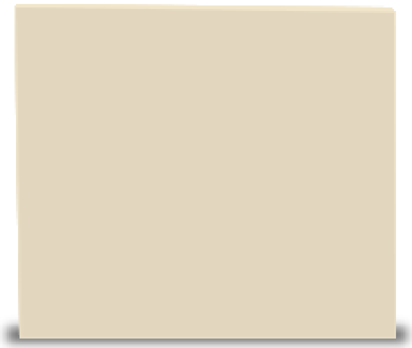


F-192
PERGAMON

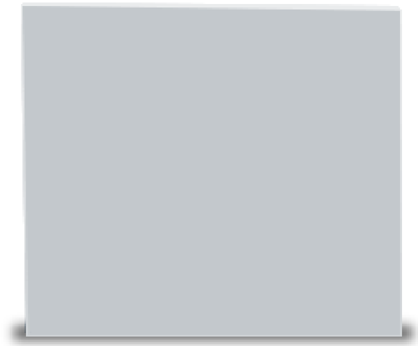


F-141
MISTY PEACH

F-207
WHITE (IW28)



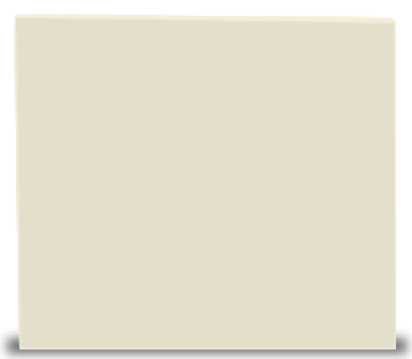
F-157
INDIAN IVORY



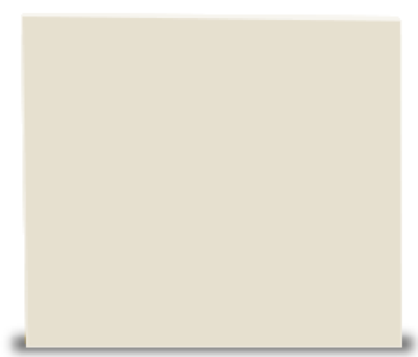
F-179
GRIS

F-176
GRAY

F-180
EURO WHITE

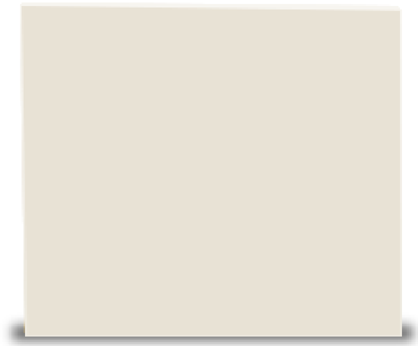


F-156
CHAMPAGNE

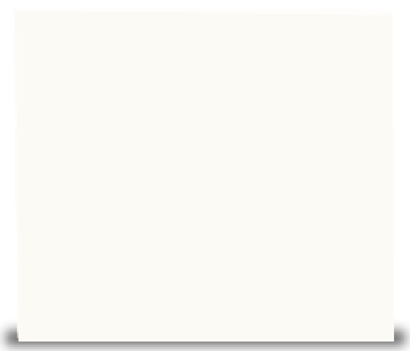


F-253
BONE

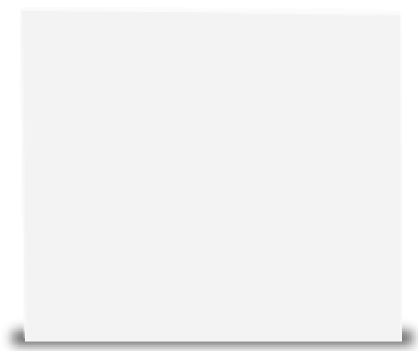
F-095
AGUAMAR



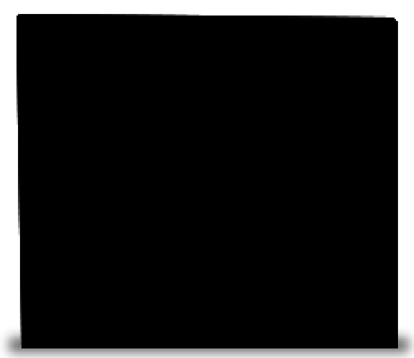
F-259
BISCUIT



F-198
ALMOND



F-209
WHITE



F-136
BLACK

CHEMICAL RESISTANCE

CHEMICAL	CODE	CHEMICAL	CODE
Acetic Acid (10%)	LR	Hydrogen Peroxid	R
Acetic Acid (glacial)	N	(3%) Isopropyl Alcohol	LR
Acetone	N	Kerosene	R
Ammonium Chloride	R	LacquerThinner	N
Ammonium Hydroxide	R	Methyl Alcohol (30%)	LR
Benzene	N	Methyl Alcohol (100%)	N
Calcium chloride	R	Methyl Ethyl Ketone	N
Carbon Tetrachloride	N	Methylene Chloride	N
Chloroform	LR	Nitric Acid (10%)	R
Chromic Acid (1 0%)	N	Nitric Acid (100%)	N
Chromic Acid (conc.)	N	Phenol (5%)	N
Diethyl Ether	LR	Sodium Chloride	R
Dioctyl Phthalate	LR	Sodium Hidroxide (10%)	R
Ethyl Alcohol (30%)	N	Sodium Hypochloride	R
Ethyl Alcohol (95%)	N	Sulfuric Acid (3%)	N
Ethylene Dichloride	N	Sulfuric Acid (conc.)	N
Ethylene Glycol	R	Toluene	N
Gasoline	LR	Trichloroethylene	N
Glycerine	R	Turpentine	R
Hexane	R	Water (distilled)	R
Hydrochloric Acid	R	Xilene	N

The code is used to describe chemical resistance as follows:

R = RESISTANT
Acrylic cast withstand this substance for long periods and at temperature up to l20°F (49°C).
LR = LIMITED RESISTANCE
Acrylic only resists the action of this substance for short periods at room temperature.
N = NOT RESISTANT
Acrylic is not resistant to this substance. It is swelled, attacked, dissolved or damaged in some manner.

These values are typical and should not be taken as specification

THERMOFORMING TROUBLE SHOOTING GUIDE FOR FIBER GLASSING

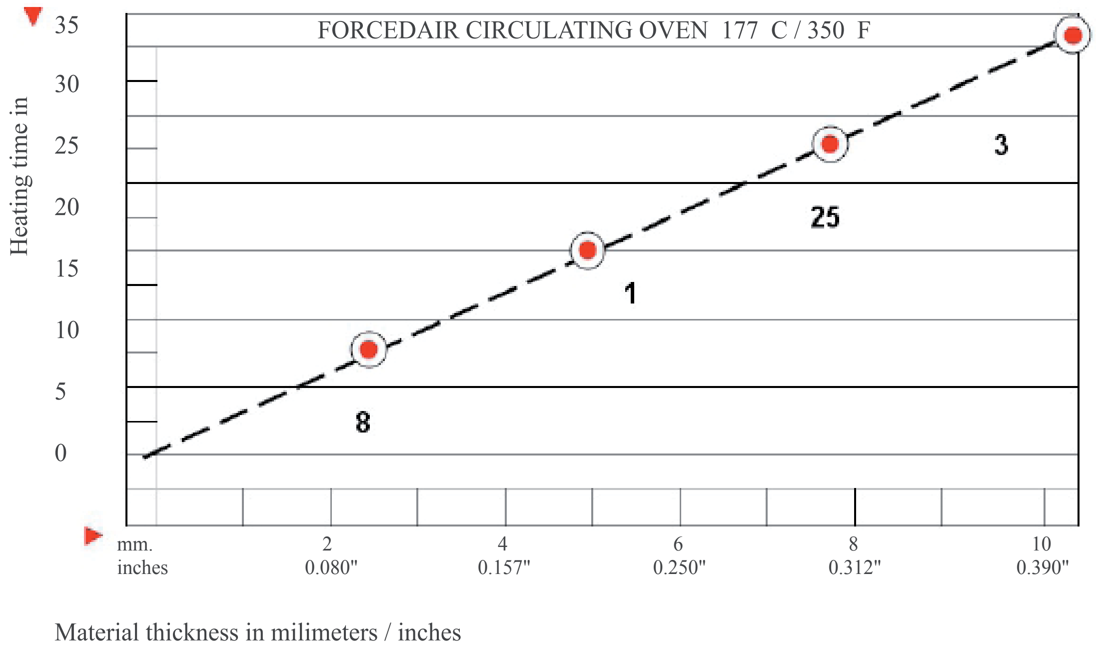
PROBLEM	CAUSE	SOLUTION
Cracking and swelling.	• Air bubble between the acrylic and polyester resin. High temperature in polymerization of the resin.	• Use multiple thin layers of fiberglass • Remove trapped air by rolling out layers. • Use suitable polyester resin for each season. • Adjust the catalyst concen-tration.
Bad mixing of resin and fiberglass.	• Shortage of polyester resin. •Viscosity of the resin too high. •Wrong type of glass roving.	• Adjust the concentration of fiberglass against resin to 20-35%. • Select a fiberglass treated with a silene that is compati-ble with the polyester resin. • Adjust the viscosity ofthe resin.
Insufficient polymerization.	• Concentration of catalyst too low. • Atmospheric temperature too low.	• Increase catalyst concentra-tion. • Raise and control atmo-spheric temperature.
Pits or pimples.	•Vacuum holes too large. •Vacuum rate too high. • Dirt or mold or sheet.	• Use smaller holes. • Decrease vacuum rate or level. • Clean mold and/or sheet.
Mark-off.	• Dirt on sheet. • Dirt on mol d. • Dirt in atmosphere.	• Clean sheet. • Clean mold. • Clean vacuum forming area. • Isolate area if necessary and supply filtered air. Reduce heat and heat more slowly.
Distortion in finished part.	• Part removed too hot. • Uneven heating. • Mold design.	• increase cooling time before Removing part. • Check temperature profile. • Correct mold design-stiff-en to eliminate.

THERMOFORMING TROUBLE SHOOTING GUIDE FOR FIBER GLASSING

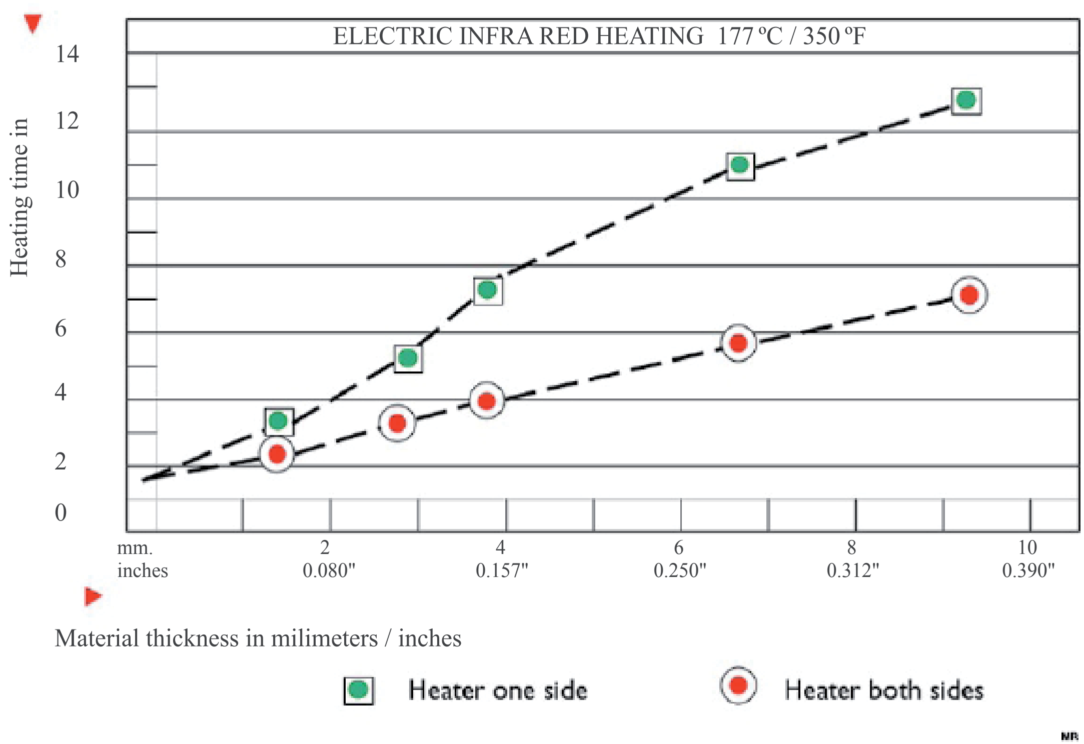
PROBLEM	CAUSE	SOLUTION
Tearing of part	• Mold design. • Sheet too hot.	• Increase radius of comer. Decrease heating time or temperature.
Bridging	• Mold design. • Sheet too hot.	• Add take-up blocks to pull out wrinkles. • Reduce time heaters, heating temperature, or reduce voltage. Move heater further away. Use screening if localized .
Poor definition of detail.	• Sheet too col d.	• Increase heat input to sheet
Incomplete forming.	• Low vacuum • Low air pressure.	• Check for leaks in vacuum system. Increase number and/or size of vacuum holes. Add vacuum capacity • Increase volume and/or pressure.
Extreme wall thickness.	• Uneven sheet heating • Mold too cold • Sheet slipping • Stray air currents.	• Check temperature profile • Change heaters to provide higher uniform mold surface temperature • Check cooling system for scale or plugs • Adjust clamping frame to provide uniform pressures • Provide protection to eliminate drafts.
Excessive sag .	• Sheet too hot.	• Reduce time or temperature
Part sticking to mold.	• Rough mold surface • Undercuts too deep • Not enough draft	• Polish mold • Reduce undercut • In crease draft of mold

THERMOFORMING TROUBLE SHOOTING GUIDE FOR FIBER GLASSING

• FIGURE 1



• FIGURE 2



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