**AirRenew® Gypsum Board Products - Frequently Asked Questions**

What is AirRenew?
AirRenew is a family of innovative gypsum board products that helps clean the air and improve indoor air quality. The gypsum board permanently removes specific volatile organic compounds (VOC’s), formaldehyde, circulating indoors while offering superior protection against moisture and mold.

How does AirRenew work?
- AirRenew utilizes new proprietary, ground-breaking technology.
- Our proprietary technology absorbs formaldehyde out of the air and permanently converts them into safe, inert compounds.
- The formaldehyde circulating in indoor air comes into contact with the surface of AirRenew through typical airflow movement in the building and is absorbed through the surface and into the gypsum core of AirRenew.
- The formaldehyde chemically reacts with a special additive in the gypsum core that breaks down the formaldehyde and forms a new safe, inert compound. This would be analogous to having two materials such as Sodium and Chlorine, which you would certainly not eat, but chemically combine them and you have a common safe compound - salt.
- Once the new compound is formed and captured in the board, it is never released back into the air.
- Additionally, our M2Tech® technology provides enhanced moisture and mold resistance for AirRenew.

How AirRenew™ cleans the air

![Diagram of AirRenew process](image)
How do I know it will work? What's the proof?

- AirRenew has been tested per the ISO 16000-23 method, “Indoor air – Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials”. This test method evaluates the ability of a material to reduce the concentration of formaldehyde inside a test chamber. In the test method, formaldehyde-spiked air is continuously supplied to the test chamber containing a sample of the material with the performance determined by monitoring the difference in concentration of formaldehyde at the inlet and outlet of the test chamber. For our testing, a sample of AirRenew was placed in the test chamber with a formaldehyde concentration of 150 µg/m³ (122 ppb) continuously injected into the test chamber at an air change per hour rate of 0.5 during the first 7 days. The AirRenew sample absorbed approximately 70% of the formaldehyde flowing through the test chamber. At the end of 7 days the formaldehyde supply was stopped while the air flow into the test chamber continued. The formaldehyde concentration at the chamber outlet continued to be monitored. Almost immediately the formaldehyde concentration in the test chamber was reduced to 0 and remained at 0 for an additional 21 days until the test was terminated.

- This testing validated the performance of AirRenew to permanently capture and convert formaldehyde circulating in the air without releasing any formaldehyde back into the air.

- The following graph illustrates the results of the test.

- UL Environment under its Environmental Claims Validation program has validated the sustainability attributes of the AirRenew product line including the statement that AirRenew has “Measured Permanent Formaldehyde Absorption Capacity of 0.4 g/m² of Surface Area”

The above data shows it works well in a lab but how about on my project in the real world?
The product has been tested in real world applications, such as the Slatington Elementary School in Slatington, PA. It was demonstrated that AirRenew was effective in absorbing formaldehyde resulting in reduced formaldehyde concentrations compared to classrooms with standard interior finish materials.
Your CertainTeed representative will be able to discuss the results with you.
How long will it work – how long will it capture formaldehyde?

AirRenew has been engineered for an average service life of 75 years. Calculations were performed using data for typical formaldehyde concentrations and standard air change rates for various applications such as education, healthcare and residential buildings. Based on a walls only installation of AirRenew, it was calculated that AirRenew would continue to capture formaldehyde in the building for a period of up to 75 years.

The 75 year period was selected as it is cited as the gypsum board service life in programs such as the National Institute of Standards and Technology (NIST) Building for Environmental and Economic Sustainability (BEES® 4.0) life-cycle assessment program. The 75 year service life also exceeds the minimum service life referenced in the ICC International green Construction Code (IgCC). At the end of the 75 year period AirRenew would continue to perform as a gypsum board product, but may not continue to capture formaldehyde.

Can AirRenew be repainted or redecorated during future remodeling?

Yes, formaldehyde absorption studies were conducted with various paints which included but were not limited to: water based latex, acrylic, epoxy and vapor barrier paints. The samples were coated several times: up to 25 coats of the individual coatings to simulate multiple remodeling projects with no effect on the efficiency of AirRenew to capture formaldehyde. The conclusion is that AirRenew continues to perform with primer plus up to 25 coats of tested paints.

Are there special requirements for disposal at the end of the product’s useful life?

No, AirRenew can be recycled where available or may be landfilled. EPA Leachate tests were conducted to determine if groundwater contamination is a concern for AirRenew board disposed of in landfills. The EPA Leachate test met all applicable regulatory guidelines with no contamination or harmful effects to humans or animals. Testing was also conducted to determine the effects of high temperature and gypsum processing conditions on AirRenew board that is recycled back into new gypsum board. This testing demonstrated that the inert compound formed in the gypsum core does not release back the captured formaldehyde and may be re-processed as recycled gypsum.

Are there other similar products currently on the market?

No, AirRenew is the first and only gypsum board product in North America that has the ability to capture, convert and store formaldehyde.

What are the key performance attributes of the product?

● AirRenew's primary performance benefit is that it absorbs and “neutralizes” formaldehyde from a building’s interior. No other gypsum board in North America will do that.
● In addition, AirRenew meets the industry’s most stringent standards for mold resistance, achieving the best possible scores of 0 for mold resistance per ASTM G 21 and 10 per ASTM D 3273.
● 5/8” AirRenew Type X is comprised of a Type X gypsum core and is UL Classified for Fire Resistance.
● AirRenew is produced in our Moundsville, WV facility resulting in a high recycled materials content, which contributes toward credit for LEED and other green building rating programs.
● AirRenew has achieved GREENGUARD and GREENGUARD GOLD certification.
● AirRenew sustainability programs have been validated by UL Environment through their Environmental Claims Validation program.
● Air Renew panels meet the same quality and performance standards of standard wall board products under ASTM C1396. STC ratings and levels of finish are unaffected as well.
What VOC’s are you specifically reducing or eliminating with AirRenew?
Formaldehyde. Aldehydes are a family of organic compounds and they typically have a pungent odor. Many fragrances are aldehydes. Formaldehyde is the first member of the aldehyde series and gives us the most concern relative to indoor air quality as it is often the highest concentration VOC in the indoor air.

What does “inert compounds” mean?
Inert compounds do not readily react with other materials; therefore, they remain safe and inactive within the gypsum board.

Where should AirRenew be used?
AirRenew is ideal for buildings with stringent indoor air quality requirements, such as education, healthcare, office and hospitality buildings where indoor environment and occupant comfort are a top priority. Residential homes also benefit from the installation of AirRenew products.

Why is indoor air quality important?
There is a rapidly growing awareness for indoor air quality and its impact on health and productivity. People spend approximately 90 percent of their time indoors, therefore it is important to manage indoor air quality to improve occupant health and provide peace of mind.

What factors affect indoor air quality?
The indoor environment is affected by many factors, including local climate, HVAC systems, building materials, occupants, and potential contaminant sources such as furnishings, moisture, and outdoor pollutants.

Where do the pollutants come from that jeopardize indoor air quality?
According to the U.S. Environmental Protection Agency, sources of VOC’s inside a building can come from pressed wood products, such as sub-flooring, shelving, cabinets and furniture. Other sources include computers, carpeting, treated fabrics, smoke, perfumes, hair sprays and cleaning materials. Also, carbon monoxide, carbon dioxide, particulates, extreme humidity and temperatures as well as inadequate air circulation and ventilation contribute to high levels of pollutants within a building.

Does it absorb 100% of the formaldehyde in the room?
AirRenew laboratory testing under high concentrations of formaldehyde, much greater than typical indoor exposure levels, resulted in an approximate 70% reduction in formaldehyde. At typical indoor concentration levels it is expected that the majority of the indoor formaldehyde would be eliminated by AirRenew. Since formaldehyde emission levels vary depending on air flow (HVAC system), furniture, temperature, humidity and other external factors, it is difficult to state an exact percentage reduction of formaldehyde for every application.

What’s a typical formaldehyde concentration level in a classroom, as an example? What would AirRenew’s net affect be on this?
Independent studies have measured formaldehyde concentrations from 4 to 18 parts per billion (ppb) in school environments. AirRenew has been shown to be approximately 70% efficient at formaldehyde reduction when exposed to concentrations up to 122 ppb. Based on this work, it is expected that the formaldehyde concentration in a typical classroom with AirRenew installed and finished per our recommendations on all four walls would be reach a 70% reduction in formaldehyde over time.
What is the result of reducing the AirRenew wall area in a room on its effectiveness at absorbing formaldehyde?
For a typical room the predicted concentration of formaldehyde is known based on multiple field studies. The 75 year service life for AirRenew is a result of installing the board on all 4 walls within this typical room. By covering fewer walls in a room with AirRenew the service life may be reduced in direct proportion since the capacity to absorb formaldehyde is a fixed amount for each AirRenew board. For example, installing AirRenew on one wall may reduce the service life for the board in that room to absorb formaldehyde to approximately 19 years. Installing AirRenew on two walls may reduce the service life for the board in that room to approximately 38 years.

How does AirRenew contribute to green building rating programs?
AirRenew will help meet the VOC concentration limits recognized by the U.S. Green Building Council’s LEED green building certification program and contribute toward other LEED categories:
  MR Credit 4: Recycled Content
  MR Credit 5: Regional Materials (within 500 miles of Moundsville, WV manufacturing location)
  IEQ Credit 3.2 Construction Indoor Air Quality Management Plan – Before Occupancy

Are there special installation requirements?
No, AirRenew is lightweight, easy to cut and install and does not require special tools. It is shipped, handled, installed and finished like standard gypsum board.

Where will the product be sold?
AirRenew products are available for sale across the U.S. and Canada. Building professionals can contact their CertainTeed representative for more information.

How will building professionals and occupants track or measure improvements to indoor air quality?
There are standard IAQ measuring and test methods referenced in the LEED program and other green building rating programs. Baseline and subsequent IAQ testing may be conducted using protocols consistent with the EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air

Does this product qualify for LEED credits? Is this information available on your website?
Yes, AirRenew products contribute to LEED Credit in several program categories. You will be able to obtain the product sustainability information for your project if you visit the ecoScorecard portion of the CertainTeed website: www.certainteedgypsum.ecoscorecard.com/.
Will you be adding AirRenew technology to other products?
CertainTeed Gypsum’s vision is to focus on innovative, sustainable products and systems. The expansion of the AirRenew Gypsum Board product line meets this vision with market recognition and specification of AirRenew being a significant factor in future product development. AirRenew Extreme Abuse, AirRenew Extreme Impact and AirRenew Essential are examples of products introduced within the AirRenew family of products over the past two years.

Which UL Environmental Labels apply to AirRenew products?
The ULE Labels below apply to AirRenew products with the exception of the Mold Resistant claim for the AirRenew Essential products.