

# ELASTIZELL

## HYBRID INSULATING CONCRETE ROOF DECK SYSTEMS



[www.Elastizell.com](http://www.Elastizell.com)

**Permanent**

**Slope-to-Drain**

**Lightweight <8 psf**

**High R-Value**

**Superior to  
Insulation Board**

**Economical**

**PERMANENT  
QUALITY ROOF DECKS FOR  
NEW CONSTRUCTION  
AND  
REROOFING APPLICATIONS**

# A SUPERIOR PRODUCT

## THE ELASTIZELL ADVANTAGE

Elastizell Hybrid Mixtures combine the best characteristics of expanded aggregate concrete (vermiculite or perlite) and Elastizell cellular concrete. The expanded aggregate additive retains enough water to improve hydration of the insulating concrete mixture, and it also acts as a rheological modifier for sloped applications.

### Elastizell Hybrid Insulating Concrete Roof Decks are:

- ▶ Permanent
- ▶ Insulative
- ▶ Nailable
- ▶ Uplift Resistant
- ▶ Economical
- ▶ Moisture Resistant
- ▶ Strong
- ▶ Non-combustible
- ▶ Compatible with Roofing
- ▶ Dimensionally Stable

Elastizell Hybrid Insulating Concrete Roof Decks are superior to both straight 1:6 mixtures and specialized 1:4 vermiculite mixtures. The Elastizell Hybrid system is a permanent insulation solution such that only the roofing membrane needs replacing when reroofing is necessary. It also provides many advantages over rigid insulation board systems.

## DIFFICULTIES INHERENT WITH RIGID INSULATION BOARD

	RIGID INSULATION BOARD	ELASTIZELL HYBRID ROOF DECKS
ReRoofability	Difficult since insulation must be removed, disposed, and replaced	Since insulation is permanent, simply replace the membrane
Slope-to-Drain	Positive slope & drainage is difficult and often impossible to attain	Slope-to-Drain is cast-in-place
Life Cycle Cost	High cost when materials, labor and maintenance costs are added	Low cost with minimum maintenance required
Moisture Absorbance and Transfer	Absorbs and transfers moisture during roofing failures - must replace insulation	Low moisture absorbing components
Installation Over Metal Deck	Water collecting in flutes, under insulation, is a serious problem and open flutes create a fire path	Flutes are filled with slurry eliminating water collection and fire path
Fasteners	<ul style="list-style-type: none"> <li>• Board may creep if not fastened properly</li> <li>• Fastener corrosion</li> <li>• Not holding to thin metal sections</li> </ul>	Nailable or adhered membrane bonded to substrate
Insulation	Low mass, results in greater thermal shock of the membrane	Greater thermal mass lessens thermal shock of the membrane

## PHYSICAL PROPERTIES

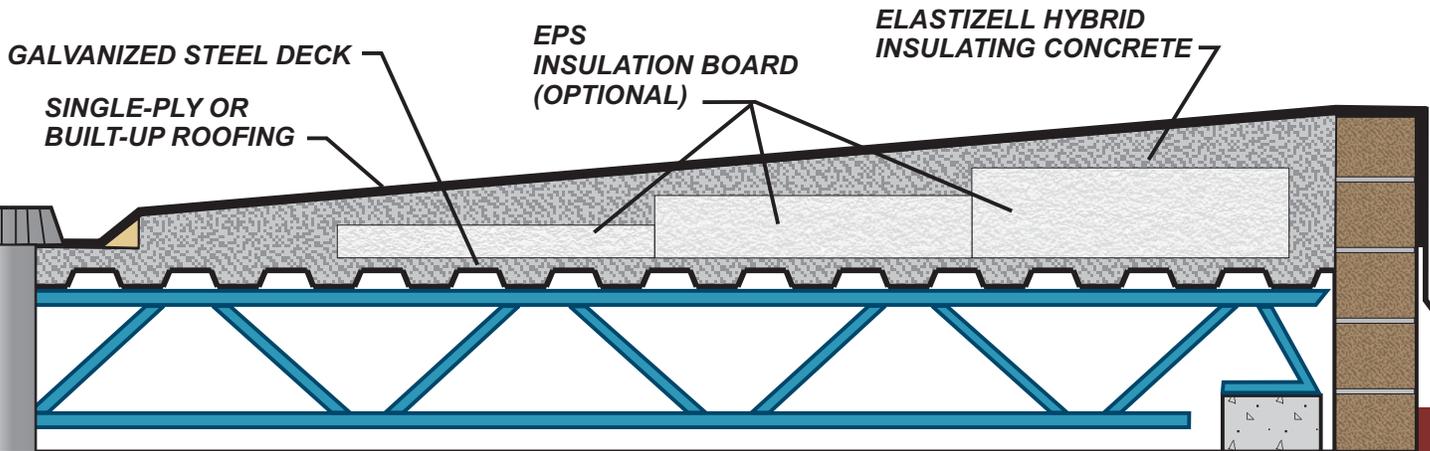
ELASTIZELL HYBRID	Cast Density (pcf)	Dry Density (pcf)	28-Day Minimum Compressive Strength	R-value (per inch)*
MIX A	42-48	32-38	200 psi	1.20
MIX B	48-54	38-44	250 psi	1.00

NOTE: Thermal conductivity is based on the minimum dry density measured at a mean temperature of 75°F per ASTM C518.

Over Steel Decks and Concrete Substrates

Elastizell Hybrid Mixtures may be cast over either slotted or non-slotted steel decks according to local conditions. Specify Elastizell over galvanized steel deck. Casting slope-to-drain Elastizell over steel deck systems is more economical than sloping the structural steel.

NEW CONSTRUCTION



## Wind Uplift

### Miami-Dade County (Florida) - Product Approval Number 00-0815.04

Steel Decking	Maximum Design Pressure
1-225 Elastizell Hybrid - 26 gauge steel deck @ 5' Spacing	112.5 psf
1-150 Elastizell Hybrid - 22 gauge steel deck @ 6' Spacing	75 psf
Structural Concrete	
New Concrete - Standard Elastizell	205 to 240 psf
Concrete with Temporary Membrane - Standard Elastizell	112 to 342 psf

### Factory Mutual Tests

Steel Decking	Rating
Elastizell Hybrid - 22 gauge steel deck @ 5' spacing	1-120
Elastizell Hybrid - 22 gauge steel deck @ 5' spacing	1-105
Elastizell Recover - 22 gauge steel deck @ 5' spacing	1-195
Structural Concrete	
New Concrete - Standard Elastizell	1-540
Concrete with Temporary Membrane - Standard Elastizell	1-255

### FM Pull Tests of Elastizell over Structural Concrete

<b>225+ psf</b>	BUR cover with slurried EPS board and Elastizell topping
<b>480+ psf</b>	Slurried EPS board and Elastizell topping
<b>480+ psf</b>	Elastizell topping only
Note: Samples did not fail - Limits of testing equipment exceeded	

## ELASTIZELL UL FIRE-RATED SYSTEMS



**Unprotected Steel Deck** P902, P903, P907, P908, P919, P920, P921, P922, P923, P924, P925, P926, P927, P928, P929, P930

**Protected Steel Deck** **Armstrong Ceiling:** P215, P216, P231, P251 **Other Tile Ceiling:** P214, P241, P246, P255, P261, P264

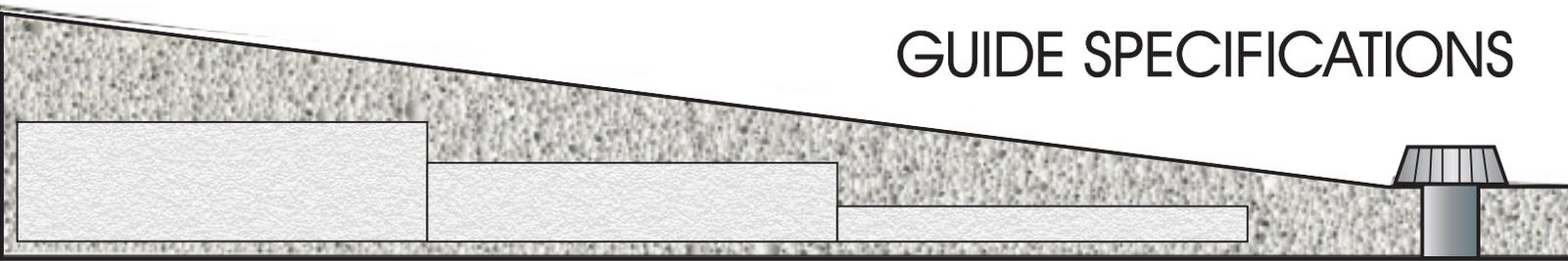
**Plaster Ceiling:** P405, P406, P407, P410, P411 **Gypsum Board Ceiling:** P405, P406, P407, P410, P411

**Precast Concrete Deck** **Exposed:** P215, P216, P231, P251 **Sprayed Fireproofing:** P708, P737, P810, P812

**Structural Concrete & Protected Steel Deck** D708, D750, D755, D759, D768, D775, D832

**Structural Concrete & Unprotected Steel Deck** D902, D916, D919, D922, D923, D925, D927, D929

# GUIDE SPECIFICATIONS



## Part One: General

1.1 Description of work: Provide a hybrid insulating concrete roof deck system as shown on the drawings and as needed for a complete and proper installation.

1.2 Applicator qualification: The Applicator shall be approved by the Manufacturer - Elastizell Corporation of America.

1.3 Certification: When required and upon completion a certificate from the Manufacturer and co-signed by the Applicator states that the materials and installation methods follow current practices.

1.4 Product data: Prior to start of the work of this Section, present installation procedures, and submittals, as required, for fire ratings and wind uplift data for this application.

## Part Two: Products

2.1 Hybrid insulating concrete is a slurry of cement, water, expanded aggregate and Elastizell to produce insulating concrete of a specific density range. Concentrate shall comply with ASTM C869 when tested in accordance with ASTM C796.

2.2 Cement: Portland cement shall comply with ASTM C150, C595 or C1157.

2.3 Admixtures: Admixtures for water reducing and set acceleration may be used if approved by the Manufacturer.

2.4 Water: Use potable water.

2.5 Aggregate: For hybrid mixtures, the expanded aggregate shall comply with ASTM C332.

2.6 Mixture Designations (see Physical Properties Table):

**Mix A:** for nailed base sheet membrane systems

**Mix B:** for nailed base sheet or fully adhered membrane systems

2.7 Insulation Board: When included, a minimum 1.0 pcf EPS insulation board shall conform to ASTM C578, in thickness shown on the drawings. EPS board shall have a minimum 6-3" diameter bond holes for each 8 square feet of board. The board is placed in a bond coat and topped with a minimum 2" of Elastizell concrete. The EPS board may be stair-stepped or of constant thickness.

2.8 Expansion joints are necessary when there are expansion joints in the structural system and per NRCA recommendations.

2.9 Reinforcement: Elastizell hybrid insulating concrete may contain Zell-Crete Fibers in minimum quantities of 1#/cubic yard in lieu of Keydeck mesh requirements. This provides reinforcement throughout the slab thickness.

## Part Three: Execution

3.1 Inspection: Prior to starting work, any unsatisfactory conditions of related trades shall be corrected by others.

3.2 Installation: Install the hybrid insulating concrete roof deck system in accordance with current practices to insure proper drainage, the required insulation value, and the published fire and uplift ratings.

3.2.1 Preparation: General Contractor shall clear the deck of all standing water, dirt, debris, ice, etc. Prepare the roof grades prior to placing the hybrid insulating concrete roof deck system.

3.2.2 Mixing and placing: Hybrid insulating concrete is mixed in approved equipment and pumped into place. EPS bond coats, double casting, and two-density casting are acceptable methods of installation.

3.2.3 Finishing: Hybrid insulating concrete shall be screeded to the proper thickness and slope with a surface free of ridges and sharp projections prior to installation of the roofing membrane.

3.2.4 Weather: Hybrid insulating concrete roof decks may be placed when temperatures are 40°F and rising at the discretion of the installer. If colder temperatures are anticipated, the Applicator shall take suitable precautions for the installation of an acceptable deck. The roofing membrane application must be coordinated with the insulating concrete installation to avoid prolonged exposure of the roof deck.

3.2.5 Testing: Check the cast density during placement and adjust the mix to obtain the required cast density. A minimum 4 test specimens (3"x6" cylinders) shall be sampled daily or for each 100 cubic yards of material placed. Protect samples from damage and temperature extremes and test according to ASTM C796. Elastizell concrete samples shall not be oven-dried prior to compressive testing. Testing shall be conducted and reported by the Manufacturer.

3.3 Completion: Begin roofing when the hybrid insulating concrete roof deck can withstand construction traffic. This is usually 1 to 2 days after the deck has been placed. The roof deck should not be left exposed for longer than 5 to 7 days. The Applicator cannot be responsible for moisture (rain) entering the roof deck after the deck is cast and finished. The general contractor and roofing contractor are responsible for removing excess water (rain) in the system. Consult the roofing manufacturers for their recommended nailing pattern for attaching the base sheet to the hybrid insulating concrete roof deck system or for fully adhered systems.

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