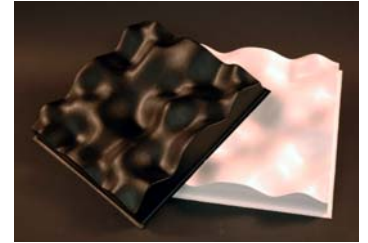


# Waveform *Harmonix-K™*

2D Diffusion



Application of T-bar mounted absorptive and reflective ceiling systems have been a traditional approach to acoustical control. However, sound can also be controlled using diffusion. RPG pioneered the sound diffusion market over 25 years ago, with a range of number theoretic diffusing products. The tradition continues with the introduction of a new entry into the T-bar mounted acoustical ceiling market, the Waveform Harmonix-K. RPG utilized its patented Shape Optimizer and aperiodic modulation technology to provide an interesting and modern contoured surface that has the unique appearance of a bas relief sculpture. The center of each panel is asymmetric, however, the sides are identical. Therefore, this unique acoustically optimized asymmetric shape, offers the opportunity to create an unlimited range of surfaces, determined only by the orientation of adjacent panels. The Harmonix-K is thermoformed from a Class A plastic for safety and economy and designed to simultaneously provide optimal coverage and low frequency absorption. This offers clarity, due to control of low frequency reverberation and uniform coverage, due to optimal diffusion and lack of periodicity effects. Add beauty and

*Optimized Compound Curvature Kydex Ceiling Tiles  
From The Acoustical Industry's Leading Innovator*



improved acoustical performance to your room with Harmonix-K.

**The Sound of Innovation™**

# Problem and Solution

## Problem

An “acoustic ceiling” has come to mean absorptive mineral or fiberglass tiles. Exclusive use of only mid-high frequency absorption in the ceiling cannot optimize the acoustics of spaces where music is to be enjoyed or speech is to be understood. The industry needed a complementary sound diffusing tile for these applications.

## Solution

The Waveform Harmonix-K™ is the first cost-effective, Class A, molded 2D sound diffuser that simultaneously offers uniform mid-high sound diffusion and optimal low frequency absorption to control problematic low frequency reverberation and provide uniform coverage.

## FEATURES

- Acoustically optimized shape
- Unique asymmetric core with identical sides
- Seamless tiling in any orientation
- Fire rated
- T-bar installation
- Thermoformed acrylic-polyvinyl chloride light weight ceiling tile
- Diaphragmatic low frequency absorber
- Units nest for shipping
- Color options

## BENEFITS

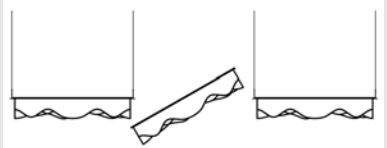
- The acoustically optimized shape, generated by RPG’s Shape Optimizer software, ensures uniform sound diffusion and coverage
- Sound diffusion is further improved using RPG’s patented (6,772,859) aperiodic modulation of a single asymmetric base shape, which allows adjacent tiles to be seamlessly oriented in any direction to minimize periodicity effects
- The fire rated ceiling tile can be used in all applications requiring a Class A rated material
- Light weight ceiling tiles install quickly and easily in standard 15/16” T-bar
- Harmonix-K offers low frequency absorption and mid-high frequency diffusion
- Since units nest, shipping costs are reduced
- Tiles are available in a wide variety of colors and textures, no field finishing necessary

## APPLICATIONS

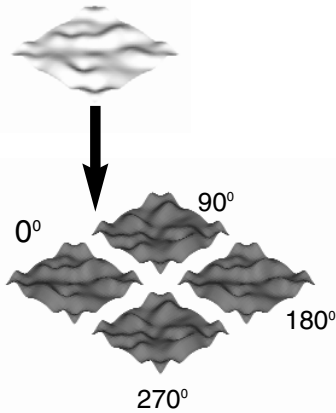
Auditoriums, Rehearsal rooms, Performance and Worship Spaces, Studios and Control Rooms.

## SPECIFICATIONS

- Panels 22 7/8” x 22 7/8” x 4”
- Weight: 3 lbs
- Thickness: 0.093” Kydex
- Panel damping with low density fiberglass recommended in the field (not supplied)
- Finish: White Kydex (standard)



# Performance Specifications

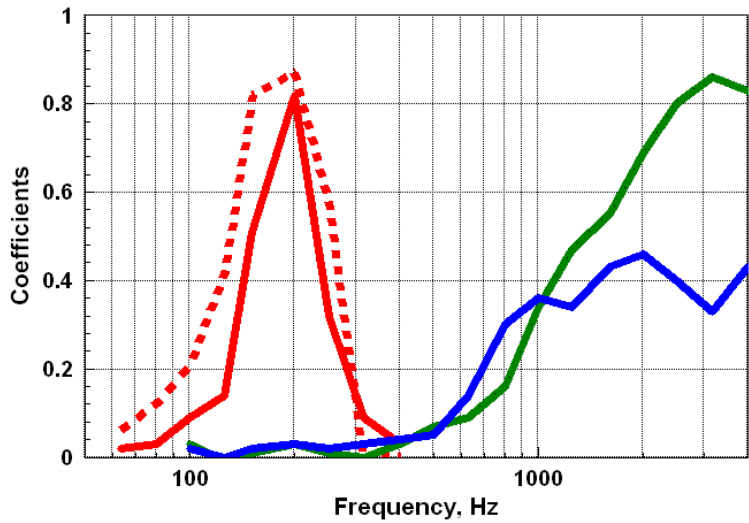


## Aperiodic Modulation of a Single Asymmetric Base Shape

RPG’s patented Aperiodic Modulation of a Single Asymmetric Base Shape allows the creation of wide area coverage seamlessly with a single asymmetric base shape (top), thus minimizing periodicity effects. This is possible, because the optimized asymmetric central shape morphs into identical sides, which have a zero gradient, allowing adjacent tiles to seamlessly transition without discontinuity in any orientation (bottom).

## Performance

The graph below illustrates the random incidence diffusion (green), scattering (red) and absorption coefficients (undamped (blue) and damped (black) with low density fiberglass in the cavity) for the Harmonix-K.



Legend  
— Diffusion    — Scattering (ISO)    — Absorption    - - - Dampec

# Installation

The Harmonix-K installs in a tegular mount in a standard 15/16 T-bar grid. Modules can be oriented in any direction and the perimeter topology will be identical.