Q-PANEL Standard Test Substrates

Q-Lab Corporation

Dominique Miller

UK Sales Manager/Panels Specialist DACH

Click here to view the morning presentation.

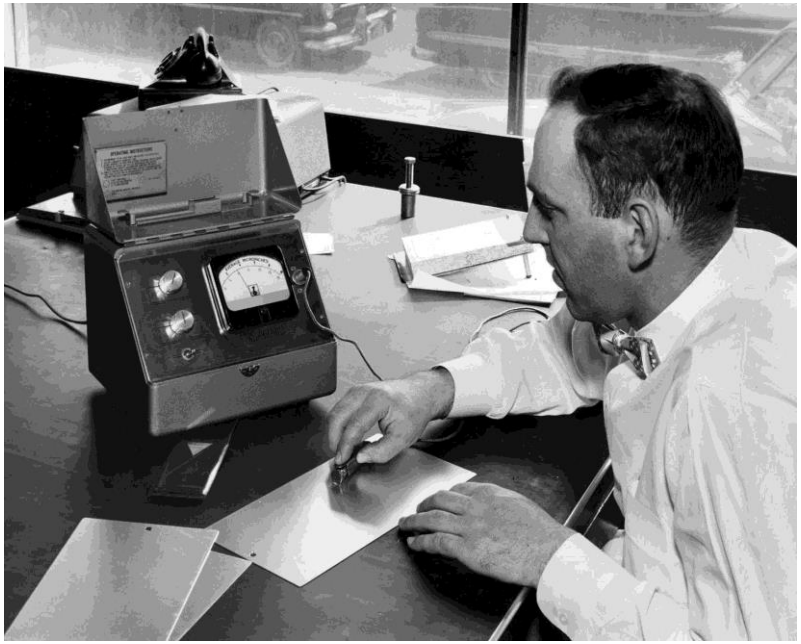
Click here to view the afternoon presentation.

Today's Agenda

- Q-PANEL history and overview
- Steel Q-PANELs
- Aluminium Q-PANELs
- Corrosion Coupons
- Automotive Refinishing Training System (ARTS)
- Custom Q-PANELs

Q-PANEL Standard Test Panels

1956



George Grossman founds Q-PANEL to fill a need for standard test panels for paint research

Today

Q-PANEL are the World's Most Widely Used Test Substrate for Paints

The “Q”-shaped hole

- Q-PANEL products are the most widely-recognizable test substrates due to the “Q” shaped hanging hole that gave our company its name.
- The Q-shaped hole also clearly indicates which side of the panel is guaranteed for testing.

Look for the Q-shaped hole.
It’s our trademark...
and your assurance of quality!

Advantages of Q-PANEL test substrates

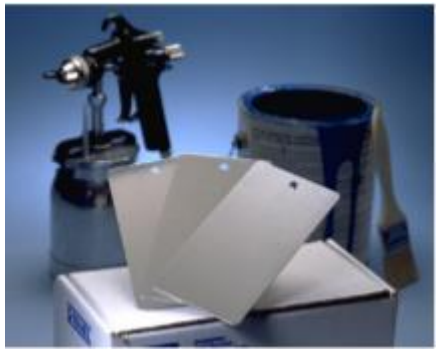
- **Quality**
  - Q-Lab stands behind every panel produced, standard or custom.
- **Cleanliness**
  - Oil-free, contaminate-free - use right out of the pack
- **Packaging**
  - Bare steel panels are wrapped in rust-proof paper
  - Aluminum and steel sheets are then packaged in smaller quantities in plastic bags
- **Standardization**
  - Same product every time
- **Price**
  - Competitive pricing, quantity discounts
- **Availability**
  - Stock in Westlake, Saarbrücken & Bolton

Q-PANELs are pre-cleaned

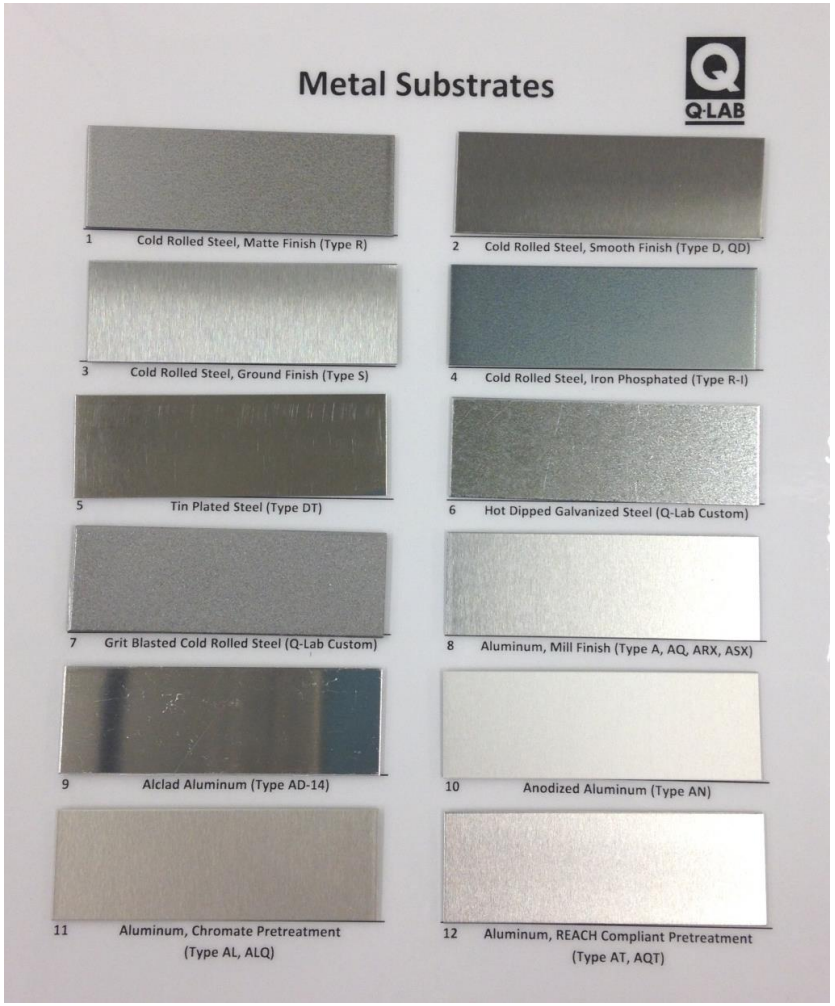
- The panels are carefully cleaned during the manufacturing process
- All oil residues and dirt that may be on the surface are removed
- In most cases, the substrates can be used directly from the pack
- In critical applications, it is sometimes necessary to remove traces of the rust inhibitor with distilled water and a cloth

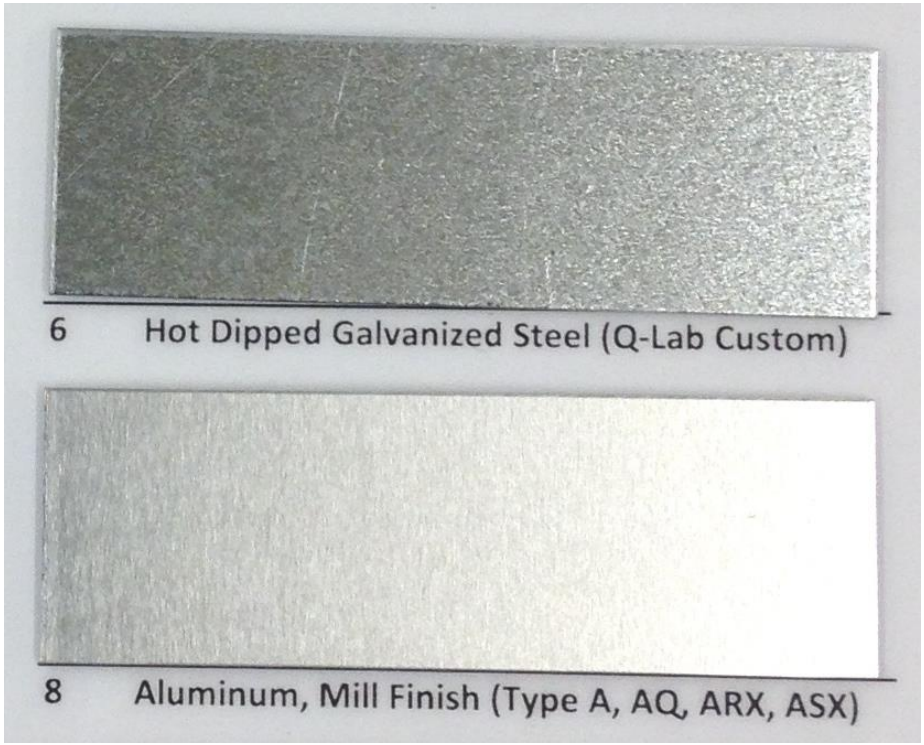
Standard Q-PANEL offerings

- **Aluminium**
  - Alloys 2024, 3003, 5005, 6061, 6063, and 7075
- **Steel**
  - Alloy SAE 1008/1010 CRS
- **Treated Al (Anodized & Chromated)**
  - Available in REACH-approved version
- **Phosphated Steel**
  - Available in REACH-approved version
- **Corrosion Coupons**
- Automotive Refinishing Training Systems (**ARTS**)



Standard Q-PANELs





Panel selector

Request a Custom Panel

METAL

Check All | Uncheck All

- ☐ Aluminum
- ☐ Aluminum (Alclad)
- ☐ Aluminum (Anodized)
- ☐ Aluminum (Bare)
- ☐ Aluminum (Chromated)
- ☐ Steel
- ☐ Steel (Bare)
- ☐ Steel (Iron Phosphated)
- ☐ Steel (Pre-Painted)
- ☐ Steel (Stainless)
- ☐ Steel (Tinplate)

TYPE

Check All | Uncheck All

- ☐ A
- ☐ AD
- ☐ AL
- ☐ AN
- ☐ AQ
- ☐ AQT
- ☐ AR
- ☐ ARX
- ☐ ASX
- ☐ AT
- ☐ CX
- ☐ D
- ☐ DT
- ☐ HA
- ☐ HN
- ☐ L
- ☐ QD
- ☐ R
- ☐ R-XX-I
- ☐ R-XX-ICF
- ☐ RS
- ☐ S
- ☐ S-XX-I
- ☐ S-XX-ICF
- ☐ SPA
- ☐ SPC
- ☐ SPR
- ☐ SS
- ☐ W

FINISH

Check All | Uncheck All

- ☐ #2B
- ☐ Dull Matte
- ☐ Ground (One Side)
- ☐ Mill
- ☐ Painted
- ☐ Smooth Mill
- ☐ Tinplate

WIDTH

Check All | Uncheck All

- ☐ 1
- ☐ 1.75
- ☐ 2
- ☐ 2.36
- ☐ 2.75
- ☐ 2.76
- ☐ 3
- ☐ 4
- ☐ 6
- ☐ 14
- ☐ 15
- ☐ 24

LENGTH

Check All | Uncheck All

- ☐ 2
- ☐ 3
- ☐ 3.5
- ☐ 4
- ☐ 5
- ☐ 5.51
- ☐ 5.9
- ☐ 6
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 12
- ☐ 24
- ☐ 34

THICKNESS

Check All | Uncheck All

- ☐ 0.007
- ☐ 0.010
- ☐ 0.020
- ☐ 0.025
- ☐ 0.032
- ☐ 0.035
- ☐ 0.040
- ☐ 0.047
- ☐ 0.063
- ☐ 0.125

Submit

◉ Inches (in) ○ Millimeters (mm)

Q-PANEL Naming Convention

A-36

Material Type

Size

Width × Height

(given in inches)

Q-PANEL Naming Convention

R -412

Material Type

Size

Width × Height

(given in inches)

Steel Q-PANELs

Steel Q-PANELs summary

Description	Type	Comment
Smooth finish	QD, D, DT	General applications, gloss and color
Matte finish	R	General sheet metal
Ground finish	S	Improved adhesion (-DG for double ground)
Painted	WW, GW, WWS	Eliminated need for priming
Iron Phosphated	-I, -ICF	Improved adhesion
Stainless steel	SS	Corrosion resistant
Low alloy	HA, HN	Mo and Cr included for strengthening
Adhesive	RS	Resists stresses of lap shear testing
Taber Abraser	-T	Abrasion testing
Curved	-CU	Available on any 3”, 4”, or 6” steel panels

Type QD, R, S
Steel Panels

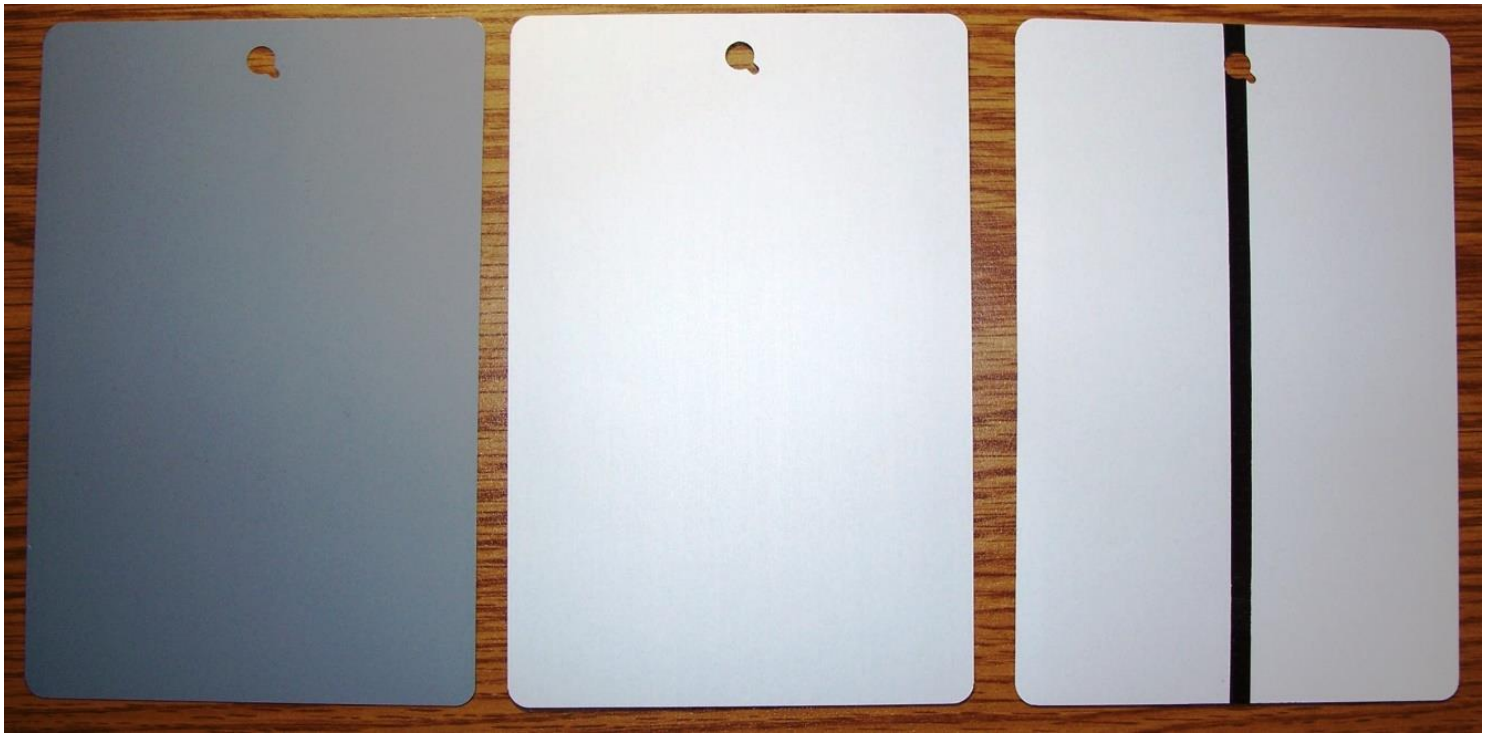
Type	QD	R	S
Thickness (mm)	0.51	0.81	0.81
Finish	Smooth	Matte	Ground, one side
Roughness (R_a, µm)	<0.5	0.6 – 1.6	0.5 – 1.1

Type DG
Double Ground Panels

Any Type S Panel with a ground finish can have that finish applied to both sides

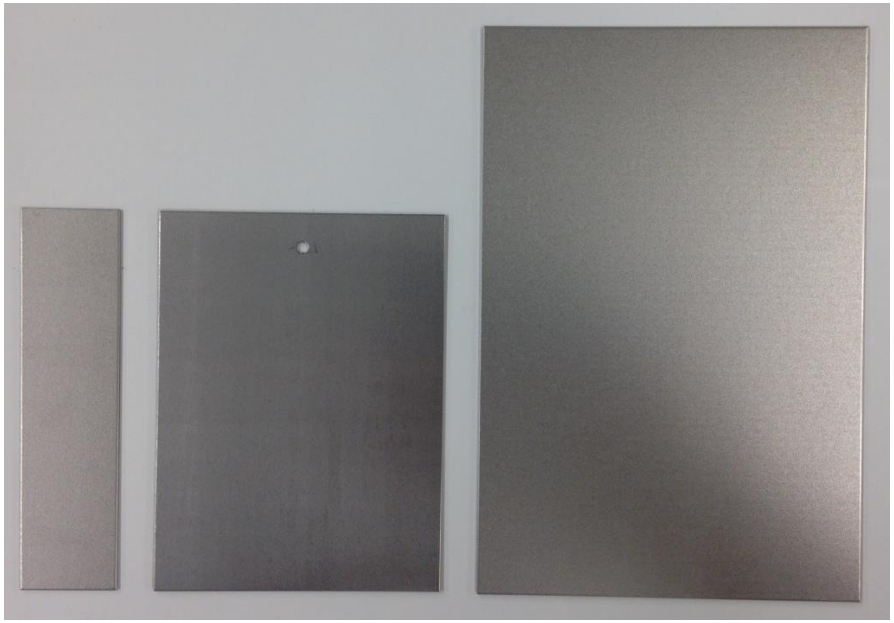
Type GW, WW, WWS
Pre-painted Steel

- Pre-primed panel for automotive refinishers
- 0.0072” (0.18 mm), flexible



Type HA & HN
Low Alloy Steel

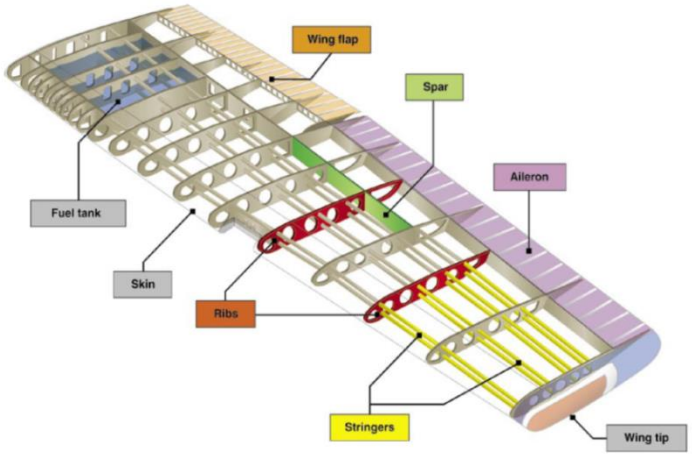
- 4130 Cr-Mo Steel
  - High Strength Steel
  - Can be welded
  - Used in many applications
- Very strong and hard
  - Better for heat treatment
  - Best for welding purposes
  - Best for machining processes
- Prone to corrosion; must be protected
  - Manganese phosphating
  - Zinc phosphating
  - Electroplating



Type HA & HN
Low Alloy Steel

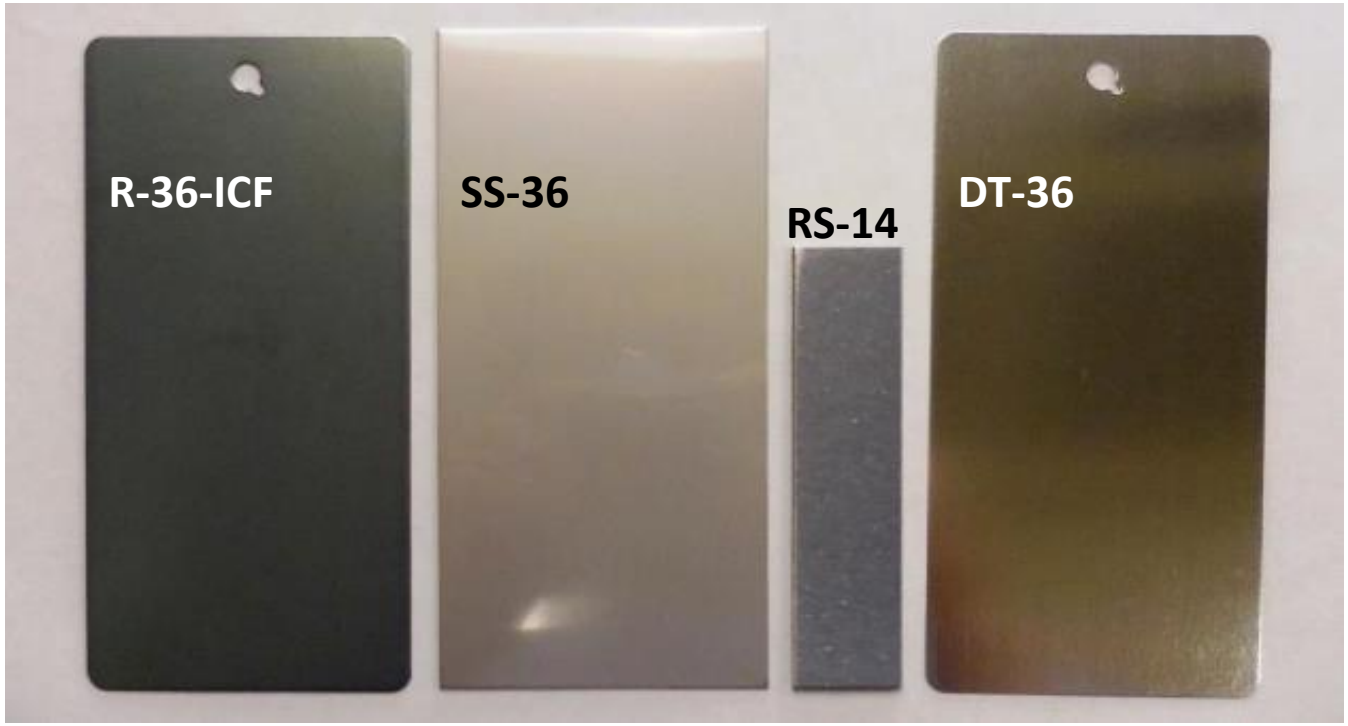
- Commonly used in structural applications
  - Gears
  - Fasteners
  - Aircraft parts

- Used to make tubing
  - Bicycle frames
  - High-pressure piping
  - Firearm parts
  - Roll cages
  - Oil drilling pipe



Type –ICF, SS, RS, DT

Additional Steel Panels



Type	-ICF	SS	RS	DT
Description	Iron phosphated steel with Chrome Free (CF) sealer	Type 304-2B stainless steel, bright finish	SAE 1010 Cold Rolled Steel w ground finish on one side	Tin plated steel, smooth finish

Aluminium Q-PANELs

Aluminium Q-PANELs summary

Description	Type	Comment
Bare aluminium	A, AQ, ARX, ASX, AGX	Standard Al offerings, mill finish
Anodized aluminium	AN	Anodized for improved corrosion resistance
Extruded aluminium	AEX	For Qualicoat and GSB etch rate testing
Chromated	AL, AT, AQT	Chromium conversion treatment to improve paint adhesion and resistance to underfilm corrosion
Adhesive	AD, AR	Heavy gauge to resist adhesive testing stress
Auto styling	SPC, SPA	Curved to mimic automobile side panels
Large display	L	Large-format products
Curved	-CU	Available on any 3”, 4”, and 6” aluminium panels

Type A, AQ

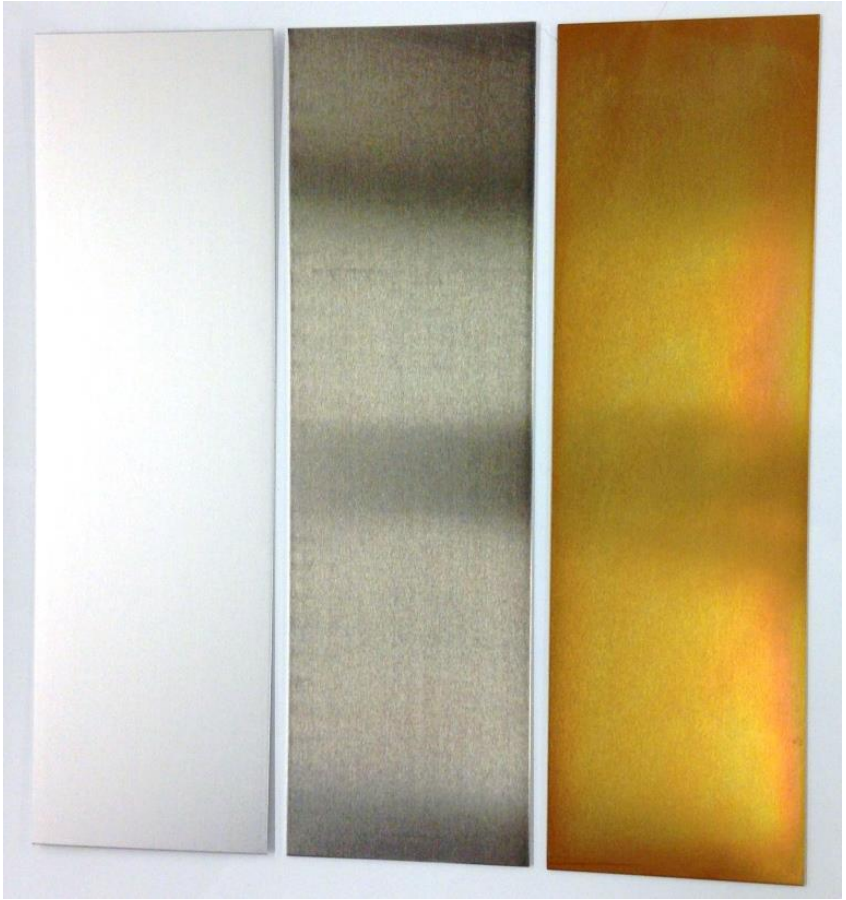
Aluminium Panels, Mill Finish

Type	A	AQ
Alloy	3003-H14	5005-H24
Thickness (mm)	0.64 mm	0.81 mm

Type ARX and ASX
Aircraft Grade Aluminium

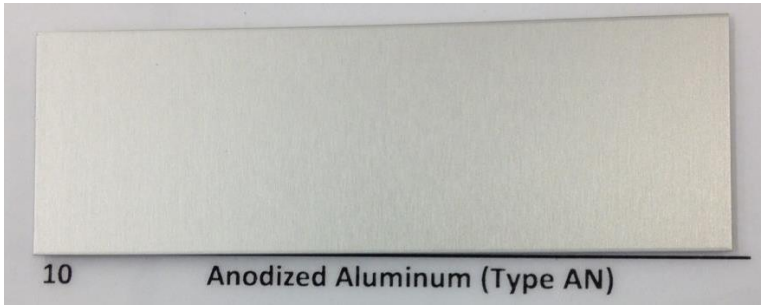
- **ARX** - 2024 T3 bare aluminium
- **ASX** - 6061 T6 bare aluminium
- **AGX** - 7075 T6 bare aluminium

- High Strength-to-Weight Ratio
- Good Fatigue Resistance
- Used in aircraft and watercraft
- Military Standards require 3 × 10” panels
  - MIL-DTL-5541 - chromating
  - MIL-A-8625 – anodizing
- Used to verify the corrosion resistance of chromating and anodizing processes



Type AN
Anodized Aluminium Panels

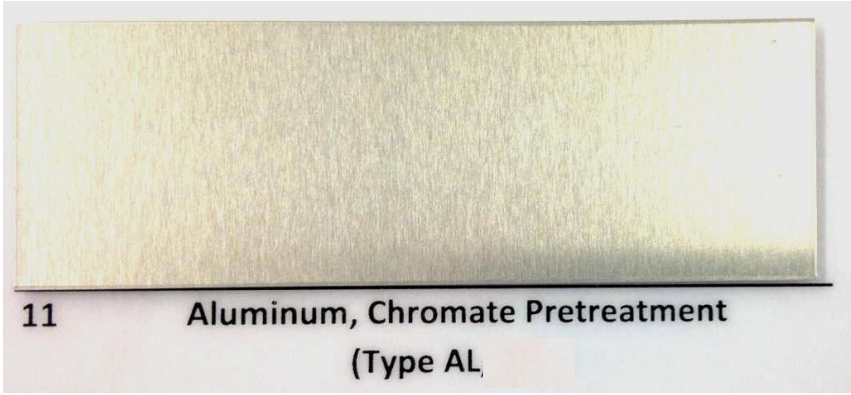
- Anodized per MIL-A-8625 Type II, Class 1



- “Filler” panels in specimen holders for QUV (3 x 6”) and Q-SUN testers (2 x 4”)

Type AL
Chromated Aluminium Panels

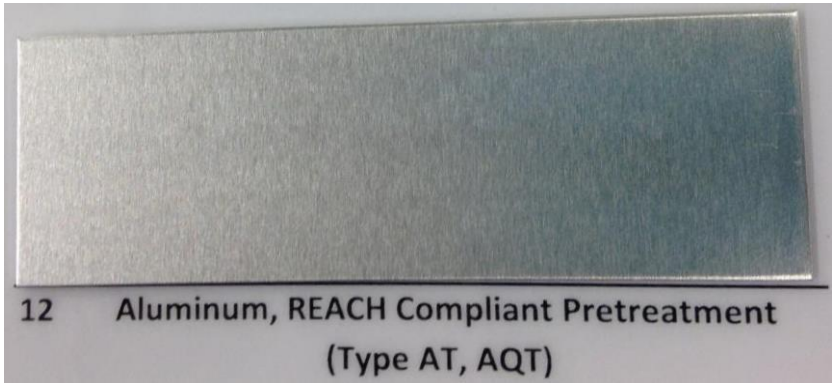
- Pretreated with a conversion coating of chromium trioxide (CrO_3), which contains hexavalent chrome (Cr^{6+})



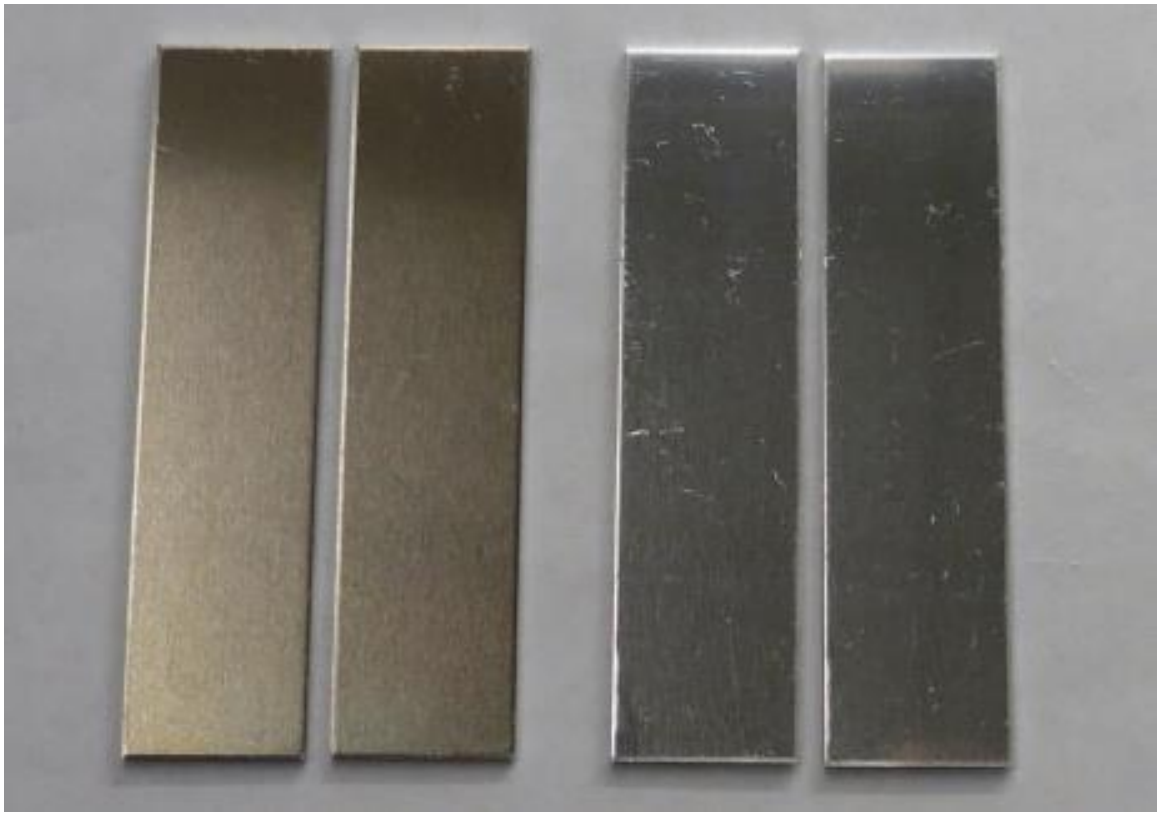
- Restricted by REACH legislation as a Substance of Very High Concern
- Not sold in EU but available elsewhere

Type AT/ATQ
Chromated Aluminium Panels

- "T" for Trivalent Chrome (Cr^{3+}) conversion coating pretreatment
- REACH-compliant alternatives to Type AL and ALQ
- Available in EU
- Performance generally comparable to AL

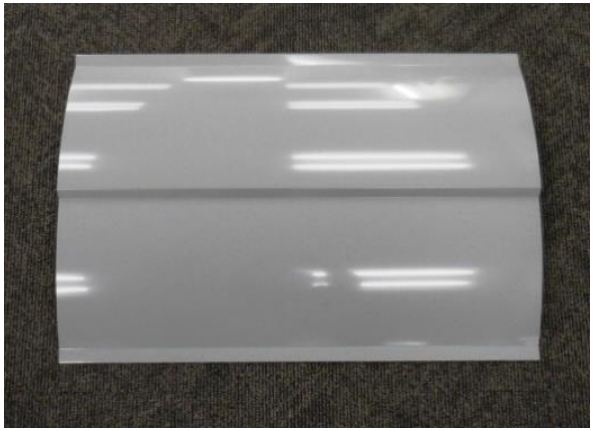


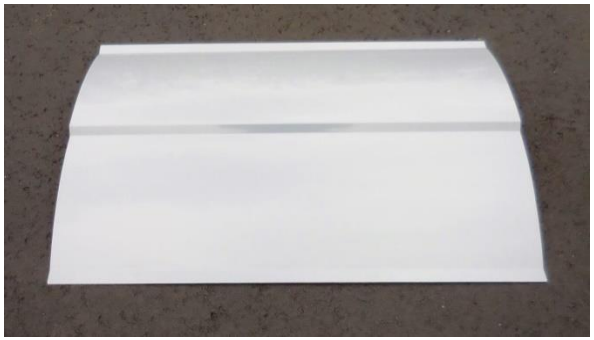
Type AR, AD
Aluminium Adhesive Panels



Used for lap shear adhesion testing per ASTM D1002

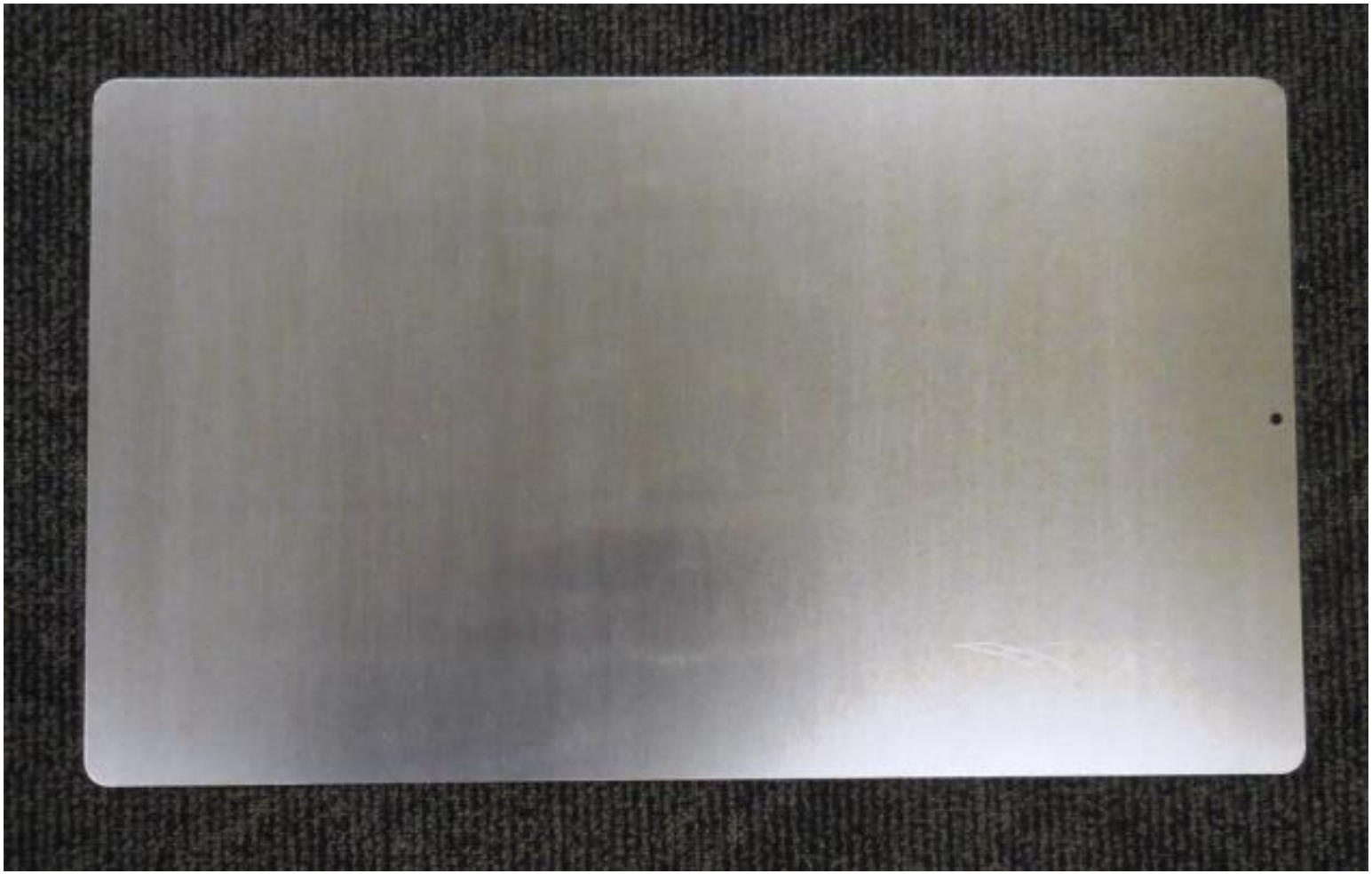
Type SPC
Auto Styling Panels





Type L

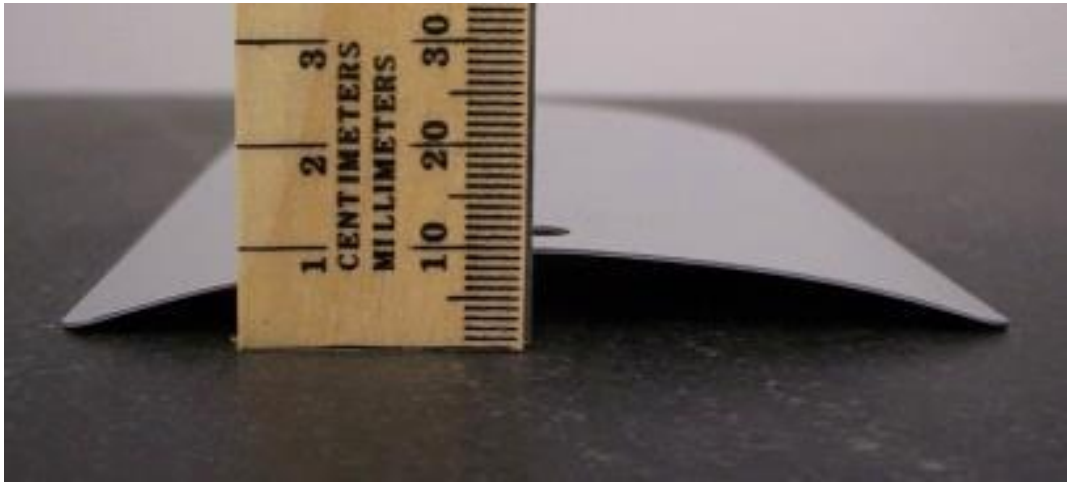
Large Display Aluminium Panels



Curved Panels (- CU)

Standard steel and aluminium panels available as -CU

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



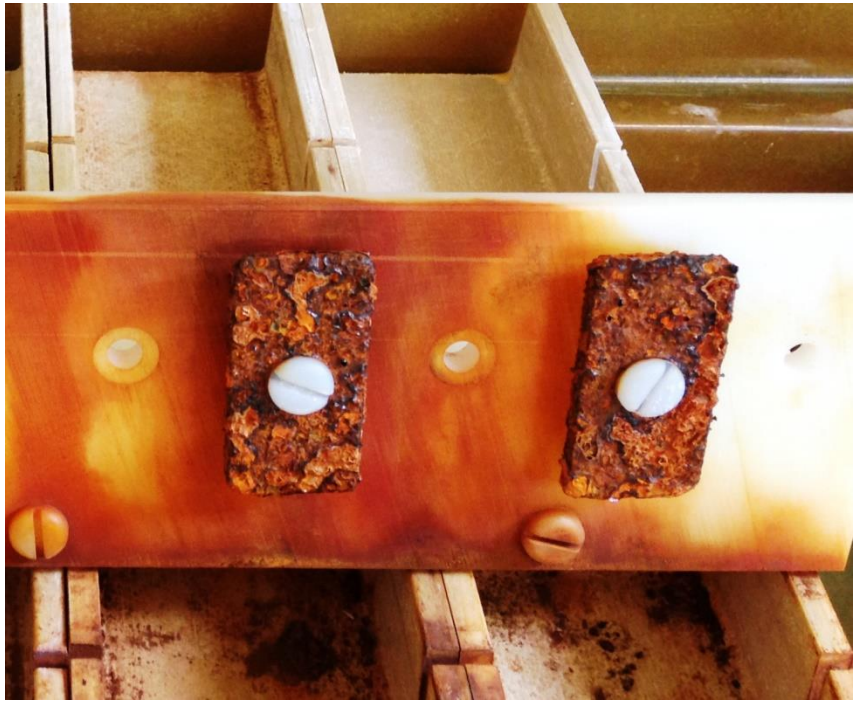
Corrosion Coupons
(a.k.a. Mass Loss Coupons)

Corrosion Test Coupons

CX Series

Corrosion Test Coupons
CX Series

- Ensure repeatability and reproducibility
- Monitor test conditions
- Measure mass loss as the test progresses
- Pre-cleaned and ready to use



Corrosion Test Coupons

CXB-12

- 25 × 51 × 3 mm
  (1 × 2 × 0.125”)
- GMW 14872, 9540P
  SAE J2334, J2721
- 30 panels per kit (box)

Corrosion Test Coupons
CXC-35

- 76 × 127 × 0.80 mm (3 × 5 × 0.032”)
- ASTM B117
- 30 panels per kit (box)

Corrosion Test Coupons
CXD-2.76-5.90

- 70 × 150 × 1.20 mm
  2.76 × 5.90 × 0.047”
- ISO 9227
  - NSS, AASS, CASS
- VDA-233-102
- 30 panels per kit (box)

Automotive Refinishing Training System (ARTS)

Automotive Refinishing Training System (ARTS) Cart

Automotive Refinishing Training System

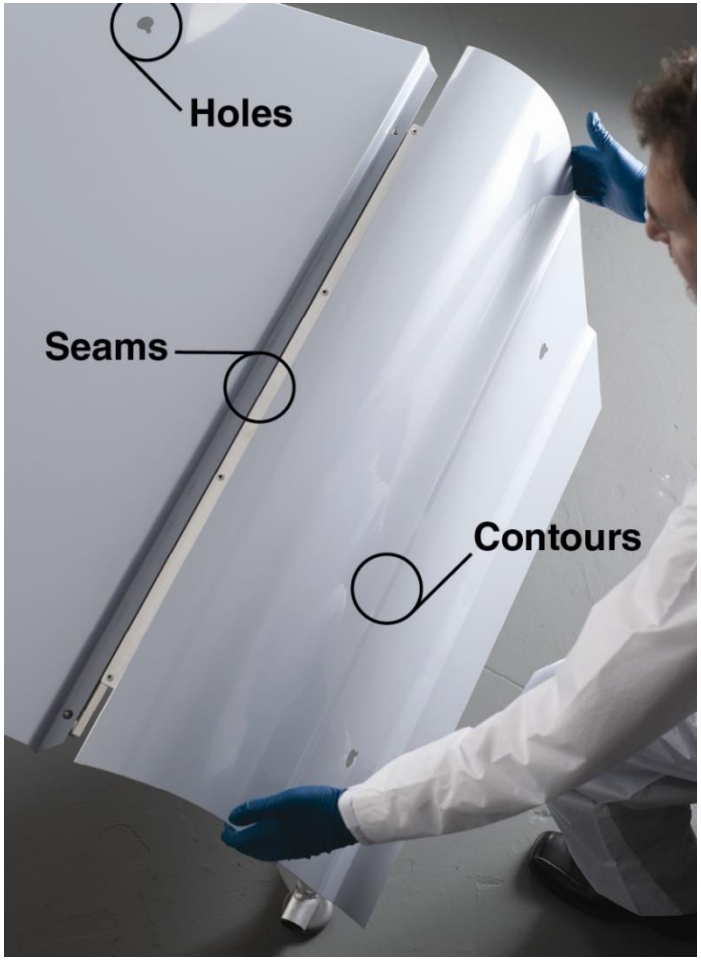
- Great for testing automotive paint on large surfaces
- Used to train painting technicians
- Used in Automotive OEM paint lines for QC and development

Automotive Refinishing Training System

Easy Storage and Transportation

Automotive Refinishing Training System

Ease of Use



- Panels can be changed easily by one person
- Panels mimic auto body features

Custom Q-PANELs

Custom Q-PANEL offerings

- Materials
  - Copper, Brass, Magnesium, Titanium, Hot Rolled Steel, Stainless Steel, Nickel, Tin, various Aluminium alloys
  - **If the material can be sourced and processed, we will quote the customer.**
- Thicknesses & sizes
  - Aluminium max. thickness: 0.250” thick (6.35 mm)
  - Steel max. thickness: 0.125” thick (3.18 mm)
- Hole sizes & placements
- Markings & Stamps
  - Stamp lot numbers / serialized / alloys

Custom Q-PANEL offerings

Q-PANEL Support Staff

Europe / Middle East - Bolton, UK (Q-Lab Europe)

- Dominique Miller– Q-PANEL Product Specialist
  - +44 7703 330 922
  - dmiller@q-lab.com

Worldwide - Westlake, OH (Global HQ)

- Robert Little – Q-PANEL Product Engineer
  - 1+440-835-8700 ext. 257
  - rlittle@q-lab.com

- Melissa Precise – Q-PANEL Product Specialist
  - 1+440-835-8700 ext. 292
  - mprecise@q-lab.com

Questions?

info@q-lab.com