

Gh-40 Generco Thinlam Sandwich Structures

1. Background

General Veneer Manufacturing Co. has been supplying lightweight materials and products to the aircraft and aerospace industry for over 50 years. With the advent of the wide body commercial airplane, new materials were required to meet their specific needs. We were among the first to use these new materials in production and have continued to develop new configurations.

2. Product Introduction

Generco Thinlam was developed to provide a thin aluminum sheet at one half the weight of a solid aluminum sheet with a stiffness ration of 5:1 over the same weight solid sheet. Due to wide acceptance, other faces such as Titanium and Stainless Steel are now available as Generco Thinlam sandwich structures.

The material consists of thin facings structurally bonded to a compressed aluminum honeycomb core with adhesive so that the folded walls are bonded together. For applications requiring flexural panel, shear panel and compression panel functions, the advantage of this great stiffness to weight ratio is readily apparent.

3. Type Identification

In the table listed below are examples of the many combinations of facings being supplied. Other combinations are readily available.

Type	Total Thickness (Inches)	Nominal Weight	Face Thickness (Inches)	Back Thickness (Inches)	Face Alloy
A	.062	.43	.008	.008	2024 T3 Clad
B	.091	.76	.020	.012	2024 T3 Clad
B-1	.091	.54	.010	.010	2024 T3 Clad
C	.091	.74	.020	.010	7075 T6 Clad
D	.091	.82	.020	.016	7075 T6 Clad
E	.125	.90	.025	.016	2024 T3 Clad
E-1	.125	.74	.012	.012	2024 T3 Clad
F	.125	.90	.020	.020	2024 T3 Clad
G	.100	.76	.020	.012	2024 T3 Clad
G-1	.150	.96	.020	.020	2024 T3 Clad
M	.100	1.10	.012	.010	301 1/4 Hard Cres ^①

① MIL-S-5059

② MIL-T-9046 Type I, Composition A

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Type	Total Thickness (Inches)	Nominal Weight	Face Thickness (Inches)	Back Thickness (Inches)	Face Alloy
T	.091	.63	.010	.005	CP Titanium ^②
U	.091	.70	.010	.010	CP Titanium ^②
R	.091	.68	.010	.008	CP Titanium ^②
S	.091	.82	.012	.012	CP Titanium ^②
W	.074	.60	.020	.008	2024 T3 Clad
Y	.100	1.26	.016	.010	301 1/4 Hard Cres ^①

① MIL-S-5059

② MIL-T-9046 Type I, Composition A

4. Physical Properties

Surface Condition: The face sheet surfaces shall be clean and free of stains, corrossions and foreign matter. When specified, the panel surfaces may be covered with protective film.

Flatness: Sandwich panels furnished as flat sheet stock shall be flat with no abrupt change in contour. Large, gentle waves are permissible when a pressure of no more than 2 P.S.I. will remove them.

Core Ribbon Direction: The ribbon direction of the core shall be parallel to the short dimension of the panel unless otherwise specified on the purchase order.

The properties for six types of sandwich panels are listed below.

Type	A	B	E	G	T	U	Unit
Overall Thickness	.062	.091	.125	.100	.091	.091	in.
Unit Weight	.43	.76	.90	.76	.63	.75	p.s.f.
Facing Thickness	.008	.020	.025	.020	.010	.010	in.
Backing Thickness	.008	.012	.016	.012	.005	.010	in
Min. Flexural Strength @ 160°F	70	100	100	100	100	100	lb.
Min. Flatwise Tensile Strength @ 160°F	1500	1500	1500	1500	1500	1500	p.s.i.
Min. Forming Radius @ 75°F	2.00	4.00	16.00	4.00	6.00	6.00	in.
Tolerances Thickness	±.005	±.005	±.010	±.005	±.005	±.005	in.
Tolerances Weight	±.05	±.05	±.05	±.007	±.05	±.05	p.s.f

5. Materials

Facing material shall conform to applicable specifications. Adhesive shall conform to the requirements of MMM-A-132, Type 1 or MIL-A-25463, Type 1, Class 2.