

Microwave Curvilinear Absorber

ETS-Lindgren's Curvilinear Absorber provides optimal normal incidence reflectivity performance in the designed broadband frequency range. Generally, curvilinear absorber is preferred for chamber back walls and other "hot spots".

Features

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

Applications

- Telecom/Wireless
- Satellite
- High-Speed Electronics
- Automotive
- Military

Maximum Reflections at Normal Incidence

MODEL NUMBER	80 MHz	120 MHz	200 MHz	300 MHz	500 MHz	L-BAND 1-2 GHz	S-BAND 2-4 GHz	C-BAND 4-8 GHz	X-BAND 8-12 GHz	KU-BAND 12-18 GHz	K-BAND 18-40 GHz
CRV-15PCL						-40 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB
CRV-23PCL					-45 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB
CRV-40PCL	-10 dB	-12 dB	-30 dB	-45 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB
CRV-60PCL	-12 dB	-15 dB	-40 dB	-45 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB
CRV-67PCL	-20 dB	-30 dB	-35 dB	-35 dB	-40 dB	-45 dB	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB

Specifications

MODEL NUMBER	ABSORBER HEIGHT		PYRAMID	PYRAMID BASE DIMENSION	NOMINAL WEIGHT	PYRAMIDS PER ABSORBER	ABSORBERS PER CARTON	CARTON DIMENSIONS L x W x H
	OVERALL	BASE						
CRV-15PCL	38.1 cm (15 in)	5.1 cm (2 in)	33.0 cm (13 in)	10.2 cm x 10.2 cm (4 in x 4 in)	4.2 kg (9.2 lb)	36	4	63.5 cm x 63.5 cm x 124.5 cm (25 in x 25 in x 59 in)
CRV-23PCL	58.4 cm (23 in)	13.8 cm (5.45 in)	44.6 cm (17.6 in)	15.2 cm x 15.2 cm (6 in x 6 in)	6 kg (13.2 lb)	16	4	63.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)
CRV-40PCL	101.6 cm (40 in)	20.3 cm (8 in)	81.3 cm (32 in)	20.3 cm x 20.3 cm (8 in x 8 in)	8 kg (1.75 lb)	1	4	63.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)
CRV-60PCL	152.4 cm (60 in)	30.5 cm (12 in)	121.9 cm (48 in)	30.5 cm x 30.5 cm (12 in x 12 in)	2.8 kg (6.1 lb)	1	4	63.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)
CRV-67PCL	170.2 cm (67 in)	12.7 cm (5 in)	157.5 cm (62 in)	30.5 cm x 30.5 cm (12 in x 12 in)	10 (13.6) kg 22 (30) lb	4	1	63.5 cm x 63.5 cm x 210 cm (25 in x 25 in x 83 in)

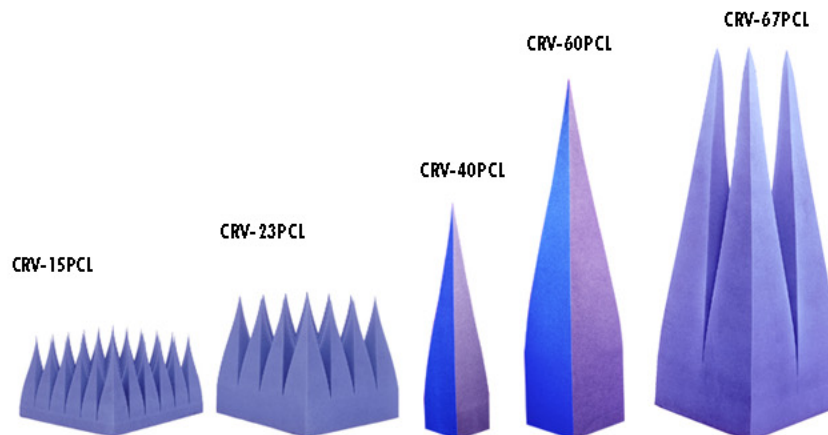
1) All absorbers are factory tested to verify rated reflection characteristics.

2) We will custom fabricate microwave absorbers to any special size, shape, or modified impregnation formulation: a) Absorber for millimeter wave applications; b) Absorber with monolithic construction up to 1.8 m (6 ft) height; c) Absorber up to 3.7 m (12 ft) height for low frequency (80MHz) applications; d) Non-fire retardant absorber formulation.

3) Due to the characteristics of polyurethane foam, some settling may occur during shipment, resulting in dimensional tolerances of .25 mm (0.25 in).

MODEL NUMBER	MAX POWER DENSITY	MAX SERVICE TEMP	FIRE RETARDANCY	ADHESIVE	VELCRO	CLIP & RAIL	ENVIRONMENTAL TEMPERATURE	SPECIFICATIONS RELATIVE HUMIDITY	COLOR
CRV-15PCL	500 V/m 775 W/m ² 0.5 W/in ²	90° C 190° F	NRL 8093 Tests 1,2,3 Raytheon #2693066 MIT MS-8-21 UL 94 DIN 4102 E2	Y	Y	Y	70° F ± 20° F 22° C ± 10° C	50% ± 20%	Rantec Blue
CRV-23PCL					Upto 15"				
CRV-40PCL					N				
CRV-60PCL									
CRV-67PCL									

Note: The charts on the following pages contain measured data for our standard absorbers. This data is a statistical representation of thousands of measurements, which have been recorded during final inspection at our factory. Each performance chart includes three legends: *Guaranteed Performance*-this equals the QC Pass/Fail limit, *Typical Performance*-this is the statistical average of each measurement point, *Worst Case*-this equals the lowest performance at each measurement point.



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ETS-Lindgren's Curvilinear Absorber optimizes normal incidence reflectivity performance throughout its broadband frequency range. The absorber is ideal for chamber backwalls and other "hot spots" that require high Quiet Zone (QZ) reflectivity performance at normal incidence. In anechoic chambers, curvilinear absorber extends the usable frequency range to as low as 100 MHz, without using expensive ferrite tiles or effecting high frequency performance.

Compared to traditional absorber, our curvilinear absorber delivers similar reflectivity performance in a smaller form factor. The benefit is maximum available workspace for a given chamber shield enclosure.

We offer two types of curvilinear absorber: complimentary and non-complimentary. Complimentary optimizes performance at the higher frequencies (>1 GHz), while non-complimentary is designed for products designed to operate in the VHF (100 MHz and above) frequency range. The benefit is that the pyramidal taper can be used to optimize reflectivity performance in the critical frequency band.

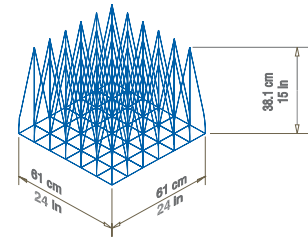
ETS-Lindgren manufactures the curvilinear absorber from high quality, low-density polyurethane foam. A double immersion process evenly impregnates the foam with a proprietary conductive carbon formula and fire retardant salts.

Each individual absorber curve and material complex permittivity is optimized using in-house numerical electromagnetic design packages. This design process enables us to achieve best possible absorber normal incidence reflectivity performance at a given depth. The optimized design is then precision-cut on a computer controlled (CNC) saw with a multi-directional wire. This ensures that the curve is accurate and consistent with the required shape as defined in the optimization.

Fifteen individual quality assurance checks take place during production. The final measured performance data and serial number of each curvilinear absorber unit is recorded and kept on file. The curvilinear absorbers meet the fire retardant standards of NRL 8093 Tests 1, 2 & 3, Raytheon Drawing #2693066, MIT MS-8-21, UL 94, and DIN 4102-B2: Tests for Flammability. They pass the ASTM E84-84 flame-spread index of 35 and a smoke developed index of 450.

CRV-15PCL Microwave Absorber

CURVILINEAR, HI-PERFORMANCE



Features

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

Physical Specifications

MODEL	CRV-15PCL	
Absorber Footprint	61 cm x 61 cm (24 in x 24 in)	
Absorber Height	Overall	38.1 cm (15 in)
	Base	5.1 cm (2 in)
	Pyramid	33.0 cm (13 in)
Pyramid Base Dimension	10.2 cm x 10.2 cm (4 in x 4 in)	
Pyramids per Absorber	36	
Weight (1 piece)	4.2 kg (9.2 lb)	
Absorbers per Carton	4	
Carton Dim. L x W x H	63.5 cm x 63.5 cm x 124.5 cm (25 in x 25 in x 59 in)	

FREQUENCY/BAND	TYPICAL REFLECTIVITY	GUARANTEED REFLECTIVITY
1-2 GHz L-Band	-42 dB	-40 dB
2-4 GHz S-Band	-52 dB	-50 dB
4-8 GHz C-Band	-55 dB	-50 dB
6-12 GHz X-Band	-55 dB	-50 dB
12-18 GHz Ku-Band	-55 dB	-50 dB
12-40 GHz K-Band	-55 dB	-50 dB

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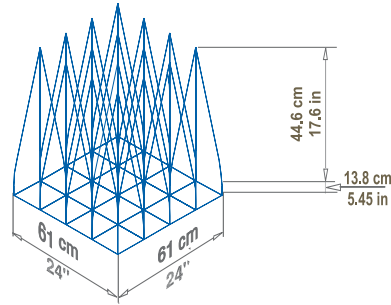
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CRV-23PCL Microwave Absorber

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Features

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

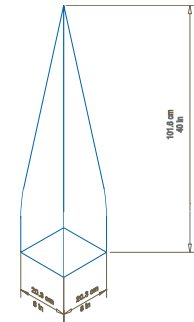
Physical Specifications

MODEL	CRV-23PCL	
Absorber Footprint	61 cm x 61 cm (24 in x 24 in)	
Absorber Height	Overall	58.4 cm (23 in)
	Base	13.8 cm (5.45 in)
	Pyramid	44.6 cm (17.6 in)
Pyramid Base Dimension	15.2 cm x 15.2 cm (6 in x 6 in)	
Pyramids per Absorber	16	
Weight (1 piece)	6 kg (13.2 lb)	
Absorbers per Carton	4	
Carton Dim. L x W x H	63.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)	

FREQUENCY/BAND	TYPICAL REFLECTIVITY	GUARANTEED REFLECTIVITY
500MHz	-47 dB	-45 dB
1-2 GHz L-Band	-55 dB	-50 dB
2-4 GHz S-Band	-55 dB	-50 dB
4-8 GHz C-Band	-55 dB	-50 dB
6-12 GHz X-Band	-55 dB	-50 dB
12-18 GHz Ku-Band	-55 dB	-50 dB
12-40 GHz K-Band	-55 dB	-50 dB

CRV-40PCL Microwave Absorber

CURVILINEAR, HI-PERFORMANCE



Features

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

Physical Specifications

MODEL	CRV-40PCL	
Absorber Footprint	20.3 cm x 20.3 cm (8 in x 8 in)	
Absorber Height	Overall	101.6 cm (40 in)
	Base	20.3 cm (8 in)
	Pyramid	81.3 cm (32 in)
Pyramid Base Dimension	20.3 cm x 20.3 cm (8 in x 8 in)	
Pyramids per Absorber	1	
Weight (1 piece)	0.8 kg (1.75 lb)	
Absorbers per Carton	4	
Carton Dim. L x W x H	63.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)	

FREQUENCY/BAND	TYPICAL REFLECTIVITY	GUARANTEED REFLECTIVITY
80MHz	-12 dB	-10 dB
100MHz	-14 dB	-12 dB
200MHz	-33 dB	-30 dB
300MHz	-47 dB	-45 dB
500MHz	-52 dB	-50 dB
1-2 GHz L-Band	-55 dB	-50 dB
2-4 GHz S-Band	-55 dB	-50 dB
4-8 GHz C-Band	-55 dB	-50 dB
6-12 GHz X-Band	-55 dB	-50 dB
12-18 GHz Ku-Band	-55 dB	-50 dB
12-40 GHz K-Band	-55 dB	-50 dB

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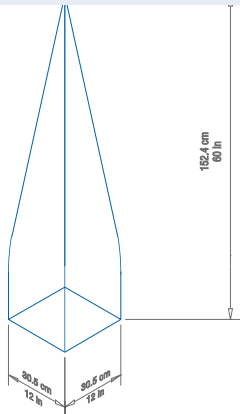
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CRV-60PCL Microwave Absorber

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Features:

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

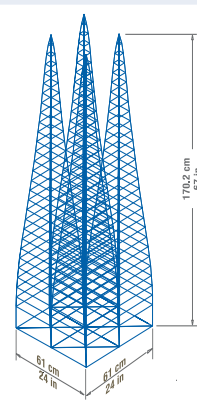
Physical Specifications

MODEL	CRV-60PCL	
Absorber Footprint	30.5 cm x 30.5 cm (12 in x 12 in)	
Absorber Height	Overall	152.4 cm (60 in)
	Base	30.5 cm (12 in)
	Pyramid	121.9 cm (48 in)
Pyramid Base Dimension	30.5 cm x 30.5 cm (12 in x 12 in)	
Pyramids per Absorber	1	
Weight (1 piece)	2.8 kg (6.1 lb)	
Absorbers per Carton	4	
Carton Dim. L x W x H	163.5 cm x 63.5 cm x 157.5 cm (25 in x 25 in x 62 in)	

FREQUENCY/BAND	TYPICAL REFLECTIVITY	GUARANTEED REFLECTIVITY
80 MHz	-14 dB	-12 dB
100 MHz	-16 dB	-15 dB
200 MHz	-43 dB	-40 dB
300 MHz	-48 dB	-45 dB
500 MHz	-53 dB	-50 dB
1-2 GHz L-Band	-53 dB	-50 dB
2-4 GHz S-Band	-55 dB	-50 dB
4-8 GHz C-Band	-55 dB	-50 dB
6-12 GHz X-Band	-55 dB	-50 dB
12-18 GHz Ku-Band	-55 dB	-50 dB
12-40 GHz K-Band	-55 dB	-50 dB

CRV-67PCL Microwave Absorber

CURVILINEAR, HI-PERFORMANCE



Features:

- Improved Low Frequency Reflection Suppression Performance
- 500 V/m Power Handling Capability

Physical Specifications

MODEL	CRV-67PCL	
Absorber Footprint	61 cm x 61 cm (24 in x 24 in)	
Absorber Height	Overall	170.2 cm (67 in)
	Base	12.7 cm (5 in)
	Pyramid	157.5 cm (62 in)
Pyramid Base Dimension	30.5 cm x 30.5 cm (12 in x 12 in)	
Pyramids per Absorber	4	
Weight (1 piece)	13.6 kg (30 lb)	
Absorbers per Carton	4	
Carton Dim. L x W x H	63.5 cm x 63.5 cm x 210 cm (25 in x 25 in x 83 in)	

FREQUENCY/BAND	TYPICAL REFLECTIVITY	GUARANTEED REFLECTIVITY
80 MHz	-22 dB	-20 dB
100 MHz	-33 dB	-30 dB
200 MHz	-38 dB	-35 dB
300 MHz	-39 dB	-35 dB
500 MHz	-43 dB	-40 dB
1-2 GHz L-Band	-49 dB	-45 dB
2-4 GHz S-Band	-55 dB	-50 dB
4-8 GHz C-Band	-55 dB	-50 dB
6-12 GHz X-Band	-55 dB	-50 dB
12-18 GHz Ku-Band	-55 dB	-50 dB
12-40 GHz K-Band	-55 dB	-50 dB

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