Q-Panel标准测试基板

张恒

Q-Lab Corporation

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Q-Lab新网络研讨会系列

今天是本季度Q-Lab耐候腐蚀测试系列讲座四场新网络研讨会的第三场

所有即将举行和存档的网络研讨会，都可以访问:
q-lab.com/webinars

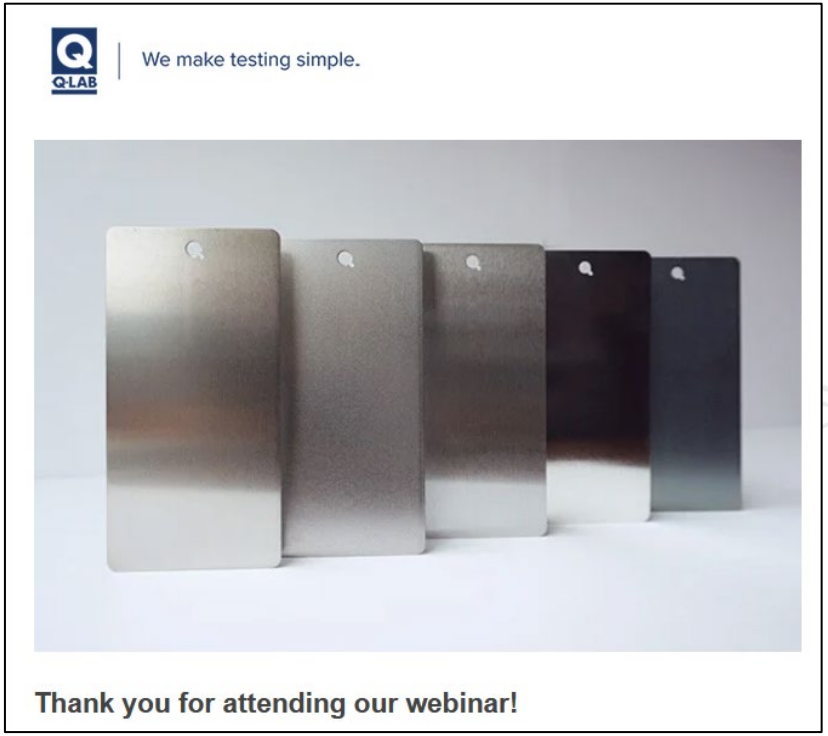
日期	主题
8月28日	测试标准的制修订
9月4日	黑板的选择
9月18日	**Q-Panel标准基材**
	如何安排比对测试

We make testing simple.

提示

您将收到info@email.q-lab.com的后续电子邮件, 其中包含回访链接、注册以后的网络研讨会, 以及下载幻灯片.

今天就使用Zoom中的问答功能，向我们提问吧!



今日议程

- Q-Panel历史和概述
- 钢制Q-Panel
- 铝制Q-Panel
- 腐蚀标准板
- 汽车修补培训系统(ARTS)
- 定制Q-Panel
- Q-Panel资料

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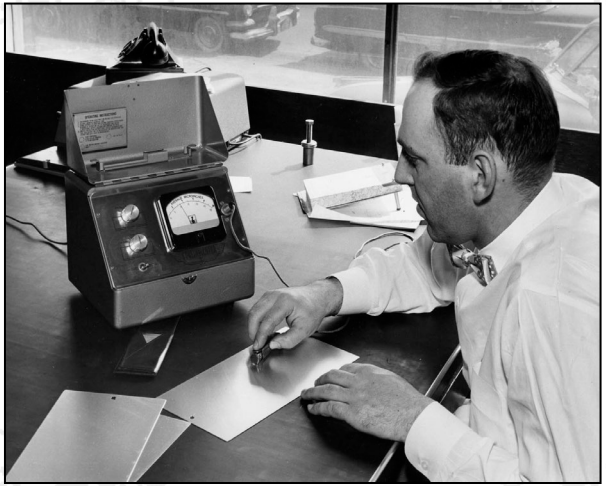
Q-Panel标准测试基板

1956



George Grossman创立Q-Panel以满足涂料研发标准测试板的需求

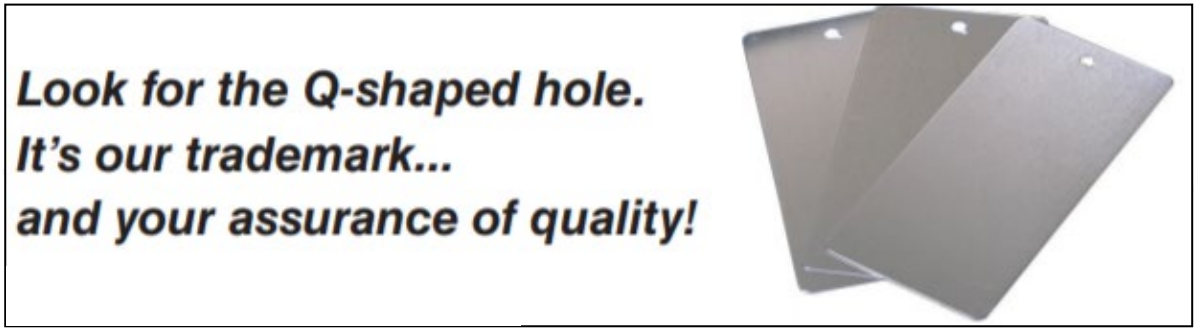
今天

Q-Panel是全球使用最广泛的涂料用测试基板

We make testing simple.

“Q”-形孔

- Q-Panel是最广泛-测试基板, 从“Q”形挂孔可识别.
- Q-形孔也清楚地显示板子的哪一面用于测试.



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What Makes It a Q-PANEL?

Q-SHAPED HOLE
It's our trademark and your assurance of quality. Accept no substitutes.

PRE-CLEANED
Special pre-cleaning processes allow most Q-PANEL substrates to be used right out of the box.

BURR-FREE EDGES
A deburring process ensures that all Q-PANEL edges are safe and easy to handle.

SHIPPED FROM STOCK
Nearly all Q-PANEL substrates are available for shipping within 24 hours from order placement.

COST-EFFECTIVE
Q-PANEL substrates are priced low because of high-volume production efficiency.

HIGH-QUALITY METAL
Q-Lab has special relationships with select, trusted, and strategic mills to ensure consistent quality.

STANDARDIZED SURFACES
A variety of finishes are available to reproduce different real-world metal surfaces, such as smooth mill, matte, and ground. Strict quality control processes ensure that these surfaces deliver repeatable and reproducible test results.

SPECIAL PACKAGING
Steel substrates are carefully packaged with a vapor phase rust inhibitor to guarantee pristine surface quality free of oil stains, with a shelf life of years.

EXPERIENCE
Q-Lab provides expert-level applications assistance to help get the most out of testing with your Q-PANEL substrates. We can help you understand the best panel selections for a wide variety of uses and industries.

NO-NONSENSE WARRANTY
Q-Lab offers a complete, 100% warranty on Q-PANEL substrates. Just return them for any reason if you're not satisfied.

Q-Panel基板是经过预清洁的

- 板子制造过程中经过仔细清洁
- 去除所有表面油迹和污渍
- 在大多数情况下, 板子可直接从包装中取出使用
- 某些特殊用途, 有时需要用去离子水和布去除防锈剂痕迹
  - 部分还提供塑料保护膜, 避免在运输过程中板子的磨损

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Q-Panel命名方法

AN-36

材质
型号和前处理

尺寸
宽×高
(英制)

Q-PANEL

Aluminum Panels

Summary

Q-PANEL® aluminum test substrates from Q-Lab minimize metal variability as a source of bias in critical tests. Made from high quality aluminum, 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.

Panel Type & Description	Stock Number	Size W × L (in) (± 0.04, except as noted)	Thickness (in) (± 0.002, except as noted)	Size W × L (mm) (± 1, except as noted)	Thickness (mm) (± 0.05, except as noted)	Box Qty	In Stock? US	In Stock? EU
Type AN Anodized Surface Smooth Mill Finish	AN-36	3 × 6	0.025	76 × 152	0.64	500	●	●
	AN-46	4 × 6	0.025	102 × 152	0.64	250	●	●
	AN-612	6 × 12	0.025	152 × 305	0.64	125	●	●

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钢制Q-Panel基板

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通常用途钢制Q-Panel汇总

描述	型号	目的
光滑打磨	QD, D	通常用途, 光泽和颜色
哑光打磨	R	通常钣金
深度打磨	S	提升附着力
铁系磷化	-I, -ICF	提升附着力(S & R板子)
预涂	GW, WW, WWS	带底涂

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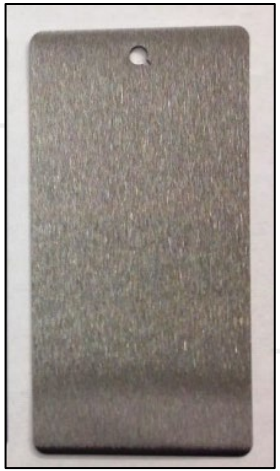
一般用途钢板: 型号QD, D, R, S



型号	QD	D	R	S
厚度(mm)	0.51	0.25	0.81	0.81
打磨	光滑	光滑	粗糙	深度, 单面
粗糙度(R_a, μm)	<0.5	<0.5	0.6–1.6	0.5–1.1
用途	颜色/光泽, 硬	颜色/光泽, 柔韧	物理/化学测试	统一打磨

符合SAE A1008标准

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一般用途钢板: 型号QD, D, R, S

SMOOTH (D, QD)

MATTE (R)

GROUND (S)

型号	QD/D	R	S
厚度(mm)	0.51/0.25	0.81	0.81
打磨	光滑	粗糙	深度, 单面
粗糙度(R_a, µm)	<0.5	0.6–1.6	0.5–1.1
用途	颜色/光泽	物理/化学测试	统一打磨

符合SAE A1008标准

We make testing simple.

铁系磷化钢板: 型号–I, -ICF

型号R和S板子经Bonderite M-FE1000™处理, 最常用的工业铁系磷化牌号

- 型号–I板子含铬, Bonderite M-PT60.
- 型号-ICF符合REACH/RoHS认证的无铬(-ICF), Bonderite M-PT99X.

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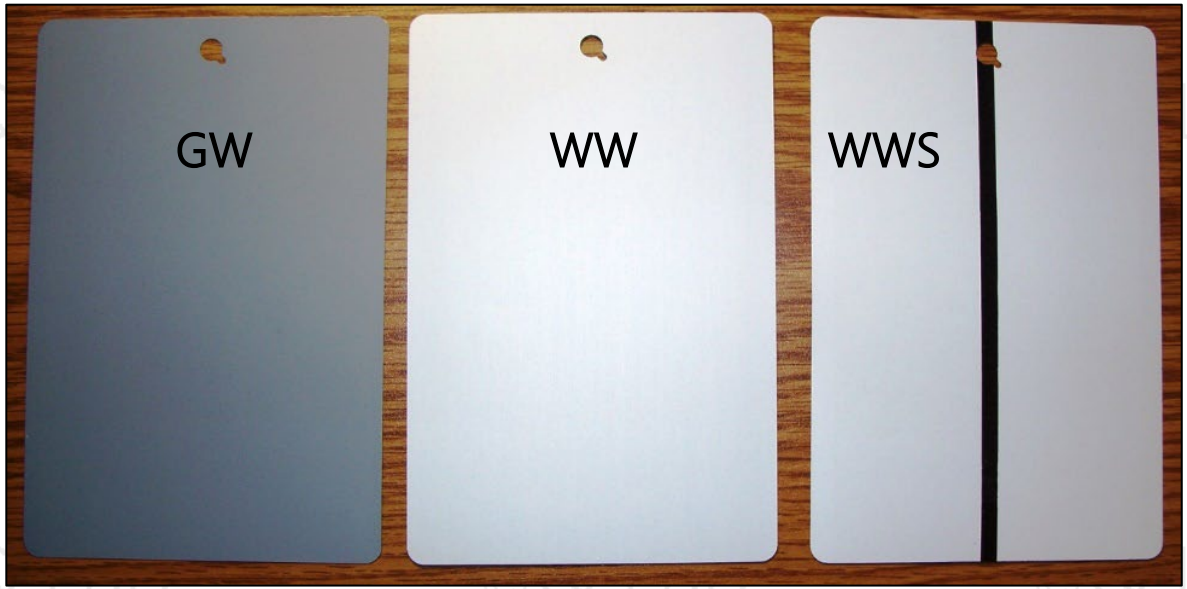
预涂钢板: 型号GW, WW, WWS



- 带底漆的板子用于汽车修补
- 0.0078”(0.20mm), 质地柔韧

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特制Q-Panel钢板汇总

描述	型号	详情
不锈钢板	SS	耐腐蚀, 剪切强度测试
粘接	RS	剪切强度测试
马口铁	DT	测试镀锡用途
低合金	HA, HN	含 Mo 和 Cr 增强
磨耗测试	-T	磨耗测试

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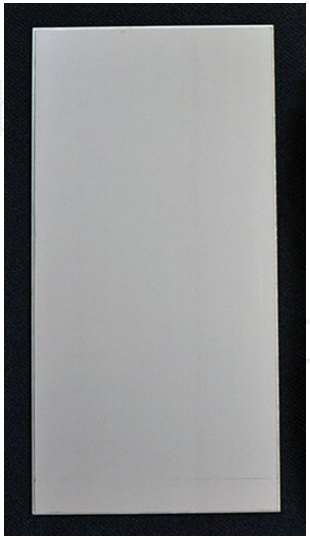
特制钢板: 型号SS, RS, DT



型号	SS	RS	DT
描述	型号304-2B不锈钢板, 光亮打磨	SAE 1010冷轧钢板 单面深度打磨	镀锡钢板, 光滑打磨

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低合金钢板: 型号HA&HN

- 4130Cr-Mo钢板
  - 高强度, 可焊接
  - 用于在许多用途
- 强度和硬度
- 更适合热处理
- 最适合加工工艺
- 容易腐蚀; 需要保护
  - Mn/Zn磷化
  - 电镀

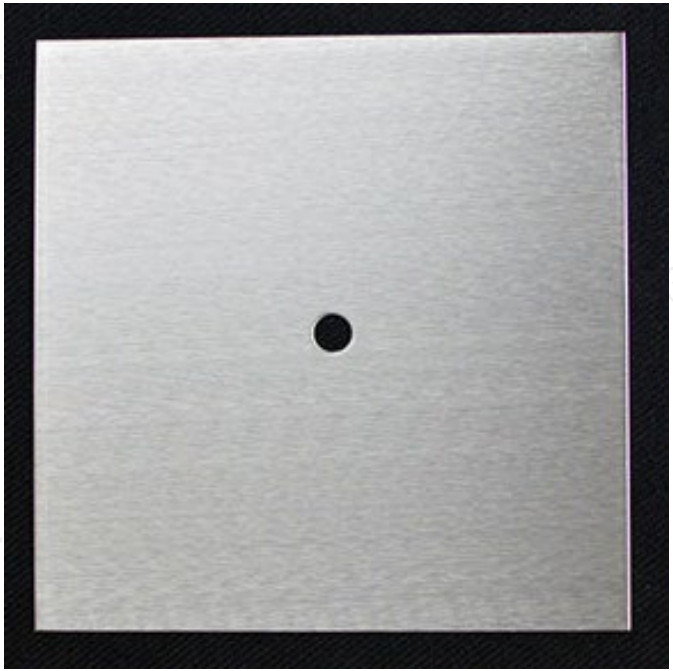
HA-14
符合AMS 6350/6351标准

HN-34
符合AMS 6345标准

We make testing simple.

Taber磨耗: 型号-T

- 特殊尺寸102×102mm(4×4”), 中间打孔, 用于安装在磨耗测试机的转盘上.
- 相同钢板和厚度
  型号R和S



We make testing simple.

铝制Q-Panel基板

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一般用途铝制Q-Panel汇总

描述	型号	详情
表面未处理铝板	A	标准铝板, 打磨
阳极氧化铝板	AN	阳极氧化以提升耐腐蚀性
铬化铝板	AL, AT	铬化, 提升涂料附着力, 改善膜下腐蚀

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一般用途铝板: 型号A, AN, AL/AT

型号	A	AN	AL/AT
打磨	光滑打磨	阳极氧化	铬化
用途	通用	耐候/腐蚀	提升附着力

3003-H14铝合金, 0.64mm(0.025in)厚

We make testing simple.

一般用途铝板: 型号A, AN, AL/AT

MILL FINISH *(A)*

ANODIZED FINISH *(AN)*

CHROMATED FINISH *(AL, AT)*

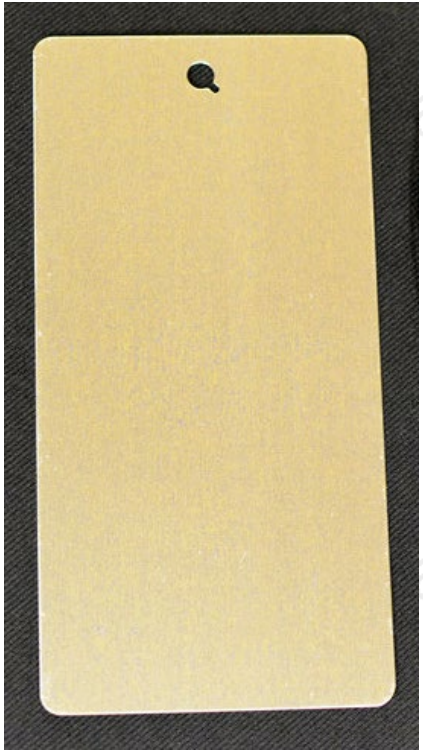
型号	A	AN	AL/AT
打磨	光滑打磨	阳极氧化	铬化
用途	通用	耐候/腐蚀	提升附着力

3003-H14铝合金, 0.64mm(0.025in)厚

We make testing simple.

铬化铝板: 型号AL

- 六价铬(Cr^{6+}) 涂层预处理
- REACH法规明确禁止的物质
- 不在欧盟销售; 其他地区可以销售



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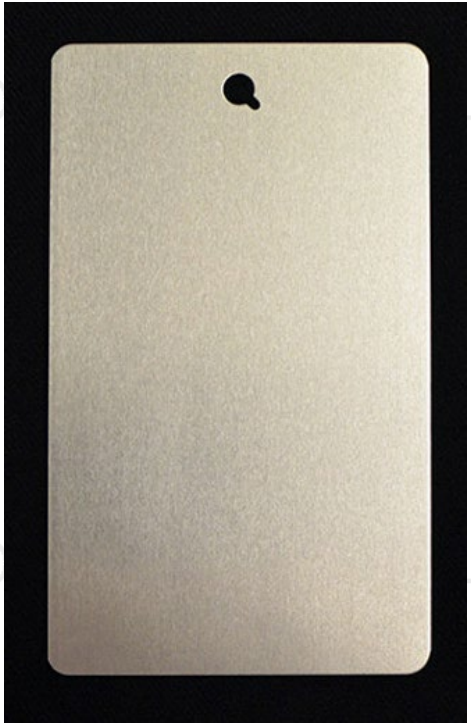
铬化铝板: 型号AT

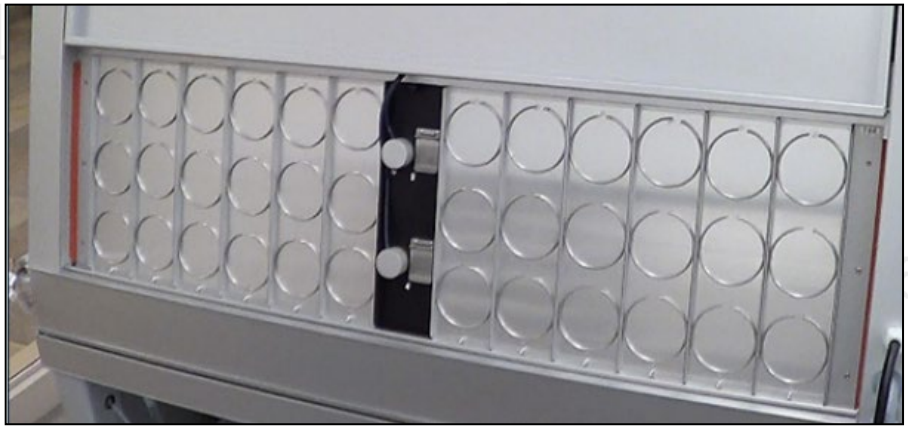
- “T”代表三价铬(Cr^{3+}) 涂层预处理
- REACH-合规，替代AL型号
- 在欧盟和世界其他地区有售



We make testing simple.

阳极氧化铝板: 型号AN

- 阳极氧化根据MIL-A-8625型号II, Class1
- “背板” QUV样品架中(3×6”), Q-SUN样品架(2×4”)
- 也有其他尺寸



We make testing simple.

特制铝板Q-Panel汇总

描述	型号	详情
未表面处理铝板	AQ	Qualicoat 铝板, 光滑打磨
铬化铝板	AQT	Qualicoat 铝板; 铬化处理以提升涂料附着力, 改善膜下腐蚀性能
型材铝板	AEX	Qualicoat 铝板, GSB蚀刻率测试
未表面处理铝板	ARX, AGX, ASX	光滑打磨, 可选PE膜单面保护, 用于飞机/军工用途
粘接铝板	AD, AR	高强度, 用于粘接强度测试
汽车造型板	SPC, SPA	曲面形状, 模仿汽车侧面板

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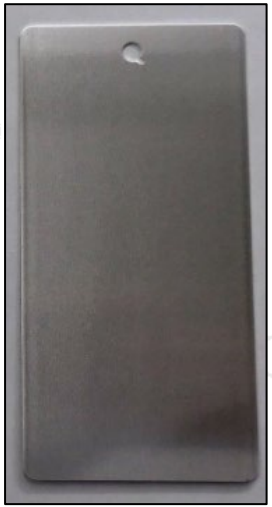
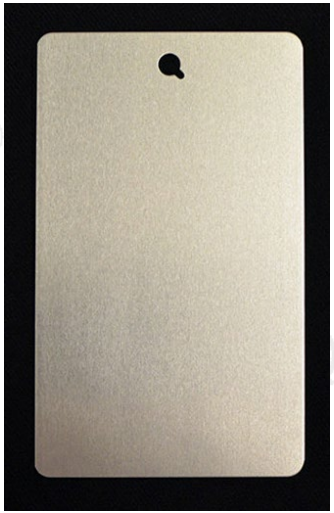
Qualicoat板子: 型号AQ, AQT, AEX





型号	AQ	AQT	AEX
铝合金	5005-H24	5005-H24	6063T5/T6
厚度(mm)	0.81	0.81	0.81
注	表面未处理	三价铬	型材

We make testing simple.

Q-Panel基板用于QUALICOAT测试

- Q-Panel标准基材可以用于各种QUALICOAT测试
- Q-Panel基板符合QUALICOAT的要求，也是加速耐候测试的理想选择
  - Classes1, 1.5, 和 2
  - ISO16474-2 方法 A 1, 000小时
- 4”×12”Q-Panel基板，适合新颜色和粉末涂层，佛罗里达户外暴露的验证需求

Q-Panel	QUALICOAT规定	测试型号
AQ	2.6, 2.7, 2.8	机械测试
	2	通常涂层部件测试
	2.2	耐刮擦测试
AEX-26	2.10, 2.11	腐蚀测试
	3.2.1	蚀刻率测试

We make testing simple.

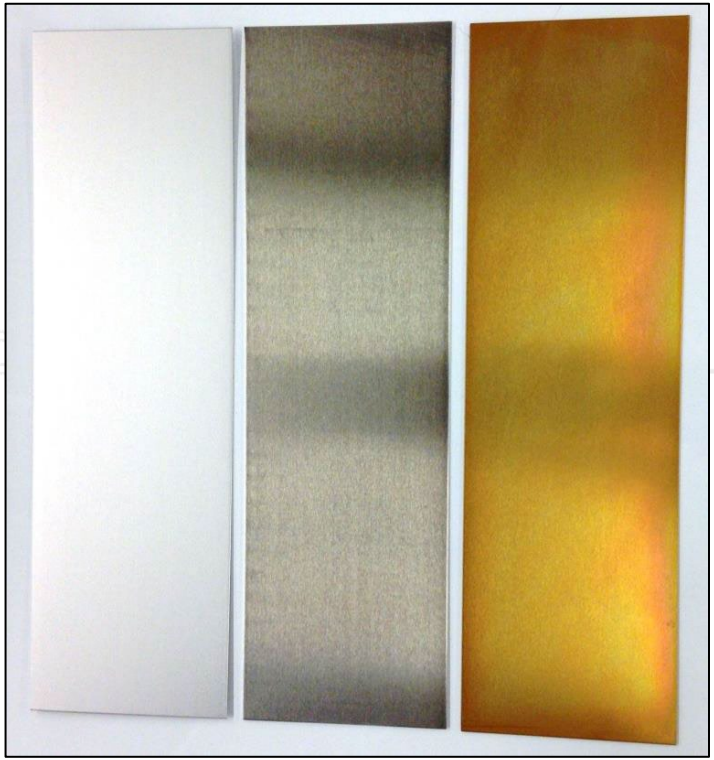
型号ARX, ASX, AGX

型号	ARX	ASX	AGX
铝合金	2024T3	6061T6	7075T6
厚度(mm)	0.81	0.81	0.81
注	表面未处理	表面未处理	表面未处理

We make testing simple.

飞机-等级铝板: 型号ARX, ASX, AGX

- ARX-2024T3表面未处理铝板
- ASX-6061T6表面未处理铝板
- AGX-7075T6表面未处理铝板
- 高强度重量比，耐疲劳
- 用于飞机和船舶
- 军工标准需要3×10”板子
  - MIL-DTL-5541-铬化
  - MIL-A-8625–阳极氧化
- 用于以验证铬化和阳极氧化工艺的耐腐蚀性



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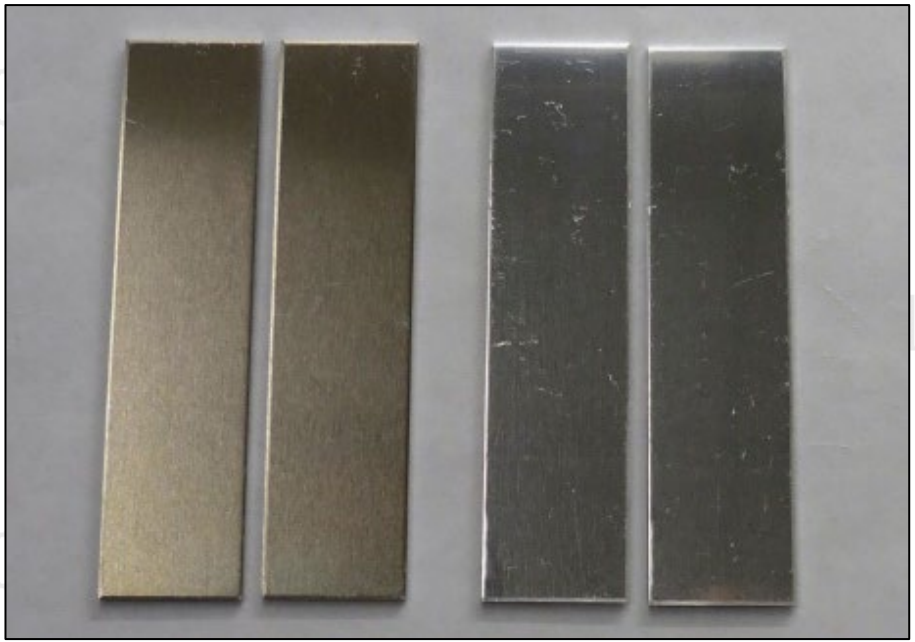
粘接铝板: 型号AR, AD

- **型号AR**板子是表面未处理铝板由铝合金2024T3制成,1.6mm(0.063in)厚.
- **型号AD**与型号AR, “Alclad”–涂一层薄的纯铝涂层铝板，以提升耐腐蚀性.



用于剪切附着力测试 符合ASTMD1002

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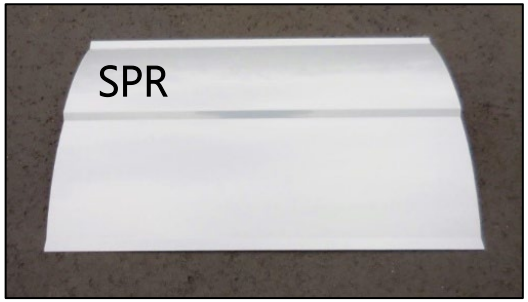
车形板: 型号SPC, SPR

SPC(预涂铝板); SPR(预涂钢板)

24 × 34″
610 × 864mm



腐蚀标准板
(失重标准板)

We make testing simple.

腐蚀测试标准板: CX系列

CXB-12
(GMW 14872 and SAE J2334)

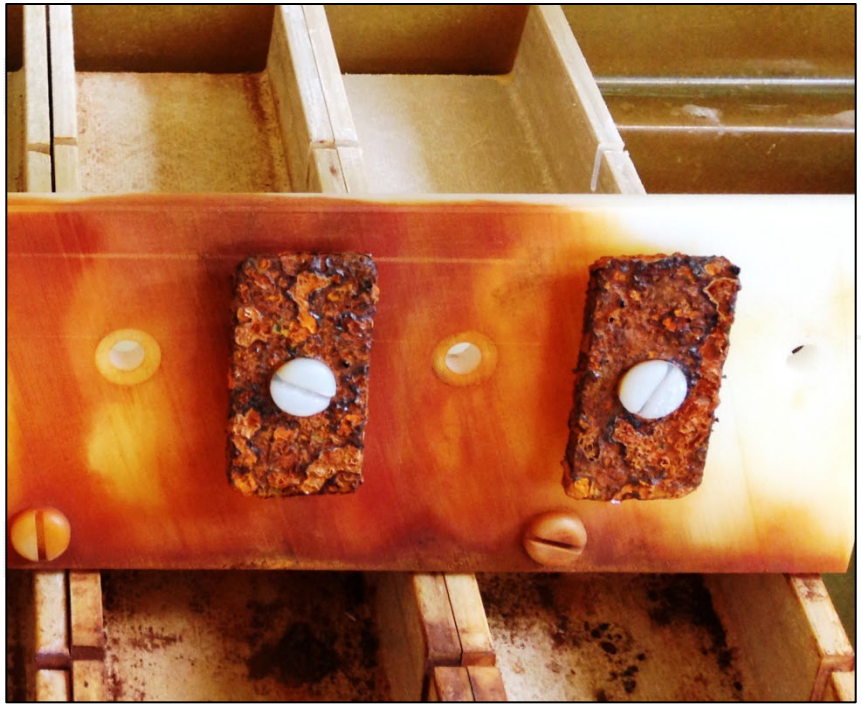
CXC-35
(ASTM B117)

CXD-2.76-5.90
(ISO 9227 and VDA 233-102)

We make testing simple.

腐蚀测试标准板: CX系列

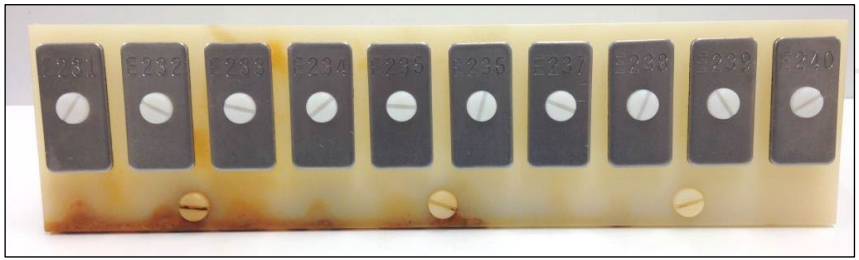
- 确认重复性和再现性
- 监测测试状态
- 测量测试过程中的失重
- 预清洁，方便使用
- 每个标准包装提供成分证书



We make testing simple.

腐蚀测试标准板: CXB-12

- 25×51×3mm
  (1×2×0.125")
- GMW14872, 9540P
  SAE J2334, J2721
- 每箱30块



We make testing simple.

腐蚀测试标准板: CXC-35

- 76×127×0.80mm (3×5×0.032")
- ASTMB117
- 每箱30块

We make testing simple.

腐蚀测试标准板: CXD-2.76-5.90

- 70×150×1.20mm
  2.76×5.90×0.047”
- ISO9227
  - NSS, AASS, CASS
- VDA-233-102
- 每箱30块

We make testing simple.

汽车修补培训系统(ARTS)

We make testing simple.

汽车修补培训系统

ARTS Cart

We make testing simple.

汽车修补培训系统

- 非常适合测试汽车涂料在大面积表面的涂装
- 用于培训涂料技术人员
- 用于汽车OEM涂装线的QC和开发

We make testing simple.

汽车修补培训系统

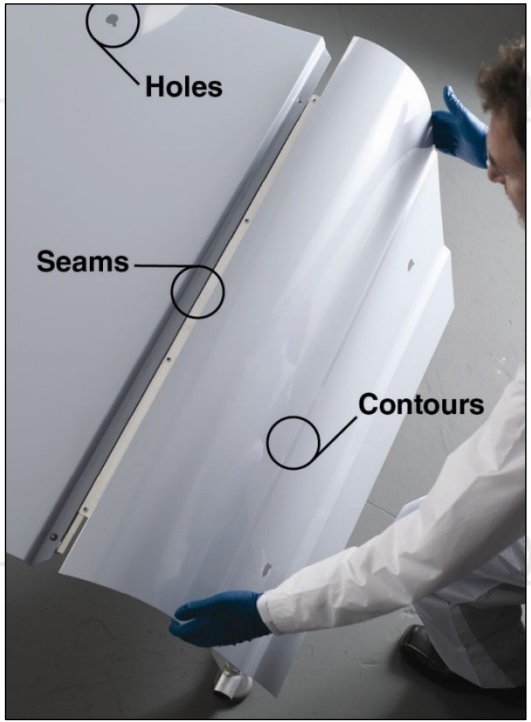
易于储存和运输

We make testing simple.

汽车修补培训系统

使用方便

- 板子一个人可以轻松更改
- 板子模仿车身特征



We make testing simple.

定制Q-Panel基板

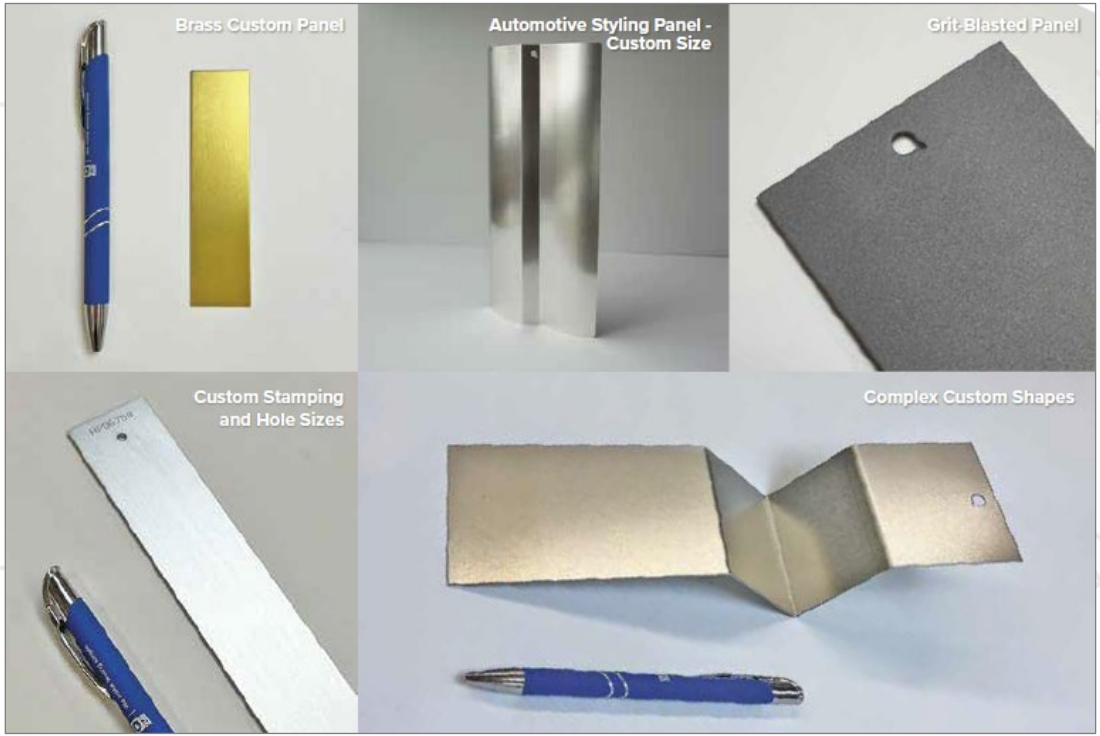
We make testing simple.

提供定制Q-Panel

- 材质
  - 铜, 镁, 钛, 热轧钢板, 不锈钢板, 镍、锡、铝合金板
  - 如果材质可以采购和加工, 我们就可以提供!
- 厚度上限:
  - 铝板　　0.250”(6.35mm)
  - 钢板　　0.125”(3.18mm)
- 挂孔尺寸和包装
- 标记(Logo)和编号
  - 批号/序列号/牌号

We make testing simple.

提供定制Q-Panel



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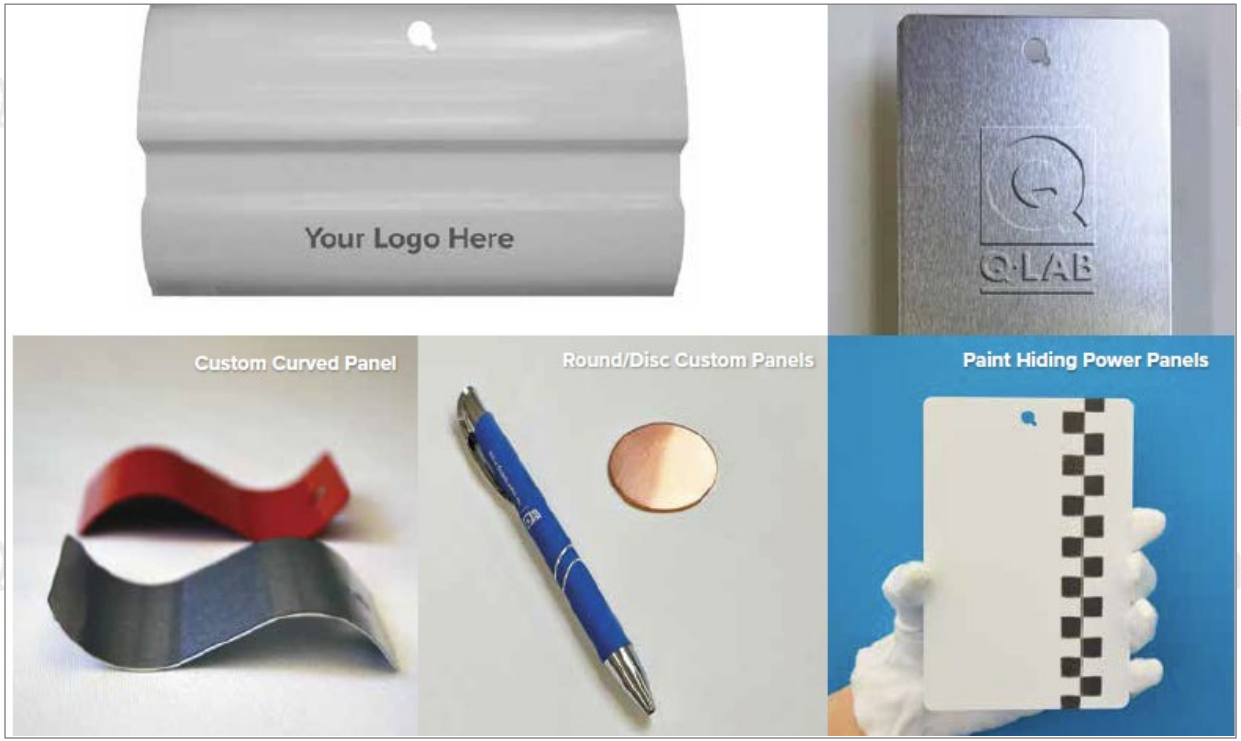
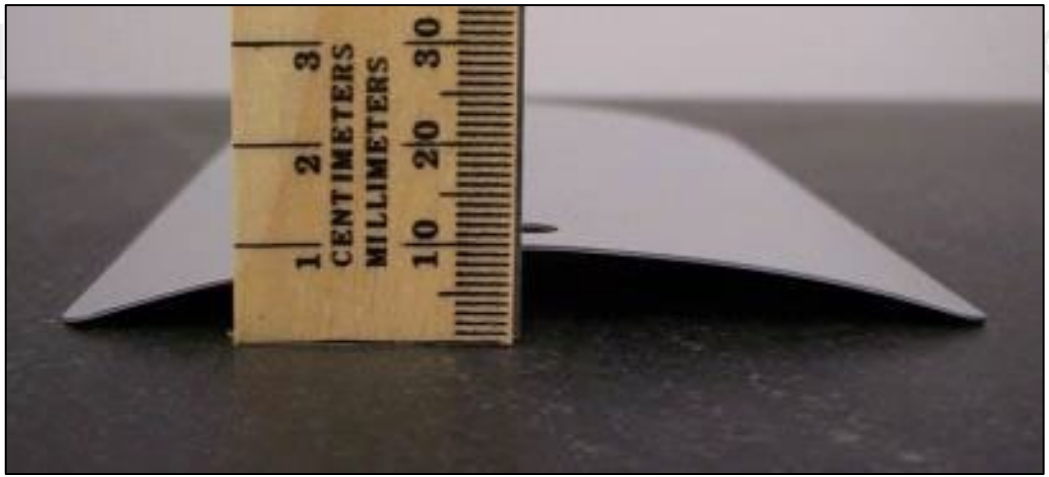
定制Q-Panel选项


Your Logo Here
Q·LAB
Custom Curved Panel
Round/Disc Custom Panels
Paint Hiding Power Panels

曲面板

标准钢板和铝板可提供曲面板

板子宽度	标准冠高
76mm(3″)	6.4mm(0.25″)
102mm(4″)	9.5mm(0.38″)
152mm(6″)	15.8mm(0.63″)



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双面深度打磨板: 型号DG

S型号板子可以深度打磨,
且可以双面打磨

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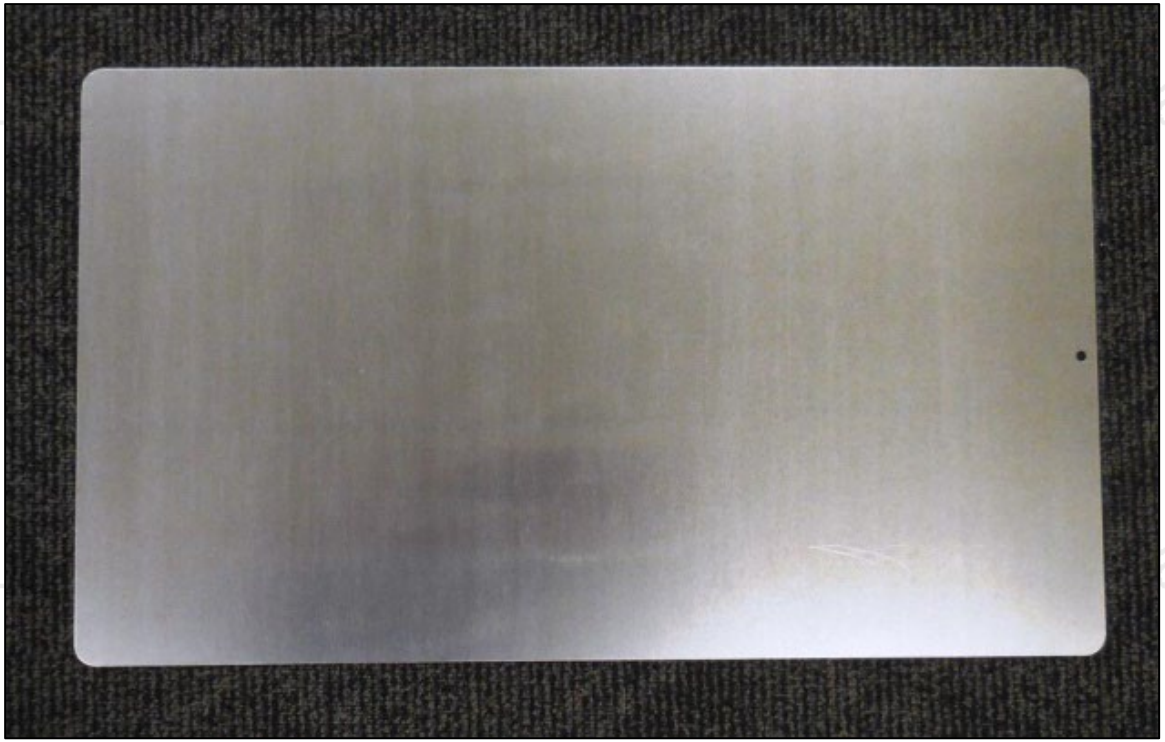
大面积展示铝板

14 × 24″
356 × 610mm



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Q-Panel资料

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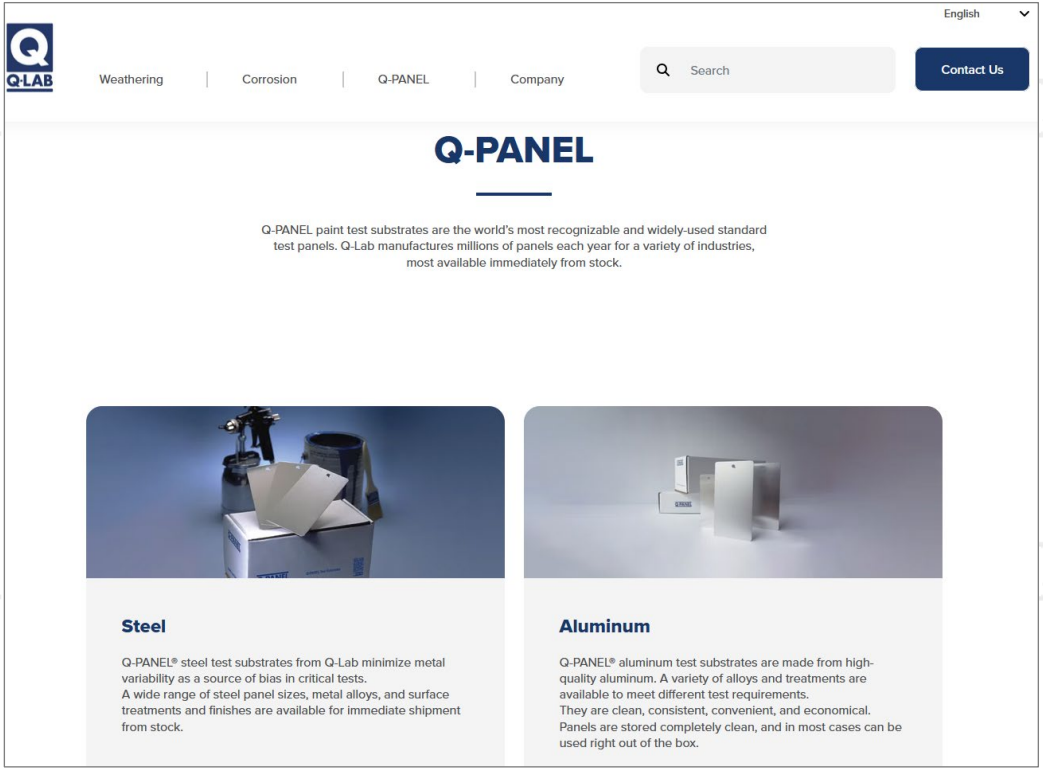
q-lab.com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Q-PANEL
Q-PANEL paint test substrates are the world's most recognizable and widely-used standard test panels. Q-Lab manufactures millions of panels each year for a variety of industries, most available immediately from stock.
Steel
Q-PANEL® steel test substrates from Q-Lab minimize metal variability as a source of bias in critical tests.
A wide range of steel panel sizes, metal alloys, and surface treatments and finishes are available for immediate shipment from stock.
Aluminum
Q-PANEL® aluminum test substrates are made from high-quality aluminum. A variety of alloys and treatments are available to meet different test requirements.
They are clean, consistent, convenient, and economical.
Panels are stored completely clean, and in most cases can be used right out of the box.

规格信息

SPECIFICATION BULLETIN LP-0862-A

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 0.51 mm (0.020 in) 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 (0.25 mm (0.010 in), flexible panels. Type D offers the same smooth surface as Type QD, while Type DT panels are tin plated. These types are very inexpansive 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, 0.81 mm (0.032 in), 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 0.81 mm (0.032 in), 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, CW 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 102 x 152 mm (4 x 6 in) and 0.20 mm (0.008 in) thick.

Iron Phosphate Treatment (Type R-XX-I, S-XX-I, R-XX-ICF, and S-XX-ICF) panels are pretreated with Bonderite M-FE 1000™, the most commonly used type of industrial iron phosphate. Q-PHOS panels incorporate either a chrome seal (-I) using Bonderite M-PT 60, or REACH/RoHS-compliant chrome-free seal (-ICF) using Bonderite M-PT 99X. Both options are followed by a virgin deionized water rinse. Iron phosphated panels have a coating weight of 323-646 mg/m² (30-60 mg/ft²) and are 0.81 mm (0.032 in) thick.

Stainless Steel (Type SS) panels are made from 304 stainless, in two sizes: 25 x 76 mm (1 x 3 in) and 76 x 152 mm (3 x 6 in). 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 1 mm (0.040 in) thick. HA panels meet AMS 6360/6361 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 25 x 102 mm (1 x 4 in) size and 1.6 mm (0.063 in) 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 and 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 101 x 101 mm (4 x 4 in) and 0.81 mm (0.032 in) 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
76 mm (3 in)	6.4 ± 1 mm (0.25 ± 0.04 in)
102 mm (4 in)	9.5 ± 1 mm (0.38 ± 0.04 in)
152 mm (6 in)	15.8 ± 1 mm (0.63 ± 0.04 in)

Custom Panels are available for unique needs. Please see page 4 for further details.

SPECIFICATION BULLETIN LP-0862-B

Q-PANEL
Aluminum Panels

Summary

Q-PANEL® aluminum test substrates from Q-Lab minimize metal variability as a source of bias in critical tests. Made from high quality aluminum, 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.

Bare Aluminum Panels (Type A, AQ, ARX, ASX and AGX) Type A are our standard aluminum panels, made from alloy 3003 H14, and are 0.64 mm (0.025 in) thick. Alloy 3003 H14 is now the most widely used general purpose aluminum alloy from coil stock. Type AQ are made from alloy 5005 H24, are 0.81 mm (0.032 in) thick, and are offered in Europe to meet Qualicoat requirements. Type ARX are made from alloy 2024 T3. Type ASX are made from alloy 6061 T6, and Type AGX are made from alloy 7075 T6. Type ARX, ASX, and AGX are 0.81 mm (0.032 in) thick, have square corners, and no hanging hole. Type ARX and ASX are also available with a removable PE film on one side (-P) or with a hanging hole (-H).

Extruded Aluminum Panels (Type AEX-26) are made from alloy 6063 T5/T6. They are 51 x 152 x 2 mm (2 x 6 x 0.080 in). They are offered in Europe to meet Qualicoat requirements.

Anodized Aluminum Panels (Type AN) are treated with an anodization process which improves resistance to corrosion. Most aluminum exposed to exterior weathering is given such a durable treatment. Type AN are made from alloy 3003 H14, and are 0.64 mm (0.025 in) thick.

Chromated Aluminum Panels (Type AL, AT, and **AQT)** are treated with a chromium conversion coating which improves paint adhesion and resistance to underfilm corrosion. Most aluminum is given such a pretreatment prior to painting. Type AL and AT are made from alloy 3003 H14, and are 0.64 mm (0.025 in) thick. Type AQT are made from alloy 5005 H24 and are 0.81 mm (0.032 in) thick. Type AL are pretreated with hexavalent chromium, which is restricted according to certain EU regulations. Type AT and AQT are pretreated with trivalent chromium, which has no such restrictions.

Aluminum Adhesive Panels (Type AD and AR) are made from alloy 2024 T3 and are 1.6 mm (0.063 in) thick. They are heavy gauge and made from a high strength aluminum alloy to resist the stress of adhesive testing. Type AR is plain (bare) and Type AD is "Alclad" or laminated with a thin coat of pure aluminum for improved corrosion resistance. These panels do not have our signature, trademarked Q-shaped hole.

Automotive Styling Panels (Type SPC-2434) are made from coated series-3000 aluminum. They are 610 x 864 x 1.0 mm (24 x 34 x 0.040 in). They are curved and have a horizontal bend along the center to mimic the side panel of an automobile. Coatings applied to styling panels reflect light in a manner similar to a coating on an actual automobile side panel. Panels are available in a light gray, coil coated, polyurethane finish.

Large Display Panels (Type L-1424) are made from smooth finish, series-3000 aluminum. They are 356 x 610 x 0.6 mm (14 x 24 x 0.025 in), with round corners and a hanging hole. They are useful for evaluating and displaying paints and coatings anywhere a large format is needed.

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
76 mm (3 in)	6.4 ± 1 mm (0.25 ± 0.04 in)
102 mm (4 in)	9.5 ± 1 mm (0.38 ± 0.04 in)
152 mm (6 in)	15.8 ± 1 mm (0.63 ± 0.04 in)

Custom Panels are available for unique needs. Please see page 4 for further details.

SPECIFICATION BULLETIN LP-0862-C

Q-PANEL
Corrosion Test Coupons

Summary

For over 50 years, Q-PANEL® test substrates have been recognized as the world standard for a consistent and uniform test surface for paints, plating, adhesives, sealants, rust inhibitors and other coatings.

This consistency and uniformity is now available through Q-Lab's CX-series corrosion test coupons. Corrosion test coupons ensure repeatability and reproducibility when performing laboratory corrosion testing. They help a user independently monitor the test conditions in the chamber by measuring the mass loss of the coupons as the test progresses. CX corrosion coupons are designed to meet the stringent requirements specified in many international modern corrosion test methods.

Features and Benefits

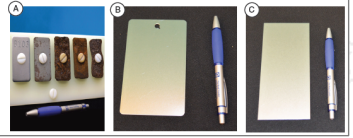
- Meet requirements of GMW14872, ASTM B117, SAE J2334, SAE J2721, ISO 9227, GB/T 10125, and VDA-233-102
- Pre-cleaned and ready to use right out of the package
- Often half the price of competitors' coupons

All Q-PANEL CX-series corrosion coupons include a Certificate of Analysis, come pre-cleaned, and are ready to use right out of the package. This allows the user to simply weigh the panels and place them in the tester, saving time and effort. And best of all, CX corrosion coupons are often half the price of competitors' coupons.

A) Q-PANEL Stock Numbers, Standards Met, and Sizes

Stock Number	Photo	Meets Standards:	Size (W x L) ± 1 mm (± 0.04 in)	Thickness ± 0.05 mm (± 0.002 in)	Box Qty	In Stock? US	In Stock? EU
CXB-12-K	A	GMW14872, 9540P, SAE J2334, J2721	25 x 51 mm (t x 2 in)	3.00 mm (0.125 in)	30*	●	●
CXC-35-K	B	ASTM B117	76 x 127 mm (3 x 5 in)	0.80 mm (0.032 in)	30*	●	●
CXD-2.76-5.90-K	C*	ISO 9227 VDA-233-102 GB/T 10125	70 x 150 mm (2.76 x 5.90 in)	1.02 mm (0.040 in)	30*	●	●

Notes: * No Q-shaped hole ● In-Stock
1. Box qty 30 includes 3 sealed packs of 10 each, extra set of plastic mounting hardware. Corrosion coupon rack sold separately (Part No. F-9220-X).
2. Box qty 30 includes 5 sealed packs of 6 each.
3. Q-PANEL CX-series coupons are only sold in quantities of 30. Broken boxes are not permitted.



PRODUCT SUMMARY LP-0869

Q-PANEL Automotive Refinish Training System

The Q-PANEL® Automotive Refinish Training System (ARTS) is a patented, portable painting setup that provides a low-cost, simulated surface for automotive paint and coatings application. The system comprises a mounting cart and a contoured, simulated hood and pair of fenders. The cart can be folded and the panels stacked together to save space. The system is designed to give the paint applicator experience with the techniques used to paint whole vehicles, without the high expense.

Features

- Low cost - saves money over real automotive hoods & fenders
- Realistic training - panels have seams, holes and contours
- Compact storage - hood and fender panels are stackable
- Portable and lightweight - cart rolls out of the way easily and folds to save storage space
- Convenient - Panels arrive pre-coated so no primer is needed

A fully assembled Q-PANEL automotive refinish training system provides a realistic simulation for painting professionals.

Save Money

Lower in cost than actual automobile hoods and fenders, the Q-PANEL simulated hood and fender are shaped like real automotive components to provide a true-to-life painting experience. They are constructed from sturdy 1 mm (0.040 in) thick aluminum to allow for multiple uses. Also, the cart is constructed from lightweight aluminum for reduced shipping costs.

Save Space

The Q-PANEL mounting cart can be folded up and easily rolled in and out of a paint booth or corner for compact storage. The simulated fenders and hoods take up surprisingly little room. A set of 16 stacked fender panels can be stored in the same space as one real fender. The condensed shape of the panels frees up precious space for other uses.

Applications

- Technician Training & Evaluation
- Paint & Coatings Development
- Trade Show Displays
- Customer Demonstrations

Save Time

It takes just a minute to attach the simulated hood and two fenders onto the portable mounting cart to create the look and feel of the front "clip" of an automobile body. Because the hood and fenders come pre-coated in a neutral gray color, no priming is necessary.

Hood and fender panels stack easily for extremely compact storage. Real fenders and hoods don't.

We make testing simple.

规格信息

A) Q-PANEL Base Metal Alloys, Mechanical Properties, Chemical Composition

Q-Lab Corporation certifies that Q-PANEL Brand Test Substrates, type Aluminum, designation "A", "AL", "AN", "AR", "AT", "AD", "AQ", "AQT", "ARX", "ASX", "AGX", and "AEX" comply with the specifications found in the following tables.

	Type A, AL, AN, AT	Type AQ, AQT	Type AR, ARX	Type ASX	Type AGX	Type AD	Type AEX
Alum. Assoc. Material Design.	3003 H14	5005 H24	2024 T3	6061 T6	7075 T6	2024 T3 Alclad	6063 T5/T6
ASTM Material Specifications	B209	B209	B209	B209	B209	B209	B209
AMS Material Specifications	QQ-A-250/2	—	QQ-A-250/4	QQ-A-250/11	QQ-A-250/12	QQ-A-250/5	—
ISO Material Design. (ISO 209-1)	AlMn1Cu	AlMg1(B)	AlCu4Mg1	AlMg1SiCu	AlZn5,5MgCu	AlCu4Mg1	AlMg0,7Si
ISO Panel Specifications	209-1, 1514	209-1	209-1	209-1	209-1	209-1	209-1
Tensile Strength* (kpsi)	20 - 26	20 - 26	>63	>42	>76	>61	>27
Tensile Strength* (MPa)	140 - 180	140 - 180	>435	>290	>520	>420	>186
Min Yield Strength* (kpsi)	17	15	42	35	67	40	21
Min Yield Strength* (MPa)	115	105	290	240	470	275	145
Aluminum (%)	Balance	Balance	Balance	Balance	Balance	Balance	Balance
Chromium (%)	—	<0.10	<0.10	0.04 - 0.35	0.18 - 0.28	<0.10	<0.10
Copper (%)	0.05 - 0.20	<0.20	3.80 - 4.90	0.15 - 0.40	1.20 - 2.00	3.80 - 4.90	<0.10
Iron (%)	<0.70	<0.70	<0.50	<0.70	<0.50	<0.50	<0.35
Manganese (%)	1.00 - 1.50	<0.20	0.30 - 0.90	<0.15	<0.30	0.30 - 0.90	<0.10
Magnesium (%)	—	0.50 - 1.10	1.20 - 1.80	0.80 - 1.20	2.10 - 2.90	1.20 - 1.80	0.45 - 0.90
Silicon (%)	<0.60	<0.30	<0.50	0.40 - 0.80	<0.40	<0.50	0.20 - 0.60
Titanium (%)	—	—	<0.15	<0.15	<0.20	<0.15	<0.10
Zinc (%)	<0.10	<0.25	<0.25	<0.25	5.10 - 6.10	<0.25	<0.10
Iron + Silicon (%)	—	—	—	—	—	—	—
Others (Each/Total) (%)	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15

化学、大小和数量信息一览表

C) Q-PANEL Dimensions, Stock Numbers and Box Quantities

Panel & Description	Stock Number	Size W × L (in) (± 0.04, except as noted)	Thickness (in) (± 0.002, except as noted)	Size W × L (mm) (± 1, except as noted)	Thickness (mm) (± 0.05, except as noted)	Box Qty	In Stock? US	In Stock? EU
Type A Bare Surface Smooth Mill Finish	A-1.75-5	1.75 × 5	0.025	44 × 127	0.64	800	●	●
	A-2-3.5	2 × 3.5	0.025	51 × 89	0.64	500	●	●
	A-24	2 × 4	0.025	51 × 102	0.64	450	●	●
	A-2.75-4	2.75 × 4	0.025	70 × 102	0.64	300	●	○
	A-35	3 × 5	0.025	76 × 127	0.64	500	●	●
	A-36	3 × 6	0.025	76 × 152	0.64	500	●	●
	A-39	3 × 9	0.025	76 × 229	0.64	150	○	○
	A-46	4 × 6	0.025	102 × 152	0.64	250	●	●
	A-48	4 × 8	0.025	102 × 203	0.64	150	●	●
	A-412	4 × 12	0.025	102 × 305	0.64	125	●	●
	A-612	6 × 12	0.025	152 × 305	0.64	125	●	●

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Q-Panel小册子和用途指南

TECHNICAL BULLETIN LP-0867

Q-PANEL Standard Substrate Applications Guide

Q-PANEL® Type	Steel						
	D	QD	R	S	R-I	HA	HN
Thickness (inches)	0.010"	0.020"	0.032"	0.032"	0.032"	0.040"	0.040"
Thickness (mm)	0.25 mm	0.50 mm	0.80 mm	0.80 mm	0.80 mm	1.00 mm	1.00 mm
Coating	-	-	-	-	phosphate	-	-
Finish	smooth	smooth	matte	ground	matte	matte	matte
Roughness RMS (micro-inches) µ in.	<20	<20	25-65	20-45	25-65	20-40	20-40
Roughness RMS (micro-meters) µm	<0.50	<0.50	0.63-1.65	0.50-1.14	0.63-1.65	0.50-1.02	0.50-1.02
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	●	●	●	●	●	●	●
Hardness - pencil	●	●	●	●	●	●	●
Hardness - rocker	◐	◕	●	●	●	●	●
CHEMICAL / ACID							
Chemical Resistance	◕	◕	●	●	●	●	●
Acid Resistance (coating itself)	◕	◕	●	●	●	●	●
Acid Resistance -corrosion of substrate	◕	◕	●	●	●	●	●
WEATHERING & CORROSION							
Corrosion - Salt Spray	◕	●	●	●	●	●	●
Corrosion - Humidity / Condensation	◕	●	●	●	●	●	●
Corrosion - Outdoor Natural Exposure	◴	◐	●	●	●	●	●
Accelerated Weathering	◕	●	●	●	●	●	●
Outdoor Weathering	◴	◐	◕	◕	◕	◕	◕
SALES SAMPLES - BATCH RECORDS							
Sales Samples (light weight)	●	◕	◐	◐	◐	◐	◐
Batch Records (light weight)	●	◕	◐	◐	◐	◐	◐
BAKING AND CURING							
Baking / Curing - Liquid Coating	●	●	●	●	●	●	●
Baking / Curing - Powder Coatings	◕	●	●	●	●	●	●

● = Best ◐◕ ○ = Not Suitable
NOTE: See Page 4 for additional details regarding testing.

Q-LAB

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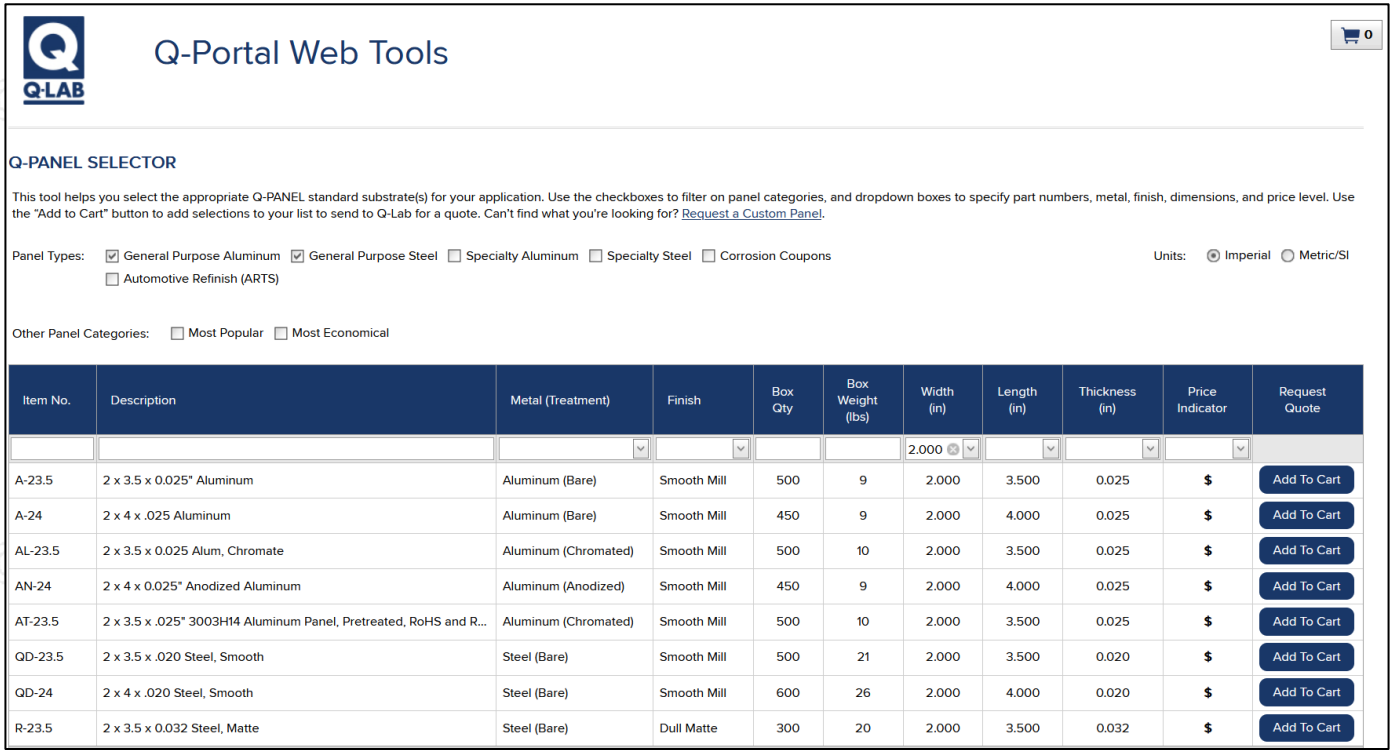
Q-Portal Q-Panel选择器



Q-Portal Web Tools

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Q-PANEL SELECTOR

This tool helps you select the appropriate Q-PANEL standard substrate(s) for your application. Use the checkboxes to filter on panel categories, and dropdown boxes to specify part numbers, metal, finish, dimensions, and price level. Use the "Add to Cart" button to add selections to your list to send to Q-Lab for a quote. Can't find what you're looking for? Request a Custom Panel.

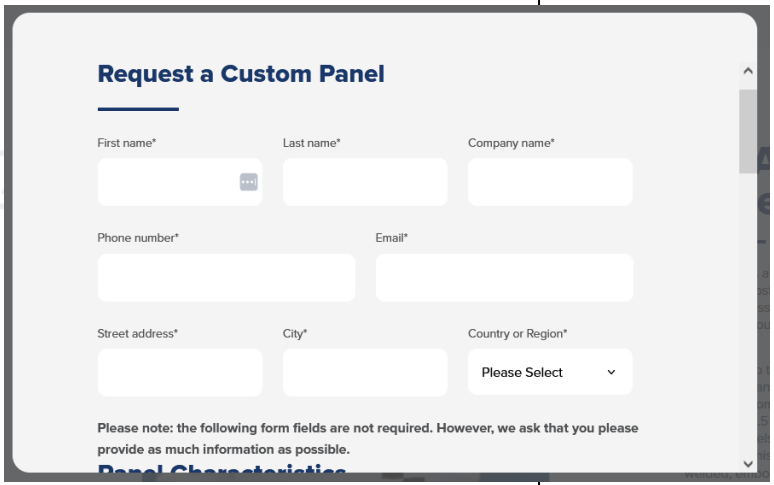
Panel Types: ☑ General Purpose Aluminum ☑ General Purpose Steel ☐ Specialty Aluminum ☐ Specialty Steel ☐ Corrosion Coupons ☐ Automotive Refinish (ARTS)

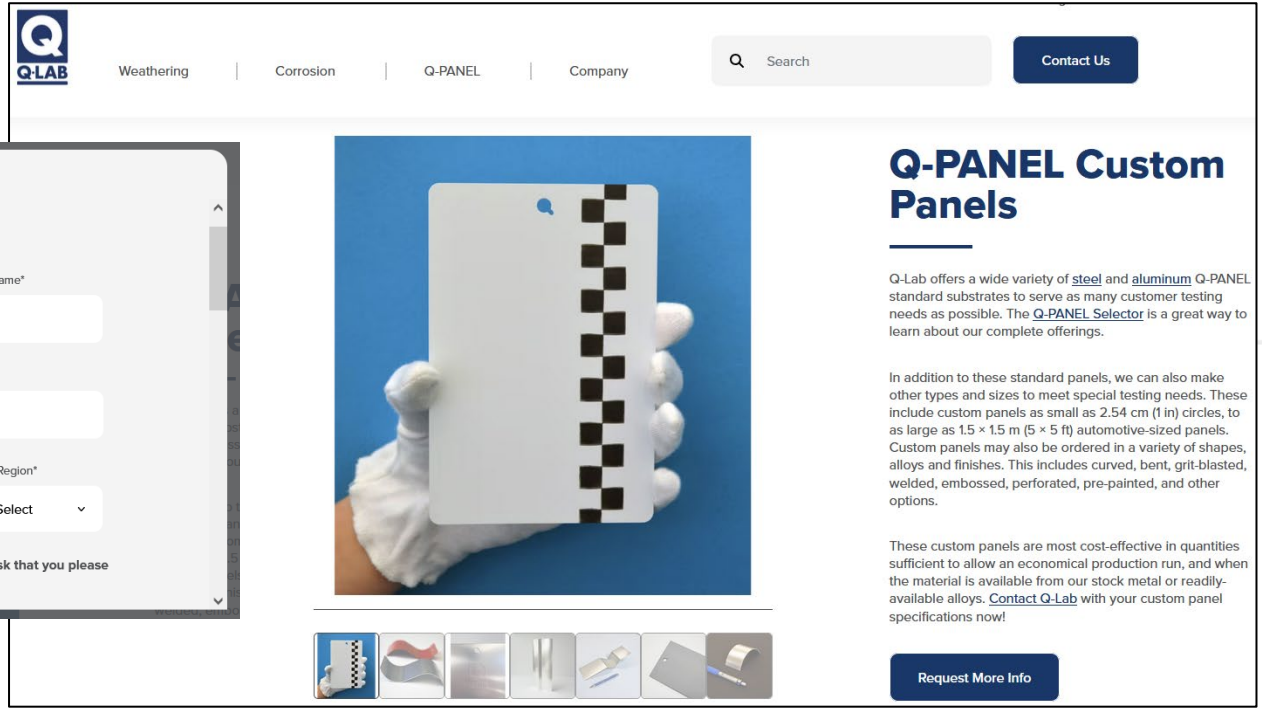
Units: ◉ Imperial ○ Metric/SI

Other Panel Categories: ☐ Most Popular ☐ Most Economical

Item No.	Description	Metal (Treatment)	Finish	Box Qty	Box Weight (lbs)	Width (in)	Length (in)	Thickness (in)	Price Indicator	Request Quote
						2.000				
A-23.5	2 x 3.5 x 0.025" Aluminum	Aluminum (Bare)	Smooth Mill	500	9	2.000	3.500	0.025	$	Add To Cart
A-24	2 x 4 x .025 Aluminum	Aluminum (Bare)	Smooth Mill	450	9	2.000	4.000	0.025	$	Add To Cart
AL-23.5	2 x 3.5 x 0.025 Alum, Chromate	Aluminum (Chromated)	Smooth Mill	500	10	2.000	3.500	0.025	$	Add To Cart
AN-24	2 x 4 x 0.025" Anodized Aluminum	Aluminum (Anodized)	Smooth Mill	450	9	2.000	4.000	0.025	$	Add To Cart
AT-23.5	2 x 3.5 x .025" 3003H14 Aluminum Panel, Pretreated, RoHS and R...	Aluminum (Chromated)	Smooth Mill	500	10	2.000	3.500	0.025	$	Add To Cart
QD-23.5	2 x 3.5 x .020 Steel, Smooth	Steel (Bare)	Smooth Mill	500	21	2.000	3.500	0.020	$	Add To Cart
QD-24	2 x 4 x .020 Steel, Smooth	Steel (Bare)	Smooth Mill	600	26	2.000	4.000	0.020	$	Add To Cart
R-23.5	2 x 3.5 x 0.032 Steel, Matte	Steel (Bare)	Dull Matte	300	20	2.000	3.500	0.032	$	Add To Cart

定制Q-Panel


Request a Custom Panel
First name*
Last name*
Company name*
Phone number*
Email*
Street address*
City*
Country or Region*
Please Select
Please note: the following form fields are not required. However, we ask that you please provide as much information as possible.


Q-LAB
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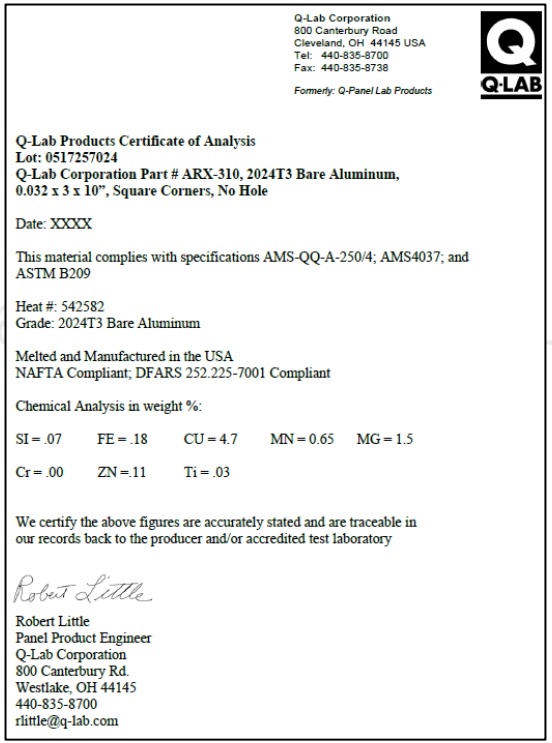
Q-PANEL Custom Panels
Q-Lab offers a wide variety of steel and aluminum Q-PANEL standard substrates to serve as many customer testing needs as possible. The Q-PANEL Selector is a great way to learn about our complete offerings.
In addition to these standard panels, we can also make other types and sizes to meet special testing needs. These include custom panels as small as 2.54 cm (1 in) circles, to as large as 1.5 × 1.5 m (5 × 5 ft) automotive-sized panels. Custom panels may also be ordered in a variety of shapes, alloys and finishes. This includes curved, bent, grit-blasted, welded, embossed, perforated, pre-painted, and other options.
These custom panels are most cost-effective in quantities sufficient to allow an economical production run, and when the material is available from our stock metal or readily-available alloys. Contact Q-Lab with your custom panel specifications now!
Request More Info

分析、合格证书



Q-Lab Corporation
800 Canterbury Road
Cleveland, OH 44145 USA
Tel: 440-835-8700
Fax: 440-835-8738

Formerly: Q-Panel Lab Products

Q-Lab Products Certificate of Analysis
Lot: 0517257024
Q-Lab Corporation Part # ARX-310, 2024T3 Bare Aluminum, 0.032 x 3 x 10", Square Corners, No Hole

Date: XXXX

This material complies with specifications AMS-QQ-A-250/4; AMS4037; and ASTM B209

Heat #: 542582
Grade: 2024T3 Bare Aluminum

Melted and Manufactured in the USA
NAFTA Compliant; DFARS 252.225-7001 Compliant

Chemical Analysis in weight %:

SI = .07 FE = .18 CU = 4.7 MN = 0.65 MG = 1.5

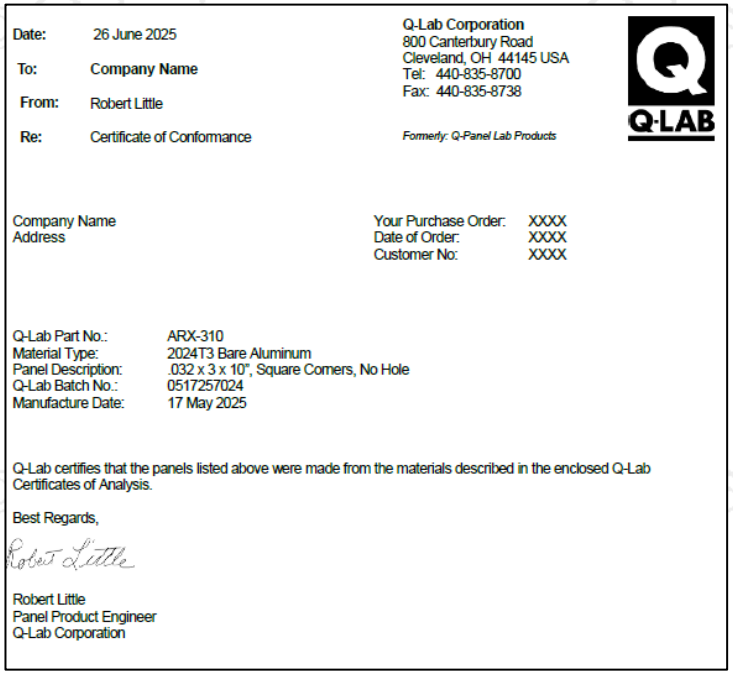
Cr = .00 ZN =.11 Ti = .03

We certify the above figures are accurately stated and are traceable in our records back to the producer and/or accredited test laboratory

Robert Little

Robert Little
Panel Product Engineer
Q-Lab Corporation
800 Canterbury Rd.
Westlake, OH 44145
440-835-8700
rlittle@q-lab.com

提供板子的化学和符合相关规范文件



Date: 26 June 2025

To: Company Name

From: Robert Little

Re: Certificate of Conformance

Q-Lab Corporation
800 Canterbury Road
Cleveland, OH 44145 USA
Tel: 440-835-8700
Fax: 440-835-8738

Formerly: Q-Panel Lab Products

Company Name
Address

Your Purchase Order: XXXX
Date of Order: XXXX
Customer No: XXXX

Q-Lab Part No.: ARX-310
Material Type: 2024T3 Bare Aluminum
Panel Description: .032 x 3 x 10", Square Corners, No Hole
Q-Lab Batch No.: 0517257024
Manufacture Date: 17 May 2025

Q-Lab certifies that the panels listed above were made from the materials described in the enclosed Q-Lab Certificates of Analysis.

Best Regards,

Robert Little

Robert Little
Panel Product Engineer
Q-Lab Corporation

Thank you for your time.

Questions?

panels@q-lab.com

We make testing simple.