

SOUTHWESTERN LABORATORIES

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W/O. No.: KWI007-10-29-45789-1
 P.O. No.:
 Report Date: 11/10/2003
 Date of Service: 10/31/2003

Identification: 32" Twist Ties

Load tests to determine weight bearing capacity of twist ties in use.

Condition #1. Two twist ties were used as if attaching a ladder rail (side) to a rail of an automotive storage rack. The simulated ladder side was 1" thick, and a width of 3". It appears that vertical alignment and the "tightness" of the twists has a direct bearing on the holding capacity. Vertical alignment means that the load is applied directly in line, or into, the base of the twisted tie. Each tie was secured with 3 revolutions

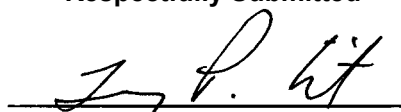
Maximum Applied Load	Notes
294 lbs.	Vertical alignment; "twists" were made very snug prior to loading
230 lbs.	Vertical alignment; tight twists but less than above sample
195 lbs.	Alignment near but not vertical; twist application three rotations, with no extra exertion.

No matter the alignment, one twist tie will begin to unravel before the other

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Stork SWL, is an operating unit of Stork Materials Technology B.V., Amsterdam, The Netherlands, which is a member of the Stork group

Respectfully Submitted


 Terry Wilt
 Manager, Product Evaluation

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Condition #2. Twist ties are tested individually. Two load bearing rods were placed inside a loop created by twisting the ends of the twist ties three revolutions. The load was applied vertically, as described above, into the base of the twist, except for the 4th sample, where the twist was horizontal, or 90° to the loading points. Again, 3 revolutions of the twist tie were applied, in what we will call a normal fashion, with no extra strength of tightness incorporated into the twisting or securing action.

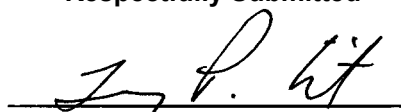
Maximum Applied Load	Alignment, or Load Application Point	Notes
85 lbs.	Vertical, into twist	Began unraveling at 40 lbs. Turned one complete revolution at 80 lbs.
88 lbs.	Vertical, into twist	Began unraveling at 25 lbs. One complete revolution by 71 lbs.
68 lbs.	Near vertical, ½: away from twist	Began unraveling at 30 lbs. One complete revolution by 65 lbs.
107 lbs.	Horizontal, twist 90° from load points	Began unraveling at 52 lbs. One complete revolution by 90 lbs.

After one full revolution under loading conditions, the remaining two twists did not allow for much of an increase in load bearing capacity.

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Load tests to determine strength of threaded ends for extension.

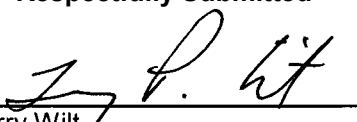
The short lengths of the ends slipped out of our fixtures before any damage, such as stripped threads, occurred. The reported values can be expected to be higher.

Sample	Applied Load
1	407 lbs.
2	406 lbs.
3	447 lbs.

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