Multi-Purpose Polypropylene Support Base Testing

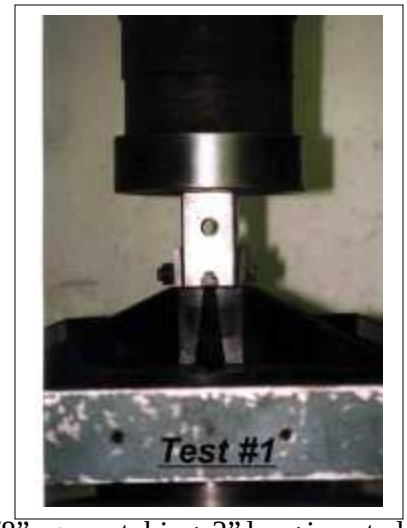
HTS, Inc. Consultants
416 Pickering Street, Houston, Texas 77091
March 18, 1997

Presented here is a report of properties and performance evaluations related to the multi-purpose polypropylene support base.

A limited number of material conformance tests and a series of load tests with various types of applications were completed.

Material conformance tests were conducted with an Instron, Model 4467 computerized system and the load testing was conducted with a Forney, Model QC400 compression machine. All testing equipment is calibrated annually and traceable to national standards.

The test data and related information is included in this report and can serve as valuable information for engineering design.



Load Test #1

The application was a 1-5/8" square tubing, 3" long inserted into the support column and resting on a ¼" square washer on the bottom. A 1-7/8" square tubing was placed over the 1-5/8" tubing that served as a collar resting on top of the support column. Two ¼" square washers were placed on two sides of the tubing and also resting on top of the support column. A ½" bolt was inserted through the holes of the tubing and washers to hold the assembly together. A maximum load of 27,791 lbs. was attained. In our observation, deformation occurred in the bolt holes of the tubing.

With a safety factor of 2 applied to this application, the base will adequately support a load of 13,500 lbs.

Load Test #2

The application was a 1-5/8" square tubing inserted into the support column. A 1-7/8" square tubing was placed over the 1-5/8" tubing that served as a collar resting on top of the support column. Two ¼" square washers were placed on two sides of the tubing and also rested on top of the support columns. A ½" bolt was inserted through the holes of the bottom of the support column. It's position was ½" from the bottom. A maximum load of 15,555 lbs. was attained. At maximum load, the tubing and washers were being wedged into the support column.

Load Test #3

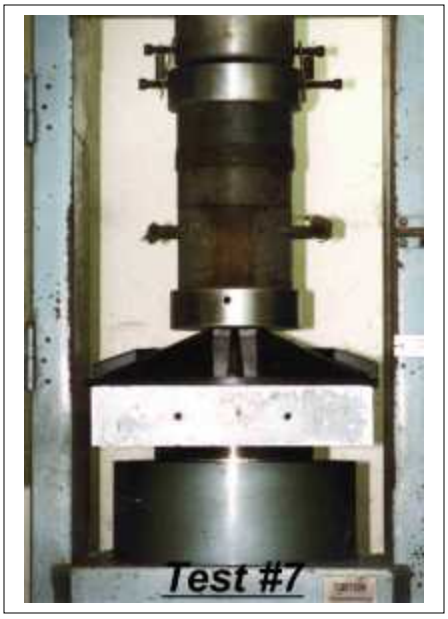
The application was a 15/8" square tubing inserted into the support column. A 1-7/8" square tubing was placed over the 1-5/8" tubing that served as a collar resting on top of the support column. Two ¼" square washers were placed on two sides of the tubing and also rested on top of the support column. A ½" bolt was inserted through the holes of the tubing and washers to hold the assembly together. The 1-5/8" tubing did not rest on the bottom of the supporting column. It's position was ½" from the bottom. A maximum load of 14,551 lbs. was attained. At maximum load, the tubing and washers were being wedged in the support columns.

With a safety factor of 2 applied to the average of tests #2 & 3 of this application, the base will adequately support a load of 7500 lbs.

Load Test #4
Model SS1000 Bracket Support
This application represents two ½" all thread bolts supporting a 1-3/4" wide 1/8" thick channel bracket. The ½" bolts have a width of 8" and a height of 2" between nuts. The bottom nuts rests on a 1-1/4" diameter washer that rests on a 1-1/4" diameter washer that rests on the anchor posts. Load was applied to the top of the all thread bolts. A maximum load of 21,890 lbs. was attained at failure. Failure occurred in all thread bolts due to bending. There was no puncture of the anchor through the base.

Load Test #5
Model SS1000 Bracket Support
This application represents two ½" all thread bolts supporting a 1-3/4" wide 1/8" thick channel bracket. The ½" bolts have a width of 8" and a height of 1-3/4" between nuts. The bottom nuts rest on a 1-1/4" diameter washer that rests on the anchor post. Load was applied to the top of the all thread bolts. A maximum load of 22,946 lbs. was attained at failure. Failure occurred in the all thread bolts due to bending. There was no puncture of the anchor through the base.

Load Test #6
Model SS1000 Bracket Support
This application represents two ½" all thread bolts supporting a 1-3/4" wide 1/8" thick channel bracket. The ½" bolts have a width of 8" and a height of 1-3/8" between the nuts. The bottom nuts rest on a 1-1/4" diameter washer that rests on the anchor posts. Load was applied to the top of the all thread bolts. A maximum load of 25,911 lbs. was attained at failure. Failure occurred in the all threads due to bending. There was no puncture of the anchor through the base.



Load Test #7

In this application, the load was transferred over the entire surface area of the center support column. A load of 43,052 lbs. was attained after 18 minutes, but failure did not actually occur at this time. The column gradually deforming and the loading head was beginning to transfer load to the gussets, therefore maximum load was assumed for the center support column.

If this application is utilized, a safety factor of 20,000 lbs. can be allowed.

Load Test #8

This application consists of a 1-5/8" square tubing inserted into the center support column with a 1/8" thick square tubing collar resting on top of the center support column. The collar was secured with a ½" bolt and the 1-5/8" square tubing was ¼" from the bottom of the center column. A maximum load of 9,248 lbs. was attained. At maximum load, the tube and collar began to wedge into the support column.

With this application, a safety factor of 4500 lbs. can be allowed.