

Q-PANEL Standard Substrate Applications Guide

Q-PANEL® Type	Steel					Aluminum	
	D	QD	R	S	R-I	A	AL
Thickness (inches)	0.010"	0.020"	0.032"	0.032"	0.032"	0.025"	0.025"
Thickness (mm)	0.25 mm	0.5 mm	0.8 mm	0.8 mm	0.8 mm	0.64 mm	0.64 mm
Coating	-	-	-	-	phosphate	-	chromate
Finish	smooth	smooth	matte	ground	-	smooth	smooth
Roughness RMS (micro-inches)	<20 μ in.	<20	25-65	20-45	25-65	10-20	10-20
Roughness RMS (micro-meters)	<0.5μm	<0.5	0.63-1.65	0.50-1.14	0.63-1.65	0.25-0.5	0.25-0.5
VISUAL PROPERTIES							
Color Measurement	●	●	●	●	●	●	●
Gloss Measurement	●	●	◐	●	●	●	●
Wave Scan (orange peel)	●	●	◐	◐	◐	●	●
PHYSICAL PROPERTIES							
Abrasion - Taber	◐	◐	●	●	●	◐	◐
Abrasion - other	●	●	●	●	●	●	●
Adhesive (scratch, cross-hatch)	●	●	●	●	●	●	●
Adhesive (pull-off)	◐	◐	●	●	●	◐	◐
Impact	○	◐	●	●	●	◐	◐
Bend - Mandrel	◐	●	●	●	●	●	●
Bend - Zero t	●	●	◐	◐	◐	◐	◐
Gravelometer	○	◐	●	●	●	◐	◐
Film Thickness - wet film	●	●	●	●	●	●	●
Film Thickness -electronic dry film	● _i	● _i	● _i	● _i	● _i	● _i	● _i
Hardness - pencil	●	●	●	●	●	●	●
Hardness - rocker	◐	◐	●	●	●	●	●
CHEMICAL / ACID							
Chemical Resistance	◐	◐	●	●	●	●	●
Acid Resistance (coating itself)	◐	◐	●	●	●	●	●
Acid Resistance -corrosion of substrate	◐ _s	◐ _s	● _s	● _s	● _s	● _a	● _a
WEATHERING & CORROSION							
Corrosion - Salt Spray	◐ _s	● _s	● _s	● _s	● _s	● _a	● _a
Corrosion - Humidity / Condensation	◐ _s	● _s	● _s	● _s	● _s	● _a	● _a
Corrosion - Outdoor Natural Exposure	◐ _{st}	◐ _s	● _s	● _s	● _s	● _a	● _a
Accelerated Weathering	◐	●	●	●	●	●	●
Outdoor Weathering	◐ _t	◐	◐	◐	◐	●	●
SALES SAMPLES - BATCH RECORDS							
Sales Samples (light weight)	●	◐	◐	◐	◐	●	●
Batch Records (light weight)	●	◐	◐	◐	◐	●	●
BAKING AND CURING							
Baking / Curing - Liquid Coating	●	●	●	●	●	●	●
Baking / Curing - Powder Coatings	◐ _t	●	●	●	●	●	●

● = Best ↔ ○ = Not Suitable

i = good if your thickness instrument works on this metal

s = good if end use is on steel

a = good if end use is on aluminum

t = may be too thin for some applications



Q-PANEL Application Guide - Notes

Color Measurement, Haze Measurement: All types work well for most color and haze measurements

Gloss Measurement: Type R is rougher, and the texture may “telegraph” through some thin coatings.

Wave Scan (Orange Peel): This “Distinctness of Image” test requires an extremely smooth substrate.

Recommend Type QD, D, A or AL. Surface texture of Type R, S and R-I may “telegraph” through the coating.

Abrasion – Taber: Requires fairly strong and robust panel. Recommend Type R, S, or R-I.

Abrasion – Other: All types work well for most abrasion tests.

Adhesive – Scratch or Cross Hatch: all types work well for scratch adhesion.

Adhesive – Pull Off: Requires robust panel to prevent deformation during pull-off. Recommend R, S or R-I.

Impact: D is too thin; metal will often break in impact. QD, A, and AL will break in severe impacts.

Use R, S or R-I.

Bend – Mandrel: Most panels will work for most mandrel bends. If bending with just your fingers, recommend D, A or AL, because they are thinner and easier to bend. If using a bending jig with a handle, you can use thicker steel panels.

Bend – Zero Thickness: Thinner panels like D and QD are easier to bend. A and AL are too brittle and will crack when bent back 180° upon themselves.

Gravelometer: D is too thin and will dent and deform badly upon gravel impact. QD, A and AL will also usually deform too much. Deformation of the panel dissipates energy that is supposed to go into chipping the coating. Recommend R, S or R-I.

Film Thickness – Wet Film: Any type will work fine.

Film Thickness – Electronic Dry Film: Some electronic thickness instruments work only on steel or only on aluminum. Make sure the panel is made out of the appropriate metal for your instrument.

Hardness – Pencil: Any type will work fine.

Hardness - Rocker, Shore, Barcol, Pendulum: Any type will work fine.

Chemical Resistance: Any type will work fine.

Acid Resistance of Coating Itself: Any type will work fine.

Acid Resistance – Corrosion of Substrate: Use steel panels if end use is on steel; aluminum panels if end use is on aluminum.

Corrosion – Salt Spray and Humidity: Use steel panels if end use is on steel, aluminum panels if end use is on aluminum. Sometimes Type D panels are too thin. When using steel panels, be sure to protect the back side to avoid extraneous corrosion that may contaminate the test.

Corrosion – Outdoor Natural Exposure: Use steel panels if end use is on steel, aluminum panels if end use is on aluminum. Thinner steel panels like D or QD may be subject to wind damage.

Accelerated Weathering: Most types work fine. Accelerated weathering usually does not produce corrosion, so the type of metal is not critical. Type A and AL are a little more convenient because the back does not need to be protected to prevent rust.

Outdoor Weathering: Thin panels like Type D or QD may be subject to wind damage. Type A and AL may also be subject to wind damage, but they have the advantage of being free from corrosion that can interfere with viewing gloss and color loss. Type R and S and R-I are thick and strong, so they resist wind damage. However, remember to coat the back of steel panels to prevent extraneous corrosion. Type R-I panels produce better adhesion because of the phosphate coating.

Samples and Batch Records: Most people prefer the lightest panels; Type D, A or AL. Type AL panels usually provide better adhesion because they have a chromate pretreatment, so the paint will be less likely to scratch off.

Baking and Curing: Most types work fine. However, some types of powder coatings require a substrate with more mass than is found in the very thin Type D.

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