

PROJECT REFERENCE

# Multi-Family and Mixed-Use Buildings

In the United States, the residential market has become a race under pressure to find affordable, sustainable, and available housing. We have witnessed a recent surge in apartment, townhouse, and mixed-use or co-op dwellings under construction. In fact, there are more multi-family buildings being built than we have seen since the 1970s. This now gives renters more options and gives architects and building owners more incentive to create energy-efficient multi-family construction projects. Specifying Armacell insulation solutions for a multi-family or a mixed-use building's systems will help with distinct design challenges that occur in these communities. **Armacell in action.**

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MAKING A DIFFERENCE AROUND THE WORLD



# Design Solutions

## Multi-Family Residential and Mixed-Use

A little over 40 million people in the United States live in multi-family housing like apartments, condominiums, townhouses, and mixed-use developments. The squeeze on the housing market combined with economic inflation has driven more people to consider multi-family homes opposed to more costly single-family homes. This trend will only continue to grow with ongoing urbanization and supply chain bottlenecks leftover from the pandemic. Americans are further choosing multi-family living because of affordability, location, modern quality, and amenity inclusion.

Multi-family buildings have different structure, HVAC and plumbing requirements than single-family homes. Design priorities in multi-family buildings like managing peak energy load, delivering room-to-room comfort control, noise attenuation, and optimizing overall systems, create unique opportunities for material selection. Materials that promote energy efficiency and sustainability are key, especially those for use on heating and cooling systems. And while insulation may seem like a small factor in support of building amenities and tenant affordability, it is imperative for modern mechanical systems in many ways.

### MANY LEVELS OF CHALLENGES

Heating and cooling challenges within vertically and horizontally oriented multi-family buildings create distinct design challenges. Although requirements will vary per building and room, the building's end goals of efficiency, performance, sustainability, accessibility, and availability are paramount. A building may be required to operate different heating and cooling programs during the day versus at night. Within the same building, a condenser water system could service residential floors via water-source heat pumps with VRF (variable refrigerant flow) in the recreation floors





and common areas. Additionally, VRF could be used to cool management offices while the resultant hot and cold water is used to heat and cool the lobby area via radiant technologies. All of these separate but shared systems can benefit from insulation.

One growing challenge is the increased usage of varied ducting and plumbing within vertical multi-family structures. These varied sizes and location constraints can lead to issues of moisture intrusion during operation if not properly considered and protected. If, for instance, moisture intrusion occurred on a system that was left unprotected, it could lead to mold problems that may go undetected for months or even years simply as a result of the physical constraints of the construction envelope. Additionally, refrigerant piping is a constant culprit for condensation build up and even refrigerant leaks over time. As this piping traverses the inner workings of a building, the risk of moisture damage increases exponentially. Designing a system with the most protective insulation barrier is insurance any designer can afford.

Another challenge for multi-family buildings is noise attenuation. These complex buildings contain many different air-conditioning technologies, and it is assumed that the noise from fans and blowers inherent to these technologies will create unpleasant noises

## Did you know?

The most populated apartment complex, Stuyvesant Town–Peter Cooper Village, covers about **80 acres (320,000 m<sup>2</sup>)** of land in New York City and contains **11,250 apartments in 55 buildings**. This complex is so large it has 110 separate street addresses!



and acoustic ailments. While insulation can be used to control temperature and efficiency, the acoustic benefits should not be taken for granted in designs mitigating confined spaces. For example, air-handling units cooling an onsite fitness center require specific acoustic conditioning to maintain the audio comfort of occupants in the residential areas. Lining and wrapping ductwork with closed cell insulation helps manage audio frequencies specific to air-handlers.

Insulation can also assist in one other challenge for multi-family buildings – indoor air quality (IAQ). Questionable IAQ is nonnegotiable for people in their homes and particulate-free air is considered a reasonable right, not an amenity. IAQ is especially important in HVAC ductwork, where fibrous material can get caught up in the air stream exposing building occupants to airborne particulates. Not only is our insulation non-particulating – meaning its structure will not break apart and become airborne – it is completely fiber-free and made with exclusive Microban® antimicrobial protection to resist the growth of mold and mildew on the insulation. It is also GREENGUARD® Gold Certified to low emission standards with low VOCs and no off-gassing.

### INSULATION DESIGNED FOR MULTI-FAMILY BUILDING APPLICATIONS

Armacell's insulation systems are ideal for insulating chilled water piping, chillers, cooling tanks and air handlers. Insulating pipes, refrigeration lines, or cooling systems not only promotes energy efficiency, but it also prevents condensation

on below-ambient temperature surfaces – a critical issue for multi-family facilities and communities. Specifying Armacell's Solutions Portfolio for multi-family buildings is a simple way for specifiers to ensure they are getting the right products for a fully integrated, high-performing system. Choose from tailored packages that are right for the exact system in a multi-family building and benefit from a 10- or 15- year warranty.

You can count on Armacell insulation retaining its thermal integrity over time, lasting well into your future. Multi-family buildings can benefit greatly from superior energy efficiency products that help address energy consumption and cost constraints.







## MULTI-FAMILY AND MIXED USE BUILDING PROJECTS

### Energy Plaza Office and Apartments Dallas, TX

**PRODUCTS INSTALLED:**

**AP/ArmaFlex® on HVAC Central Piping and Equipment**

Renovation of a one million square foot, 49-story skyscraper into office spaces and apartments. The first development in the East Quarter is a 20-story mixed-use tower called 300 Pearl, that will feature 180,000 square feet of office space, 25,000 square feet of ground-floor retail, and 336 luxury apartments.

### 1 Southside Park Apartments, Hotel and Mixed Use Miami, FL

**PRODUCTS INSTALLED:**

**AP/ArmaFlex on HVAC Central Piping**

The building at 1 Southside Park is the largest downtown Miami project to date, spanning of full city block. This 2.5 million square foot, 64-story high rise consists of more than 1,100 residential units, 200,000 square feet of office space, a 184-key Treehouse Hotel, 5,000 square foot banquet hall, and a ground level fire station.

### Weingart Center Los Angeles, CA

**PRODUCTS INSTALLED:**

**AP/ArmaFlex on HVAC Central Ducting and Piping and Cold Plumbing Pipes**

A 19-story mixed-use building offering transitional and permanent housing, mental support, and health services. This center contains 278 residential units serving formerly homeless persons, over 7,000 square feet of office space, and ample shared common spaces to support LA's communities.

### Capital Square West South Street Tower Raleigh, NC

**PRODUCTS INSTALLED:**

**AP/ArmaFlex on HVAC Central Piping**

A 20-story luxury mixed-use high-rise apartment tower located in the Warehouse District of Raleigh, featuring 300 apartment homes and more than 10,000 square feet of ground-floor retail space. Onsite amenities will include a resort-style swimming pool, rooftop lounge, coworking office space and fitness center.

### Teton H1 Club Condos Jackson, WY

**PRODUCTS INSTALLED:**

**AP/ArmaFlex Black LapSeal on HVAC Central Piping**

A 5-story, 134,000 square feet mountain resort consisting of 28 luxury condos and amenity space for short-term rentals in the highly desirable Teton Village area known for breathtaking views, skiing, and retreats.

## ARMACELL HAS ANSWERS

Bringing more than half a century of science, industry leadership, and innovation to foam technology, Armacell has the expertise to create specialized solutions to meet building codes, standards, and local requirements. Our advanced insulation product portfolio includes a variety of multi-family and mixed-use building solutions to support HVAC applications, cold and chilled water lines, mechanical systems, chillers, boilers, UV, and high temperature areas, and also includes accessories like pipe hangers, adhesives, and tape. Armacell's Solutions Packages offer a wide range of products tailored to code-compliance, performance, and budget.

All data and technical information are based on results achieved under the specific conditions defined according to the testing standards referenced. Despite taking every precaution to ensure that said data and technical information are up to date, Armacell does not make any representation or warranty, express or implied, as to the accuracy, content or completeness of said data and technical information. Armacell also does not assume any liability towards any person resulting from the use of said data or technical information. Armacell reserves the right to revoke, modify or amend this document at any moment. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. This document does not constitute nor is part of a legal offer to sell or to contract.

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## ABOUT ARMACELL

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As the inventor of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,300 employees and 25 production plants in 19 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for acoustic and lightweight applications, recycled PET products, next-generation aerogel technology and passive fire protection systems.

For more information, please visit:  
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