



# Q-PANEL

## Steel and Iron Phosphated Panels

### Summary

Q-PANEL® steel test substrates from Q-Lab minimize metal variability as a source of bias in critical tests. Made from standard low-carbon, cold-rolled steel, they are clean, consistent, convenient and economical. A wide range of panel sizes and types are available for immediate shipment from stock. Panels are stored completely clean and, in most cases, can be used right out of the box.

**Smooth Finish Steel Panels (Type QD, D, and DT)** have a smooth, bright finish. Type QD are 0.020 in (0.51 mm) thick, and are our smoothest panel. They are recommended for testing gloss and color, and are the best buy for many general applications. Type D and DT are very thin 0.010 in (0.25 mm), flexible panels. Type D offers the same smooth surface as Type QD, while Type DT panels are tin plated. These types are very inexpensive and are stocked in a limited number of sizes.

**Matte Finish Steel Panels (Type R)** are a dull matte mill finish produced by roughened rolls. This matte finish is representative of general purpose sheet metal applications. Because they are thicker, 0.032 in (0.81 mm), Type R panels are more rigid than Type QD.

**Ground (Polished) Finish Steel Panels (Type S)** are the same steel as Type R, with a thickness of 0.032 in (0.81 mm), but one side is polished by grinding it with an abrasive until the mill surface is completely removed. This imparts a smooth surface that looks similar to a “brushed” finish. The ground (or polished) surface frequently gives better adhesion results than a matte finish. Add a **(-DG)** for ground surfaces on both sides of any Type S panel (double ground).

**Painted Panels (Type WW, GW and WWS)** are pre-coated in gray or white to eliminate the time required to prime test substrates. They are also available with black stripes and other patterns to test the hiding ability of a coating. They are 4 x 6 in (102 x 152 mm) and .007 in (.18 mm) thick.

**Iron Phosphate Treatment (Type R-XX-I and Type S-XX-I)** panels are pretreated with Bond-erite M-FE 1000™, the most commonly used type of industrial iron phosphate. Q-PHOS panels incorporate a chrome seal and virgin deionized water rinse. Iron phosphated panels have a coating weight of 30-60 mg/ft<sup>2</sup> (323-646 mg/m<sup>2</sup>) and are 0.032 in (0.81 mm) thick.

**Stainless Steel (Type SS)** panels are made from 304 stainless, in two sizes: 1 x 3 in (25 x 76 mm) and 3 x 6 in (76 x 152 mm). They are 0.035 in (0.89 mm) thick and do not have a Q-shaped hole.

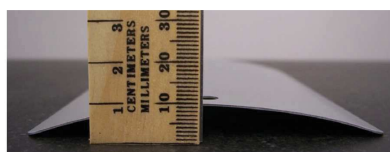
**Low Alloy Steel (Type HA and Type HN)** panels are made from AISI 4130 steel, which contains molybdenum and chromium as strengthening agents. These panels are 0.040 in (1 mm) thick. HA panels meet AMS 6350/6351 and HN panels meet AMS 6345. Type HA panels do not have a Q-shaped hole.

**Adhesive Panels (Ground Finish) (Type RS)** are stocked in a 1 x 4 in (25 x 102 mm) size and 0.063 in (1.6 mm) thickness for testing adhesives. One side has a surface finish similar to Type S. These panels are thicker and harder than regular steel, to resist the stress of lap shear testing. These panels do not have a Q-shaped hole.

**Taber® Abraser Panels (Type R-44-T and Type S-44-T)** are specially designed for use with the Taber Abraser Tester. They are 4 x 4 in (101 x 101 mm) and 0.032 in (0.81 mm) thick, with a hole in the center. Their surface finish corresponds with our Type R and Type S panels, respectively.

**Curved Panels (-CU)** are available on any standard aluminum (or steel) panel width shown below, with the crown heights as indicated. Min box quantity and nominal setup fee applies.

Panel Width	Standard Crown Height
3 in (76 mm)	0.25 ± 0.04 in (6.4 ± 1 mm)
4 in (102 mm)	0.38 ± 0.04 in (9.5 ± 1 mm)
6 in (152 mm)	0.63 ± 0.04 in (15.8 ± 1 mm)



## A) Q-PANEL Alloys, Mechanical Properties and Relevant Standards

CRS panel specifications (nominal) for steel panels: cold rolled steel, low carbon SAE 1008/1010

**Table 2. Mechanical Properties & Standards Met by Q-PANEL Test Substrates**

	Type QD	Type D	Type DT	Type R	Type S	Type HA & HN	Type WW, GW & WWS	Type SS	Type RS
<b>SAE Material Designation</b>	1008/1010	1008/1010	1008/1010	1008/1010	1008/1010	4130	1008	304	1008/1010
<b>ASTM Material Specifications</b>	A1008	A1008	A624	A1008	A1008	A505 & A506	—	A240 A666	A109
<b>ISO Material Specifications</b>	3574 Type CR1	3574 Type CR1	11949	3574 Type CR1	3574 Type CR1	—	—	15510: X5CrNi 18-9	—
<b>ASTM Panel Specifications</b>	D609-Type 3	D609-Type 3	—	D609-Type 1	D609-Type 2	—	—	—	D1002
<b>ISO Panel Specifications</b>	1514-Type 3	1514-Type 3	1514 Section 4.1	1514-Type 1	1514 Section 3.5.4	—	—	—	1514
<b>Roughness Ra (micro-inches)</b>	<20	<20	<20	25-65	20-45	20-40	60° Gloss Gray: 5-10 White: 10-20	<20	20-45
<b>Surface Finish</b>	Smooth	Smooth	Tinplate	Dull Matte	Ground	Dull Matte	Painted	2B	Ground
<b>Temper</b>	1/4 hard	T4	T2	1/4 hard	1/4 hard	—	1/2 hard	—	1/2 hard
<b>Hardness (Rockwell B)</b>	50-65	62-71	50-65	50-65	50-65	HA 70-80 HN 90-96	60-88	80-90	70-85
<b>Tensile Strength (MPa)</b>	310 - 448	310 - 448	262 - 400	310 - 448	310 - 448	HA 480 - 590 HN 655 - 760	—	650 - 700	379 - 517

## B) Q-PANEL Chemical Composition

The chemical composition of SAE 1008/1010 steel panels is 0.60% max Manganese, 0.15% max Carbon, 0.030% max Phosphorus, 0.035% max Sulfur. The chemical composition of SAE 304 stainless steel panels is 2% max Manganese, 0.08% max Carbon, 0.045% max Phosphorus, 0.030% max Sulfur, 0.75% max Silicon, 18-20% Chromium, 8-10.50% Nickel. The chemical composition of AISI 4130 steel is 0.40-0.60% Manganese, 0.28-0.33% Carbon, 0.035% max Phosphorus, 0.04% max Sulfur, 0.15-0.30% Silicon, 0.80-1.10% Chromium, 0.15-0.25% Molybdenum.

All Q-PHOS panels are made from the same premium steel as Q-PANEL standard steel substrates.