

# Brightpack ClipBox System Test Report

## ABSTRACT

The Brightpack ClipBoxes were tested with a load of 3,780lbs. The tests accomplished on the test units were the stacking, vibration, drop, incline impact, forklift handling, and disassembly tests. The boxes passed all requirements with no significant problems encountered.

## Brightpack ClipBox System

### Box

External Dimensions (length\*width\*height mm): 1200x1000x1118

Internal Dimensions (length\*width\*height mm): 1170x970x973

Material: OSB in 15mm

Steel clips: 28

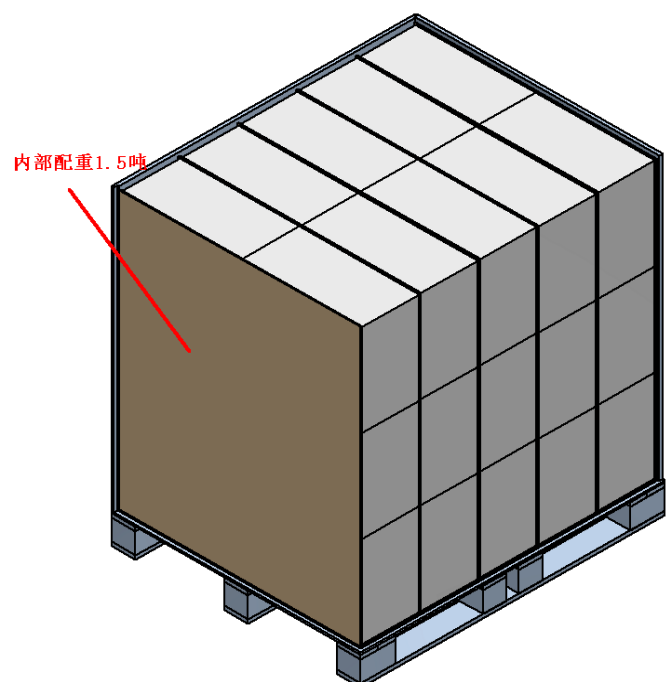
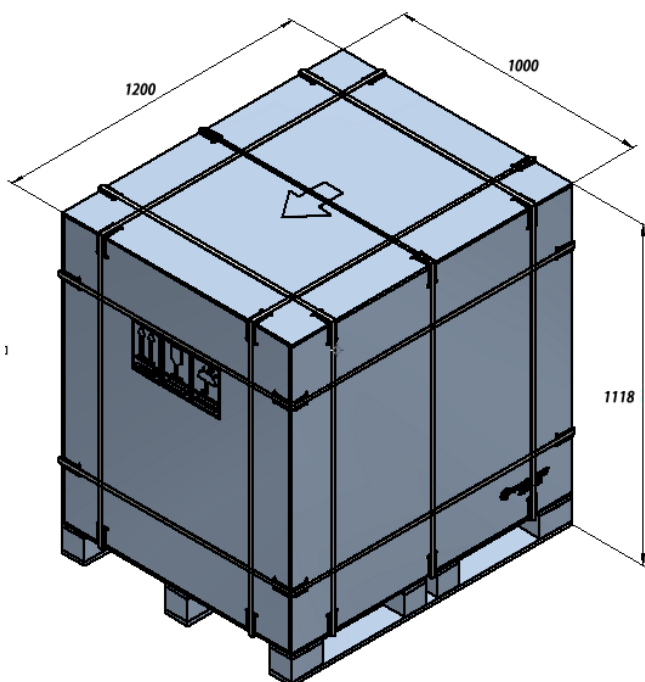


### Weight

Box weight: 158lbs

Load weight 126lbs x30=3,780lbs

Total weight: 3,938lbs



## STACKING TEST

### TEST EQUIPMENT:

COMPRESSION TESTER

Manufacturer: Ormond Manufacturing

Platform: 60- x 60-inches

Compression Limit: 50,000 pounds

Tension Limit: 50,000 pounds

### TEST PROCEDURES:

The test unit will be tested to simulate a stack of identical items stacked 16 feet high, for a period of one hour. This stacking load will be simulated by subjecting the specimen to a compression weight equal to an equivalent 16-foot stacking height.

### TEST RESULTS:

The test unit was compressed with a load force of 12,165 pounds for 60 minutes. No damage was noted as a result of this test. See Photo 1 of the test unit in the compression unit.



Photo 1

## REPETITIVE SHOCK TEST

### TEST EQUIPMENT:

TRANSPORTATION SIMULATOR.

Manufacturer: Gaynes Laboratory

Capacity: 6,000-pound payload

Displacement: 1/2-inch amplitude

Speed: 50 to 400 RPM

Platform: 5- x 8-foot

### **TEST PROCEDURES:**

The test unit will be placed on (not fastened to) the platform. With the test unit in one position, the platform will be vibrated at ½-inch amplitude 3-1 (1-inch double amplitude) starting at a frequency of approximately 3 cycles-persecond. The frequency will be steadily increased until the specimen leaves the platform. The resonant frequency is achieved when a 1/1 6-inch-thick feeler gage momentarily slides freely between every point on the specimen in contact with the platform at some instance during the cycle. Midway into the testing period, the specimen will be rotated 90 degrees, and the test continued for the duration. Unless failure occurs, the total time of vibration will be three hours.

### **TEST RESULTS:**

The test unit was vibrated 90 minutes at 200 RPM in the longitudinal orientation and 90 minutes at 200 RPM in the lateral orientation. No damage was noted as a result of this test. Photo 2 shows the test unit on the vibration platform.



Photo 2

## **EDGEWISE-ROTATIONAL DROP TEST**

### **TEST EQUIPMENT:**

Forklift

### **TEST PROCEDURES:**

The test unit will be placed on its skids with one end of the pallet supported on a beam 6 inches high. The height

of the beam will be increased as necessary to ensure that there is no support for the skids between the ends of the specimen when the dropping takes place, but should not be high enough to cause the specimen to slide on the supports when the dropped end is raised for the drop. The unsupported end of the specimen is then raised and allowed to fall freely to the concrete, pavement, or similar unyielding surface from a prescribed height. Unless otherwise specified, the height of drop for level A protection will conform to the following tabulation:

GROSS WEIGHT (WITHIN RANGE LIMITS) (Pounds)	DIMENSIONS OF ANY EDGE, HEIGHT OR WIDTH (WITHIN RANGE LIMITS) (Inches)	HEIGHT OF DROPS ON EDGES	
		Level A (Inches)	Level B (Inches)
150-250	60-66	36	27
250-400	66-72	32	24
400-600	72-80	28	21
600-1,000	80-95	24	18
1,000-1,500	95-114	20	16
1,500-2,000	114-144	17	14
2,000-3,000	Above 145- No limited	15	12
Above – 3,000		12	9

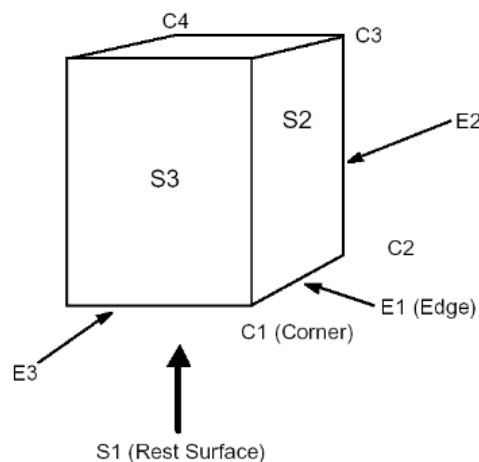


Photo 3

**TEST RESULTS:**

The test unit was edgewise rotationally dropped from a height of 12 inches on both longitudinal sides and both lateral sides. No significant damage was noted as a result of this test; however, the test unit sustained minor

damage to the bottom skids and the top deck during drop testing. The damage was deemed minor because it would not interfere with the container safely continuing on with its intended mission. The minor damage that occurred is common to this type of container with the 4,000-lb. load capacity. Photo 5 shows the test unit during the edgewise drop test. Photo 4 shows the minor damage sustained during the drop tests.



Photo 4



Photo 5

## INCLINE-IMPACT TEST

### TEST EQUIPMENT:

INCLINED PLANE.

Manufacturer: Conbur Incline

Type: Impact Tester

Grade: 10 percent incline

Length: 12-foot

### TEST PROCEDURES:

The test unit will be placed on the carriage with the surface or edge to be impacted projecting at least 2 inches beyond the front end of the carriage. The carriage will be brought to a predetermined position on the incline and released. If it were desired to concentrate the impact on any particular position on the container, a 4- x 4-inch

timber may be attached to the bumper in the desired position before the test. The carriage will not strike any part of the timber. The position of the specimen on the carriage and the sequence in which surfaces and edges are subjected to impacts may be at the option of the testing activity and dependent upon the objective of the test. When the test is to determine satisfactory requirements for a container or pack, and, unless otherwise specified, the specimen will be subjected to one impact on each surface that has each dimension less than 9.5 feet. Unless otherwise specified, the velocity at the time of the impact will be 7 feet-per-second.

### **TEST RESULTS:**

The test unit was impact tested on both longitudinal sides and both lateral sides. No significant damage was noted as a result of this test. See Photo 6 for the specimen during the lateral incline-impact test.



Photo 6

## **FORKLIFTING TEST**

### **TEST EQUIPMENT:**

Forklift

### **TEST RESULTS:**

The test unit was lifted clear of the ground by a forklift from both longitudinal sides and both lateral sides and transported on the forks. Photo 7 shows the test unit during the Forklifting Test. No damage was noted as a result of this test.





Photo 7

## CONCLUSION

No major problems were encountered during the completion of the required testing.