REPORT OF TEST

SGS U.S. Testing Company Inc.

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REPORT NUMBER: 720210-3R
DATE: 12/24/96

REVISED DATE: 03/04/97

CLIENT: **DOC'S MARKETING CORPORATION**
2343 Calle Alucema
Thousand Oaks, CA 91360

SUBJECT: **METAL/WOOD SCREW (150 SP)**

REFERENCES: Conferences and correspondence with Mr. Forrest Dockery commencing September 18, 1995.

SAMPLE ID: The following specimens were randomly sampled at Doc's Marketing Corporation, 5158 Goldman Ave. Unit A, Moorpark, CA 93021, by an SGS United States Testing Co. representative on October 7, 1996:

- 225 ea, 2¾-inch long, nominal, heat-treated, plated, 1018 steel, ceiling suspension fasteners, Part Number 150SP. Each fastener consisted of a 1½-inch long threaded portion (0.19-inch shank diameter; 0.25-inch thread diameter), a 0.5-inch diameter by 0.08-inch thick washer portion, a 0.21-inch diameter by 0.6-inch long shank portion and a 0.08-inch thick by 0.5-inch long flattened, eyelet portion with a 0.18-inch diameter hole. The underside of the collar portion had a fan blade appearance and the top had four lines radiating from the center (See drawing in the Appendix).

The Client submitted 22-gauge, corrugated, galvanized, sheet metal sections and identified them as being manufactured by Verco, ICBO #2078.

The Rockwell C hardness of the sampled fasteners was 39, as determined by Metal Control Laboratories, Inc. in Montebello, CA, and witnessed by SGS U.S. Testing Company personnel, on November 26, 1996.

The chemical composition of a specimen taken from the sampled lot was determined by the Client and the report, from MGF Wire Processing Industries, Inc., is included in the Appendix.

SIGNED FOR THE COMPANY:

Marco Tachiquin
Test Engineer

David Pereg
Manager, Engr. Dept.

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SAMPLE ID: (CONT.) The following basic production procedure was outlined by the Client (See Photographs in the Appendix):

1. 1018 steel from wound wire coils is inserted into a forming machine. *
2. The forming machine cuts the rolled steel to the proper size to create washered "blanks."*
3. The blanks are further processed in other machines that form the threads, shape the heads, and punch/drill a hole in each fastener head. *
4 Fasteners are then sent out to a subcontractor for heat treatment,and plated with Zinc II, giving them a yellow or gold appearance.
5. Upon return of lot from heat treatment/plating, several fasteners are selected at random for examination. Between 3 and 4 fasteners out of each 1,000 pounds is tested by inserting into a section of 20-gauge sheet metal.
6. Case hardness, per specification, is expected to be between 4 and 8 mils.
7. Case hardness is verified by inserting selected fasteners into 20-gauge sheet metal. Fasteners are then impacted with a hammer and visually inspected. Fasteners should bend at least 45 degrees without shearing into two or more pieces. *

* These procedures were witnessed by the SGS U.S. Testing Company representative on October 7, 1996.

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SUMMARY OF RESULTS:

Substrate	Orientation	Average Maximum Load (lbs)	Average Deflection (in)
Doug-Fir wood	Tensile	980	0.375
	Shear	300	0.789
	45 degrees	625	0.797
22 gauge metal (0.030-inch average thickness)	Tensile	455	0.654
	Shear	715	1.555
	45 degrees	510	0.798

PROCEDURE: Fifteen fasteners were drilled into the 2-inch edge of a 2 X 6 inch wooden beam. The beam was secured so that the fasteners were in a vertical position to the fixed table of an Instron testing machine. Each fastener was then individually pulled in tension at a crosshead separation rate of 0.5-inch per minute until failure and the maximum load and deflection were recorded.

The test was repeated on wood with the fasteners in a horizontal position (Shear) and at a 45° angle and on 22-gauge corrugated galvanized steel sections in all three orientations (See Figure Nos. 1 - 6).

Notes:

- The specific gravity of the wood used in testing was 0.46.
- The fasteners were drilled into the wood and metal without pre-drilling.
- The steel and fasteners were conditioned for a minimum of 40 hours at 73°F and 50% relative humidity prior to testing.
- Testing was performed at 73°F, 50% relative humidity.

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PROCEDURE:
(CONT.)

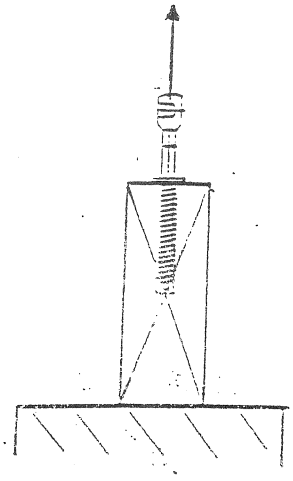

Figure No. 1

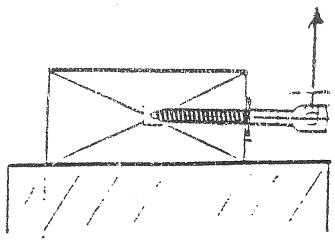

Figure No. 2

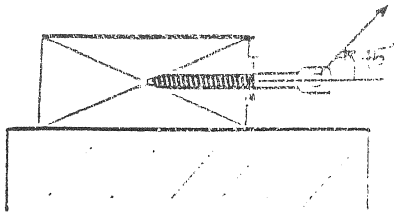

Figure No. 3

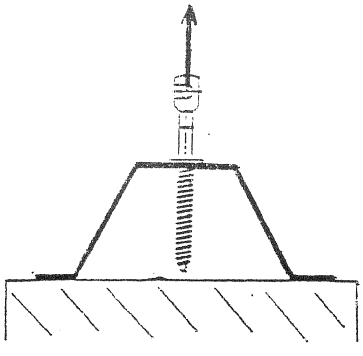

Figure No. 4

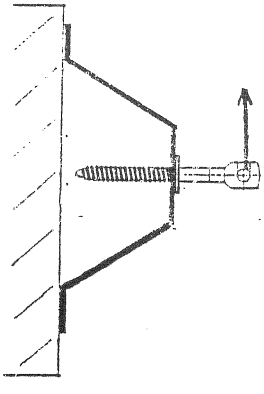

Figure No. 5

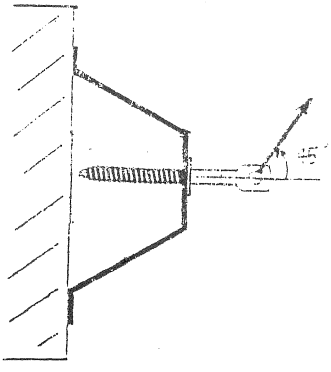

Figure No. 6

TEST DATES: Between December 9 and 10, 1996

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RESULTS:

Specimen	Maximum Load (lbs)	Deflection (in)
Wood, Tensile		
1*	900	0.550
2	1,020	0.521
3*	900	0.321
4	940	0.368
5	1,020	0.421
6*	1,040	0.321
7	1,050	0.391
8*	1,000	0.315
9*	1,080	0.356
10*	960	0.316
11	960	0.364
12	900	0.311
13	930	0.382
14	940	0.326
15	1,040	0.364
Average	980	0.375
Wood, Shear		
1*	235	0.797
2*	530	1.321
3*	300	0.865
4*	290	1.070
5*	220	0.706
6*	280	0.536
7	690	1.313
8*	230	0.879
9*	235	0.693
10*	240	0.670
11*	260	0.491
12*	270	0.581
13*	235	0.491
14*	190	0.740
15*	290	0.680
Average	300	0.789

* Failure occurred as a result of the fastener breaking in two at the washer. All other failures occurred as a result of the fastener pulling out of the wood.

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RESULTS: (CONT)

Specimen	Maximum Load (lbs)	Deflection (in)
Wood, 45 degrees		
1	840	0.683
2	750	0.881
3	420	0.687
4	740	0.767
5	800	0.918
6	510	0.705
7	550	0.874
8	380	0.547
9	780	0.997
10	535	0.796
11	510	0.699
12	720	0.891
13	635	1.040
14	585	0.828
15	620	0.642
Average	625	0.797

All failures occurred as a result of the fastener pulling out of the wood.

22-gauge steel, Tensile		
1	480	0.839
2	450	0.670
3	450	0.583
4	450	0.585
5	470	0.652
6	450	0.647
7	440	0.593
8	440	0.567
9	410	0.661
10	450	0.581
11	460	0.621
12	480	0.624
13	470	0.647
14	490	0.682
15	440	0.860
Average	455	0.654

All failures occurred as a result of the fastener pulling out of the metal.

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RESULTS: (CONT)

Specimen	Maximum Load (lbs)	Deflection (in)
22-gauge steel, Shear		
1	685	1.343
2	650	1.417
3	750	1.645
4	700	1.460
5	670	1.848
6	700	1.527
7	750	1.548
8	810	1.478
9	770	1.567
10	740	1.670
11	740	1.534
12	730	1.455
13	670	1.609
14	670	1.693
15	700	1.526
Average	715	1.555
22-gauge steel, 45 degrees		
1	510	0.895
2	550	0.838
3	550	0.873
4	540	0.846
5	560	0.840
6	540	0.887
7	540	0.661
8	550	0.765
9	560	0.819
10	520	0.948
11	380	0.790
12	380	0.722
13	460	0.727
14	500	0.652
15	510	0.706
Average	510	0.798

All failures occurred as a result of the fastener pulling out of the metal.