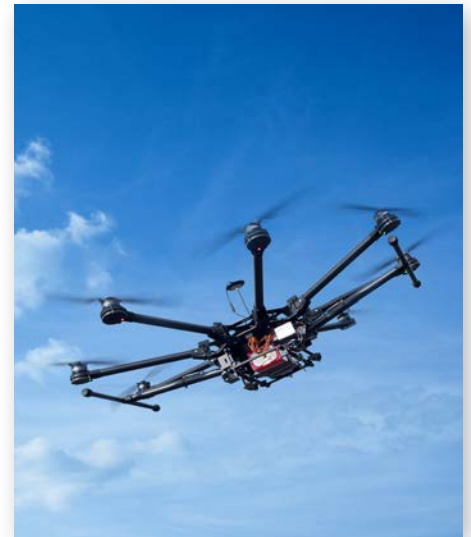
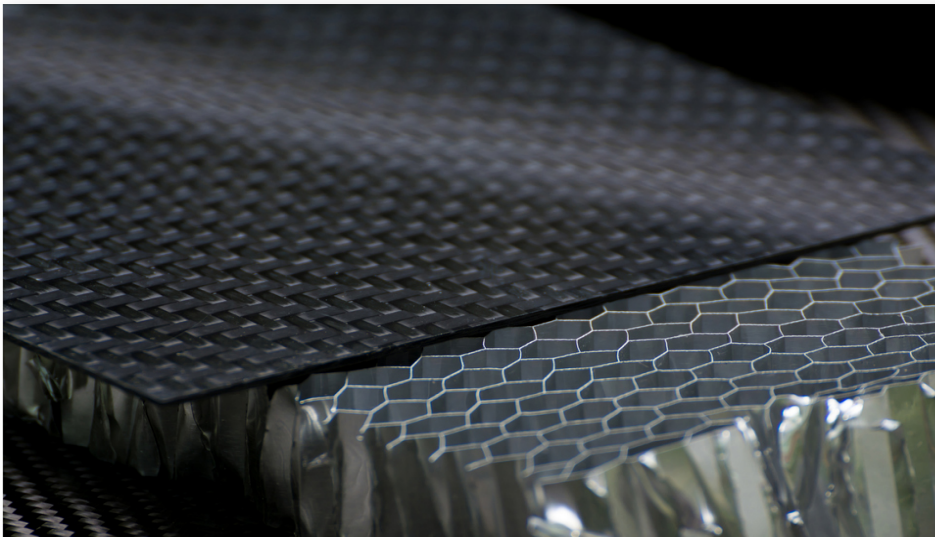


# MATERIAL PERFORMANCE LABORATORY

## RESEARCH & DEVELOPMENT, TESTING, EVALUATION, EXPERTISE

CTT Group is a specialized service center dedicated to advance materials evaluation, prototyping and R&D, with more than 600 accredited tests.



### ■ ADHESION AND SURFACE TESTING

- Evaluation adhesion of coatings by tape test / Paint adhesion  
ASTM D3359
- Volatiles content of composite material  
ASTM D3530, D2369, D1353
- Specular gloss of plastic films and solid plastics  
ASTM D523
- Evaluation of coated specimens to corrosive environments  
ASTM D1654
- Evaluation degree of cracking of exterior paints  
ASTM D661
- Evaluation degree of blistering of paints  
ASTM D714
- Evaluation degree of flaking (scaling) of exterior paints  
ASTM D772

### ■ THERMO PHYSICAL ANALYSIS

- Glass transition temperature  
DMA  
ASTM E1640, ASTM D7028
- Glass transition temperature DSC  
ASTM E2602, E1356, ASTM D7426
- Loss modulus  
ASTM E2425
- Coefficient of thermal expansion  
ASTM E831

### ■ HARDNESS

- Hardness Shore A, Shore D  
ASTM D2240
- Hardness barcol impressor  
ASTM D2583
- Hardness rockwell  
ASTM D785

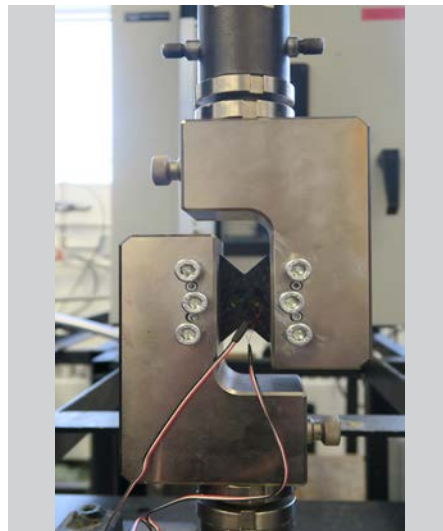
### ■ ENVIRONMENTAL CONDITION

- Conditioning from -70°C to 250° C salt spray (fog)  
ASTM B117
- Fluorescent UV lamps exposure ASTM G154, ISO 4892-3
- Xenon arc lamp weathering  
ASTM G155
- Solar radiation  
MIL-STD-810g METHOD 505.5
- Thermal and humid aging  
ASTM D2126
- Immersion to chemicals  
ASTM D5322, C581
- Moisture absorption and conditioning  
ASTM D5529
- Temperature variation  
RTCA/DO-160f Section 5.3
- Humidity  
RTCA/DO-160f Section 6.3
- Fluid susceptibility  
RTCA/DO-160f Section 11.4

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### ■ LAMINATE STATIC TEST

- In-Plane tensile  
ASTM D3039, D638, D5083
- In-Plane compression  
ASTM D695, D6641, SRM-1R, D3410
- In-Plane shear  
ASTM D3518, D5379, D7078
- Out-of-Plane tensile  
ASTM D7291
- Out-of-Plane shear  
ASTM D2344
- Laminate flexural  
ASTM D790, D6272, D7264
- Impact izod  
ASTM D256
- Notched laminate tension and compression  
ASTM D5766, D6742
- Bolted joint  
ASTM D5961, D7332, D6873, D7248
- Impact damage resistance  
ASTM D7136, D5628, D7137
- Peel  
ASTM D1876, D3167

### ■ SANDWICH CONSTRUCTION

- In-Plane compression  
ASTM C364
- Out-of-Plane tensile ASTM C297
- Out-of-Plane compressive  
ASTM C365
- Core shear strength ASTM C393
- Flexural  
ASTM D7249
- Drum-peel  
ASTM D1781
- Static pin bearing strength  
ASTM D953

### ■ ADHESIVE BOND TESTING

- Lap-shear  
ASTMD1002, D3163
- Lap-shear composites  
ASTMD5868, D7616
- Pull-off strenght of coatings  
ASTMD4541

### ■ FLAME RESISTANCE

- Surface flammability  
ASTM E162
- Density of smoke  
ASTM E662
- Flooring radiant panel test  
ASTM E648
- Heat release rates  
ASTM E1354
- Rate of burning  
ASTM D635
- FAR 25.853 appendix F part I  
Paragraph 4 - Vertical flammability  
Paragraph 5 - Horizontal flammability  
Paragraph 6 - Forty five degree angle  
Paragraph 7 - Sixty degree flammability

### ■ CONSTITUENT CONTENT

- Density  
ASTM D792, C271
- Fiber, resin, void content  
ASTM D3171
- Void content  
ASTM D2734
- Resin content  
ASTM D2584