



Product Data Sheet

Description

CityMix is a patent pending lightweight concrete additive consisting of individual expanded polystyrene (EPS) waste particles encapsulated in an applied coating. The product is static free, mixes easily and uniformly, and bonds extraordinarily well to cement paste. CityMix by weight consists of approximately 50% EPS-based inner core and 50% proprietary, non-toxic outer shell. By volume, CityMix consists of 99% recycled EPS particles with 1% outer coating.

CityMix is classified as Non-Hazardous (see MSDS).

Features

- Ultra-Lightweight Additive (Appx 2.5 – 3.0 lb/ft³)
- Non-Static Handling
- Mixes Easily & Uniformly
- Non-Combustible (ASTM E84 Class A Flame and Smoke Rating)
- Contains 99% Recycled Content (By Volume)
- Helps Reduce Transportation, Handling and Installation Costs
- Enables Lighter Structure Weight

Benefits

- Cementitious Mixtures Can Be Designed to Specific Unit Weight
- Improved Freeze-Thaw Resistance
- Increased Flexural Strength
- Tailored Compressive Strength
- Improved Crack Resistance
- Improved Thermal Resistance
- Decreased Permeability

Mix Designing: CityMix is designed to serve as an ultra-lightweight VOLUME SUBSTITUTION MATERIAL for equal parts by volume of natural aggregates and SHOULD ONLY BE MEASURED BY VOLUME, never by weight. Even minor particle size and density variations can have a significant effect upon CityMix weight or bulk density. Measuring or adding the product into a batch mix by WEIGHT is never advised. To begin the mix designing process, the effective volume of CityMix should be regarded as approximately 50% of the bulk volume, which is similar to natural aggregates, such as sand. Test mixing should always be performed to verify or adjust the effective volume factor of CityMix. Minor variations can be expected due to each individual manufacturer's mixer, materials and/or process.

Sustainability: CityMix helps recycle the largest volume consumer waste product in the North American landfill into a lightweight, user-friendly and performance-enhancing additive for use in concrete, the world's most common building material. Traditional concrete products are typically made with heavy and rurally mined natural aggregates requiring energy-demanding processing, handling and transporting equipment and procedures. Conversely, the use of recycled, ultra-lightweight CityMix-containing concrete provides significant potential for net carbon reduction. LEED documentation support and other product sustainability information is available from your CityMix representative.

Packaging:

CityMix is volume packaged into flexible tote bags. Packaged volume remains consistent, although content weight may vary due to post-manufacturing-moisture evaporation or other atmospheric conditions. Other volume packaging options may be available upon request. Packaged product shelf-life is one year from date of manufacture.

Storage:

CityMix should be stored in a cool, dry space and away from open flame and heat sources.

Preparation:

CityMix particle size separation and settlement may have occurred during shipment, so care should be taken to gently tumble or otherwise agitate contents to ensure uniform distribution of large and small particles.

Temperature:

CityMix is largely made up of recycled expanded polystyrene, which is affected by temperatures above 180°F both before and after the mixing/batching process. Consult with your CityMix representative for exposure information above 180 F.

Safe Handling:

CityMix contains respirable dust. As with all dust generating material, adequate dust mask and eyewear should always be worn when handling this product. Care should also be taken to inhibit wind or fans from dispersing particles. Good housekeeping should be observed to maintain clean work surfaces. Product can be swept or picked up and placed into a suitable container for disposal. Spills may present a slipping hazard and may present a risk of explosion or fire if exposed to high temperatures and/or sources of ignition.

Bulk Density Variation:

The CityMix manufacturing process leaves trace amounts of surface moisture on the finished particles, so bulk density will vary with the degree of moisture evaporation. In dry or windy environments the moisture will evaporate more quickly compared to more humid environments. The total weight of material in each tote can vary by as much as 30% in extreme cases. For this reason, CITYMIX MUST ONLY BE MEASURED AND ADDED BY VOLUME, never by weight.

Specific Gravity:

The mix designing process using CityMix is strictly based on volume replacement of natural aggregate, making the specific gravity value unnecessary.

Compression & Resiliency:

CityMix is a resilient material, as evident from lab testing and field experience in both pumping and mixing applications. The material exhibits little or no swelling of concrete mixtures after incorporation into the manufacturing or placing process.

Water Absorbance:

CityMix has negligible water absorbance due to the closed cell nature of the EPS particles and its surface coating material.

Bagging Dry Cement-Based Mixtures:

When blending and bagging dry concrete products such as stucco base coat and premixed concrete, the CityMix component must be dried to acceptable standards to prevent any risk of premature hydration. Please contact your CityMix representative to discuss acceptable drying, packaging and storage methods and conditions.

Use of Additives:

CityMix does not require accompanying use of any special additives, but is compatible with mix designs incorporating various and common air entraining agents, plasticizers, surfactants, etc.

Maximum Usage:

CityMix can be used in structural concrete to reduce overall concrete weight by up to approximately 20%, and can also be used to create weight reduction up to 75%, or more, in various non-structural products and applications.

Air Content:

The air content of concrete mixes containing CityMix should be maintained according to codes and standards. As with many cementitious mixtures the air content may vary with vibration time, frequency and amplitude. A minimum addition volume of CityMix can be determined that will provide the void structure for freeze-thaw durability, but only by testing the particular mix design. Contact your CityMix representative for more information.

Mixing & Batching:

CityMix can be added at any point during the process, although users should be aware of, and adjust for, any possible pulverizing action caused by the manufacturing process. CityMix is not hydrophobic during the mixing process so it will easily and quickly incorporate into wet concrete mixtures. An ideal mixing procedure can be quickly developed to prevent under or over mixing. Most common types of mixing equipment such as paddle, pan, drum and/or ribbon mixers can be used. Contact your CityMix representative when using unusual mixing equipment.

Curing:

Curing a cementitious mixture incorporating CityMix material may require a slightly longer initial curing period. Cure properly with high humidity similar to other cementitious mixtures.

Conveyance:

CityMix is a very lightweight material and is able to be conveyed within a manufacturing facility with airvey equipment or by many methods of gravity flow. Static charge should not pose a conveyance hindrance.

End-of-Life-Cycle Usage:

Concrete products containing CityMix can be recycled for backfill, roadbed and other forms of recycled concrete uses. Please contact your CityMix representative to discuss further recycling specifics.

Testing & Certification:

Please contact your CityMix representative for current ICC, ASTM and/or other testing and certification data.