

M-90 with Back Tray Panel



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Empire M-90 with Back Tray Noise Abatement System

The EAS M-90 with back tray Panel System is engineered for acoustical enclosures and noise barriers where existing walls or structures need additional sound absorption. M-90 panels are designed for both indoor and outdoor applications.

M-90 Specifications

- M-90 panels are fabricated using 22-gauge cold-formed ASTM 653 Galvanized G-90 sheet steel or Galvalume A-60, with options for Stainless 304 or Aluminum
- Standard M-90 panels are 24 inches wide by 2½ inches thick.
- Face panel trays are typically fabricated using 22-gauge steel with 3/16-inch diameter perforations in a 3/8-inch staggered pattern.
- Back panel trays are typically fabricated using 18-gauge steel
- M-90 panels are filled with six-pound density mineral rock wool with option for fiberglass.
- The maximum M-90 panel length is 12'-5" before intermediate bracing is required.
- The NRC rating is 1.05.

Mineral Rock Wool (see attached data sheets) conforms to Federal Specifications HH-1-558B and ASTM Standard E-136 and has the following characteristics:

- Has a density of 6 pounds per cubic foot.
- Is non-hygroscopic and absorbs less than 1% water.
- Melts above 2,000 Degrees Fahrenheit, has a **flame spread of 15** or less and a **smoke development of 0** when tested in accordance with ASTM Standard E-84, is rated incombustible by ASTM Standard E-136.

Acoustical Performance Standards

• M-90 Panels have a noise reduction coefficient of 1.05 when measured in accordance with the requirements of ASTM C423.

Material Finishes

- **Finish:** The panels will be fabricated using aluminum coil cut to length from coil, and may be painted with the following paint system. EAS Standard Color Guide available upon request.
 - Powder
 - Liquid
 - Coil Minimum order applies

Quality Assurance

- EAS products will conform to the required quality and performance standards.
- EAS panels, trims, accessories shall be installed in accordance with the approved shop drawings to ensure the required quality standards.

Durability

- EAS wall systems are designed to be a cost effective, light weight, easy to install, aesthetically pleasing solution to reflective sound energy and they are virtually maintenance free over the expected lifetime of a typical installation.
- The panels are typically fabricated from 3003 series Aluminum and may be powder or liquid spray coated depending on the application. Coating of the panels not only serves to be aesthetically pleasing, but also extends their life by reducing the susceptibility to chemical deterioration and abrasion, as well as minimizing the effects of weathering. As the panels are used for outdoor application over the lifetime of the installation one will see some weathering effects but these will not be significant.
- The noise walls are designed based on current AASHTO standards. These panels are designed to withstand wind speeds more than 140 mph depending upon the region and specified parameters by transferring the wind-load to the existing wall.

Warranty

- EAS shall warrant for a period of one year that the panels, trims and accessories furnished by the manufacturer shall be free from defects in materials and factory workmanship.
- Paint finish warranties shall be the paint manufacturers standard for wall panels and trims.

Powder Coating Process

EAS uses ASTM B209 from coil to form the panels. Once formed, the panels can be powder or liquid spray coated.

The coating process involves:

- Surface preparation, including washing the panels using an automated process involving several wash stations, per manufacturer's specifications.
- Drying stage prior to powder or liquid spray coated.
- Panels are coated individually per manufacturer's specifications.
- The coated panel parts are then heat cured in an oven per manufacturer's specifications.

The material is tested at various process points to ensure paint specifications and specified quality control parameters are met and maintained.

Some of the ASTM test procedures are as follows:

- ✓ Adhesion per ASTM D3359
- ✓ Flexibility per ASTM D 1737
- ✓ Hardness per ASTM D3363
- ✓ Reverse Impact per ASTM_D2794
- ✓ Humidity per ASTM D 2247
- ✓ Salt Spray per ASTM D117
- ✓ Specular Gloss per ASTM D523

Packaging

EAS M-90 Panels are packaged and shipped flat on a wooden pallet. The maximum panel length is 12'-5" and approximately 30 panels are packed on each pallet (depending on panel lengths). The panels are placed on the pallet in 2 rows and horizontally stacked.

Care is taken while stacking the panels to prevent scratches. Additionally, foam strips are placed between the panels at multiple locations for further protection. Once stacked, the panels are shrink-wrapped and bound using steel bands on all sides to prevent the panels from shifting.

A computerized Bill of Materials is shipped between the shrink wrapping on each pallet and is easily visible for inspection.

After packaging, the panels are moved to the loading dock where they are loaded onto trucks using a fork lift.

Palletized Panels





Loading for Shipment

The pallets are loaded on a flatbed truck side by side (in some cases a box truck may be used). The pallets are not stacked in an effort to prevent damaging the lower panels while in transport.

After the pallets have been loaded, a water resistant tarp is placed over the load to ensure that the panels reach the destination safe and dry.







Loaded Truck

Covering Load

Receiving

Upon arrival of the panels at the jobsite, the contractor is responsible for inspecting the shipment for damage, shortages etc. If damage or shortage is observed, a claim must be filed with EAS immediately and the delivery documents noted. In the event damage or shortage is concealed, EAS must be notified immediately. Photographs and pallet number of the damaged components in their original packages attached to a claim must be submitted within 72 hours of delivery. Additional NCR information may be required.

Unloading

We recommend using a fork lift for unloading the pallets from the truck. The maximum pallet weight is approx. 4,000 pounds.

Storage

As the panels will usually be installed within a few weeks of receipt, care should be taken to store them at convenient locations to minimize handling during erection.

The shrink wrapping should be removed only at the time of installation of the panels and the pallets should be stored on a slight slope to allow for water run-off.

To prevent damage, the pallets should not be stacked.

Should the panels require storage for a long duration they should be stored and protected in a covered, dry location with good air circulation, shielded from direct sun light and free from the effects of corrosive environments.

Material Handling

The panels should be carried on edge in a horizontal orientation for stiffness. Care should be taken to avoid carrying them flat as bending or warping may occur. As shown in photos below.





Installing Panels

For warranty purposes, the installation should be performed per an approved plan set. EAS installation technicians are available for installation training.

Cleaning and Maintenance of Panel Systems

Under normal working environments, EAS panels have shown remarkable resistance to exterior chalking, fading, cracking and the effects of chemicals and ultraviolet light.

Removal of undesirable materials from the surface of the panels should always be limited to mild, soapy water and mild cleaners followed by a clean water rinse. However, problems occur, such as overspray from air-dry painting, graffiti or other incidental problems. Since these baked-on enamels are composed of resins and pigments that can be adversely affected by strong chemicals, extreme care should be exercised in any removal activities. It is important that all cleaners and solvents listed in steps A through D below are first tested on a less visible area to determine if any potentially negative affects to the finish.

Cleaning should not be attempted if there is any damage, such as abrasion, scuffing, dulling, burnishing, etc., to the coating in the test area.

The following sequential procedures are recommended:

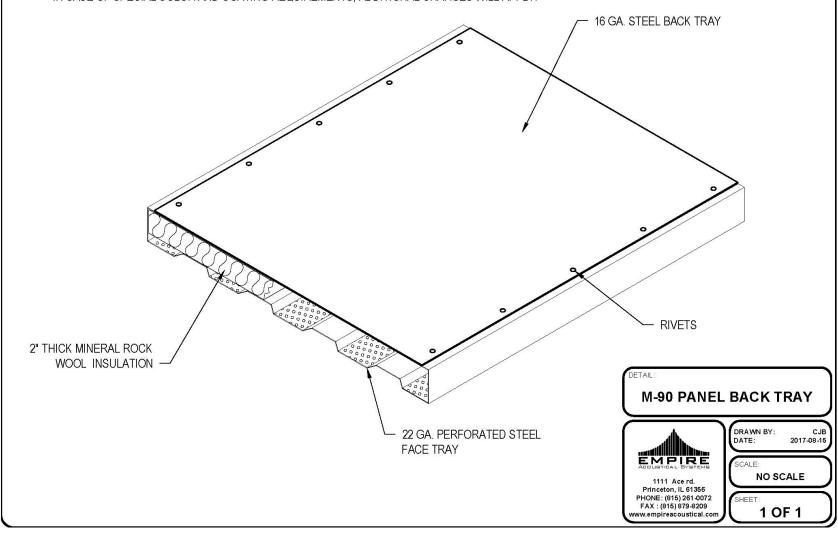
- 1) Unless the condition is clearly undesirable, it is typically best to do nothing at all. This is often the case with light, unintentional overspray as it will likely be removed by the elements in a relatively short period of time.
- **2)** If removal is required, the first step recommended by EAS is washing with mild soapy water or a mild household cleaner. Occasionally the use of a minimally abrasive Teflon-type pad is required.
 - Note: Repeated rubbing with abrasive cleaners and/or pads is likely to result in a scuffed surface, which will not only be unsightly, but will also decrease the service life of the factory finish and void warranty coverage.
- **3)** If previous step's results are unsatisfactory, a slightly more aggressive approach would be to wipe the surface with mineral spirits *or* VM&P Naphtha. These solvents are often used in air-dry paints. Mineral spirits evaporate slowly and will work best in warm weather on warm metal. VM&P Naphtha evaporates rapidly, and will work best in cool weather on cool metal.
- **4)** If steps 1 through 3 have not produced satisfactory results, more aggressive aromatic solvents such as xylene ("xylol" or "m-xylene") or toluene ("toluol") may be used. It is important to proceed *very carefully*, using only the amount of solvent required to dampen a cloth, and limit the time of exposure to 10-15 seconds or less on any given area. Xylene has a moderate evaporation rate and is best suited for warm metal in warm weather. Toluene evaporates faster, and is better suited for cool weather on cool metal.

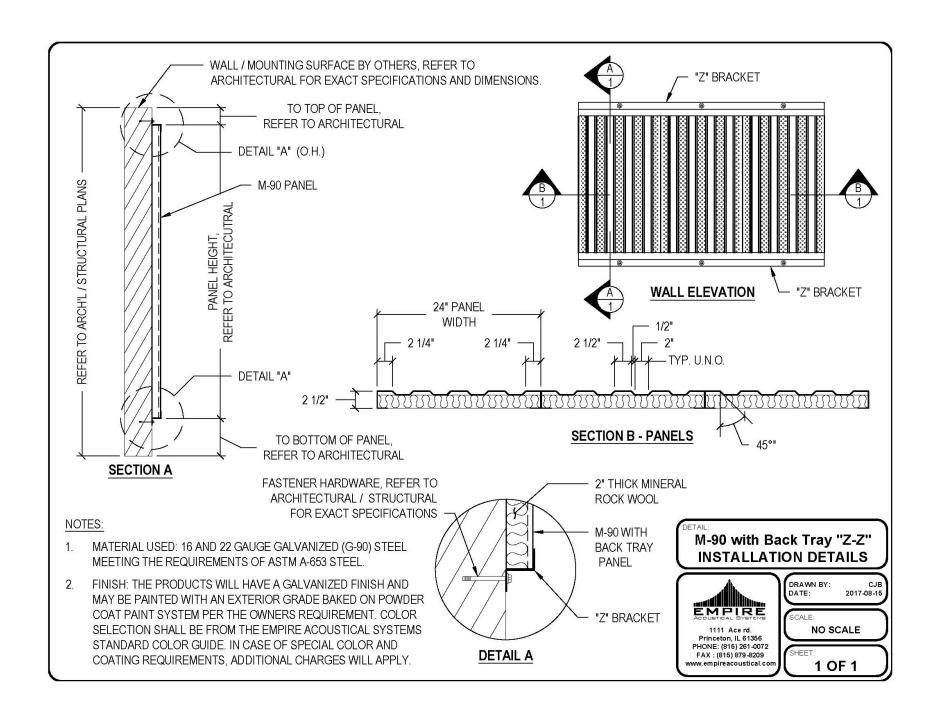
Note: Stronger solvents, such as any type of ketone, should never be used to clean factory finishes – damage to the coating is extremely likely to occur and will void any warranty coverage.

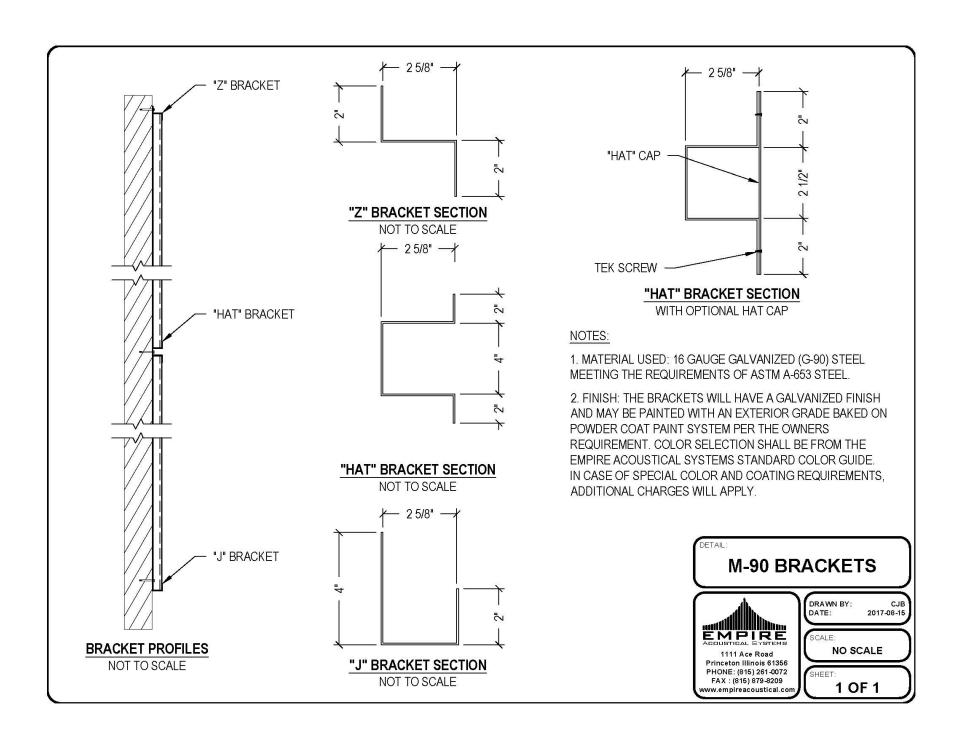
5) The longer the factory applied coated surface has been in service the more susceptible it will be to damage caused by any procedure intended to remove undesirable deposits from its surface. Therefore, it is important that all cleaners and solvents be first tested on a less visible area to determine the potential side-effects of cleaning. Cleaning should not be undertaken if there is any damage, such as abrasion, scuffing, dulling, burnishing, etc., to the film. Also, the older the original surface, the greater will be the likelihood that the "cleaned" area will result in a somewhat different appearance due to the removal of dirt and natural degradation of materials from the cleaned area.



- 1. MATERIAL USED: 16 AND 22 GAUGE GALVANIZED (G-90) STEEL MEETING THE REQUIREMENTS OF ASTM A-653 STEEL.
- 2. FINISH: THE PRODUCTS WILL HAVE A GALVANIZED FINISH AND MAY BE PAINTED WITH AN EXTERIOR GRADE BAKED ON POWDER COAT PAINT SYSTEM PER THE OWNERS REQUIREMENT. COLOR SELECTION SHALL BE FROM THE EMPIRE ACOUSTICAL SYSTEMS STANDARD COLOR GUIDE. IN CASE OF SPECIAL COLOR AND COATING REQUIREMENTS, ADDITIONAL CHARGES WILL APPLY.







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REPORT

Empire Acoustical Systems

RAL[™]-TL92-422

8 December 1992

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TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data are within the limits set by the ASTM Standard E90-90.

FREQ.	<u>T.L.</u>	<u>C.L.</u>	DEF.	FREQ.	<u>T.L.</u>	<u>C.L.</u>	DEF.
100	22	0.16	0	800	39	0.25	0
125	22	0.09	0	1000	42	0.20	0
160	24	0.31	0	1250	44	0.19	0
200	23	0.07	4	1600	47	0.17	0
250	26	0.09	4	2000	50	0.16	0
315	27	0.10	6	2500	54	0.12	0
400	30	0.13	6	3150	57	0.09	0
500	33	0.20	4	4000	59	0.08	0
630	36	0.22	2	5000	59	0.08	0

STC = 37

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)
T.L. = TRANSMISSION LOSS, dB
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT

DEF. = DEFICIENCIES, dB<STC CONTOUR STC = SOUND TRANSMISSION CLASS

Submitted by

Peter E. Straus Experimentalist Reviewed by

John W. Kopec

Supervisor, Riverbank Acoustical Laboratories

THE RESULTS REPORTED ABOVE APPLY ONLY TO THE SPECIFIC SAMPLE SUBMITTED FOR MEASUREMENT. NO RESPONSIBILITY IS ASSUMED FOR PERFORMANCE OF ANY OTHER SPECIMEN.

ACCREDITED BY DEPARTMENT OF COMMERCE, NATIONAL VOLUNTARY LABORATORY



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TEST_RESULTS

1/3 Octave Center Center Frequency (Hz)	Absorption Coefficient	Total Absorption In Sabins	% Of Uncertainty With 95% Confidence Limit With Specimen
100	0.24	17.41	3.22
** 125	0.28	20.43	2.90
160	0.36	25.81	1.89
200	0.49	35.28	1.76
** 250	0.68	48.68	1.66
315	0.97	70.00	1.21
400	1.13	81.37	1.35
** 500	1.19	85.99	1.14
630	1.06	76.53	0.89
800	0.93	66.75	0.93
** 1000	0.86	61.73	0.63
1250	0.88	63.53	0.71
1600	0.92	65.97	0.67
** 2000	0.89	64.43	0.58
2500	0.78	56.40	0.59
3150	0.75	53.81	0.50
** 4000	0.72	52.13	0.46
5000	0.65	47.03	0.56

NRC = 0.90



THE LABORATORY'S ACCREDITATION OR ANY OF ITS TEST REPORTS IN NO WAY CONSTITUTES OR IMPLIES PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NIST.







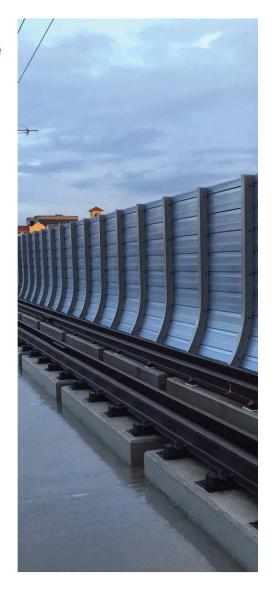
^{*}Additional colors and color matching available upon request





Empire Acoustical Systems is committed to providing our customers with the best possible noise mitigation solution. We offer a variety of costeffective, light weight, galvanized metal panels that are both reflective and absorptive in order to meet your specific noise control issue. Maintaining the highest acoustical properties available, our systems are engineered for ease of installation, to withstand the harshest environments, and are virtually maintenance free. With more than 30 years in the business, here at EAS we are pleased to supply you with a custom product designed to fit your particular noise mitigation project.

Empire Acoustical Systems partners with PPG to supply our customers with a variety of color options that are aesthetically pleasing and durable. Each panel can be coated with a powder from PPG that has undergone extensive research, development, and testing. Each powder has been field-proven to ensure the color will present an attractive appearance for years to come while providing additional protection from various environmental conditions.





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ENVIROCRON® Ultradurable Powder Coatings

ENVIROCRON ULTRADURABLE S	SPECIFICATIONS
Colors Available ²	White, black, and a full range of solid and pearlescent colors
Dry Film Thickness ASTM D1400	2.5 mils ± 0.5 - Apply 2 mils minimum ³
Gloss ASTM D523 @ 60°	High, medium, & low gloss
Pencil Hardness ASTM D3363	H – 2H
Cross Hatch Adhesion 1/16" grid	No removal
Direct Impact 1/10" distortion	No removal
Acid Resistance ASTM D1308 10% muriatic acid spot test	15 minutes – No attack
Alkali Resistance Mortar pat test 100% relative humidity @ 100° F	24 hours – No attack
Detergent Resistance 3% immersion @ 100° F	72 hours – No attack
Salt Spray Resistance ASTM B117, 3000 hours 5% NaCl @ 100° F	Meets or exceeds 1/16" maximum undercutting
Humidity Resistance ASTM D714 ASTM D2247, 3000 hours 100% relative humidity @ 100° F	Meets or exceeds specification of few #8 blisters maximum
Exterior Exposure ⁴ 5 year @ 45°, South Florida ASTM D3344 ASTM D4214 Film Integrity Gloss Retention	Maximum 5 fade Maximum 8 chalk Very Good Greater than 30%

¹ American Architectural Manufacturers Association, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels. Publication No. AAMA 2604-02

ENVIROCRON ULTRADURABLE WARRANTY INFORMATION

PPG offers a comprehensive warranty on ENVIROCRON ULTRA DURABLE extrusion powder coatings. For complete warranty information and a copy of the ENVIROCRON ULTRADURABLE extrusion powder coatings warranty, please call PPG at **1-866-PPG-TRUE**.



²The range of color availability will vary depending upon exposure requirements and architects' specifications.

³ For more critical applications, a primer/topcoat system and greater film thicknesses may be recommended. Consult a PPG Powder Coating Specialist for recommendations when developing specifications.

⁴ While this coating has been formulated with the intent to meet the specifications in AAMA 2603-02, completed testing regarding South Florida Weathering requirements does not exist for all colors.

ENVIROCRON® Ultradurable Powder Coatings

PRODUCT DESCRIPTION

ENVIROCRON® ULTRADURABLE powder coatings are spray-applied systems which are recommended for use in a variety of architectural applications. Based on thermosetting polyester resin technology, they offer building architects and specifiers a unique blend of physical and chemical properties with excellent resistance to outdoor weathering.

EVIROCRON ULTRADURABLE powder coatings are aesthetically pleasing and can be custom formulated with finishes from high gloss to low gloss, and in a variety of textures.

These powder coatings are designed to meet the physical test requirements of AAMA¹ 2604-05 specifications.

SYSTEM OVERVIEW

ENVIROCRON® ULTRADURABLE powder coatings represent a new level of performance for architectural applications. They offer unsurpassed color and chalk retention to meet demanding architectural needs. Film hardness of H to 2H can be achieved with ENVIROCRON ULTRADURABLE powder coatings. ENVIROCRON ULTRADURABLE powder coatings in a smooth and beautiful finish.

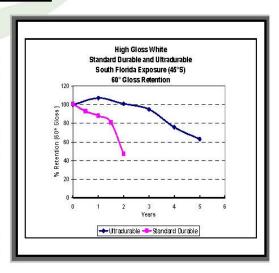
COMMERCIAL USES

Architects and specifiers want coatings that provide an attractive appearance throughout a building's lifetime. ENVIROCRON ULTRADURABLE powder coatings' combination of improved mar resistance and excellent weatherability make them an intelligent choice for use in high traffic areas such as store fronts, schools, hospitals, and high-rise condominiums.

It should be noted that ENVIROCRON ULTRADURABLE powder coatings are not a replacement for PPG CORAFLON® powder coatings, which have been designed to meet the requirements of the AAMA2605 specification. CORAFLON powder coatings are the architectural coatings of choice when ultimate durability and performance are specified.

DURABILITY

ENVIROCRON ULTRADURABLE powder coatings were designed to meet the AAMA 2604 weathering specifications of less than 5 ΔE units color fade, maximum chalk rating of 8, and greater than 30% gloss retention after five years of exposure in south Florida. For projects requiring finishes that are easy to apply and still offer improved long-term durability, ENVIROCRON ULTRADURABLE powder coatings are the best



Five Year Florida Weathering Data Comparison



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