Architectural Shielding Using Aluminium Foil

European EMC Products

Product Datasheet

Architectural Shielding is the protection of buildings from electromagnetic fields using suitable shielding materials. Careful consideration of shielding attenuation, frequency range and cost will dictate the most effective material and method of installation. Commonly used materials include copper and aluminium foils and steel sheet.

Careful design, installation and selection of apertures will ensure the maximum practical performance will be achieved from the materials selected.

European EMC Products can offer a complete service from the initial RF site surveys to the design, installation and final attenuation testing.

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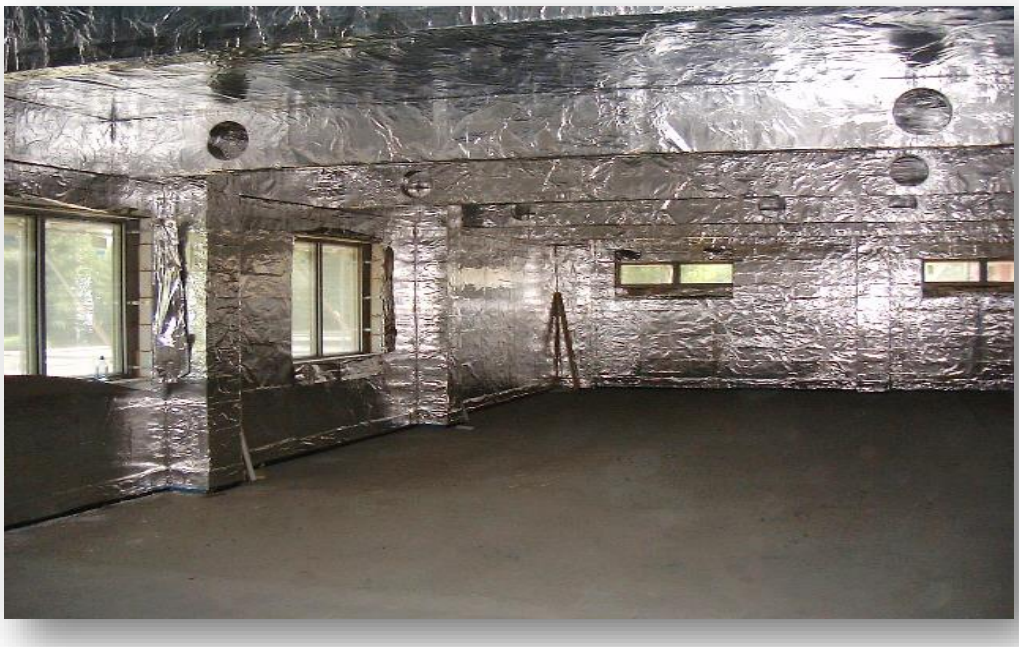
The shielding material should comprise of:

- 100 to 125 micron aluminium sheet bonded and overlapped to all walls and ceiling.
- All joints should be over lapped by 100 mm and sealed with metallic tape.
- The floor should be shielded with
  1 mm thick galvanised steel sheets, fixed to the floor with percussion type fixings.
- All sheets will be overlapped and sealed with tape which has a conductive adhesive.
- Steel sheet should also be fixed to the wall and ceiling where these coincide with the internal partition walls to be installed on completion of the shielding.



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Chemical Composition

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Other	Al (min)
1050	0.25	0.40	0.05	0.05	0.05		0.07		0.05	0.03	99.50
1200	Si + Fe =	1.00	0.05	0.05			0.10		0.05	0.15	99.00
3003	0.60	0.70	0.5-0.21	1.0-1.5			0.10			0.15	Rem
8011	0.50-0.90	0.60-1.0	0.10	0.20	0.05	0.05	0.10		0.08	0.15	Rem
8079	0.050-0.30	0.70-1.3	0.05	-	-	-	0.10	-	-	0.15	Rem
8111	0.30-1.1	0.40-1.0	0.10	0.10	0.05	0.05	0.10	-	0.08	0.15	Rem

Figures from the above table are taken from the Aluminium Associations Registration Record of Alloy Designations and Chemical Compositions limits.

Mechanical Properties:

Alloy	Gauge	Soft Temper			Hard Temper		
		Tensile Strength (Mpa)		Elongation (%)	Tensile Strength (Mpa)		Elongation (%)
		Min.	Max.	Min.	Min.	Max.	Min.
1050	6-9	35	80	1	135	-	-
	10-24	40	85	1	135	-	-
	25-40	45	90	2	135	-	-
	41-89	45	95	4	135	-	-
	90-139	50	95	6	-	-	-
	140-200	50	95	10	-	-	-
1200	6-9	40	95	1	140	-	-
	10-24	45	100	1	140	-	-
	25-40	50	105	3	140	-	-
	41-89	55	105	6	140	-	-
	90-139	60	105	10	-	-	-
	40-200	60	105	14	-	-	-
8079	6-9	45	100	1	150	-	-
	10-24	50	105	1	150	-	-
	25-40	55	110	4	150	-	-
	41-89	60	110	8	150	-	-
	90-139	60	110	13	-	-	-

For Further Information Visit: www.euro-emc.co.uk
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	140-200	60	110	16	-	-	-
8111	10-2	55	105	2			
8011	10-24	55	115	1	155		
	41-89	65	130	7	155		

Figures from the above table have been taken from BS EN 546-2

RF Shielded Doors should be of steel construction with a TCS (tin coated steel) knit mesh gasket for RF performance. Two-point latching should be used to ensure uniform compression of the gasket.

Ventilation Grills should be of steel or aluminium honeycomb construction with the minimum thickness of 12.7mm, 25.4mm for higher frequencies.

Pipe Penetrations should be prefabricated into 2mm steel plates then bonded to the shield.

Windows should be shielded using an internal secondary RF shielded glazed unit of stainless-steel mesh bonded between glass sheets.

Cable Penetrations, i.e. power and data, should enter the shielded room via RF Filters mounted on steel penetration panels.

Internal Fixing Points for decorative finishes should be metallic; i.e. steel studding frames used for plasterboard. The fixings can be mounted through the aluminium sheet but should then be sealed over using metallic tape. The number of fixings through the aluminium should be kept to a minimum.

RF Shielding Performance

20 – 30 dB of attenuation of radiated electric and plane wave signals over the frequency range 10 kHz to 10 GHz can be achieved. This equates to a signal reduction of 90 to 97%.

About Us

European EMC Products Ltd was formed in July 1996 to supply high quality products and services to the Electro-Magnetic Compatibility (EMC) market. The emphasis being on EMP and RF Shielded Chambers and associated products and services such as RF Shielded Windows, Shielded Doors and Shielding Effectiveness and EMP Testing.

Quality

European EMC Products are registered to BS EN ISO 9001:2015, Certificate No. FS 38901. License scope: The design, assembly, servicing and testing of RF Shielded structures and equipment including EMI shielding and thermal management materials; Gas tight doors; and specialised mobile electromagnetic pulse protected (EMPP) containers.

Disclaimer

NB: All of the information provided within this datasheet is for reference only. Product specifications are subject to change without notice.