

TechTalk



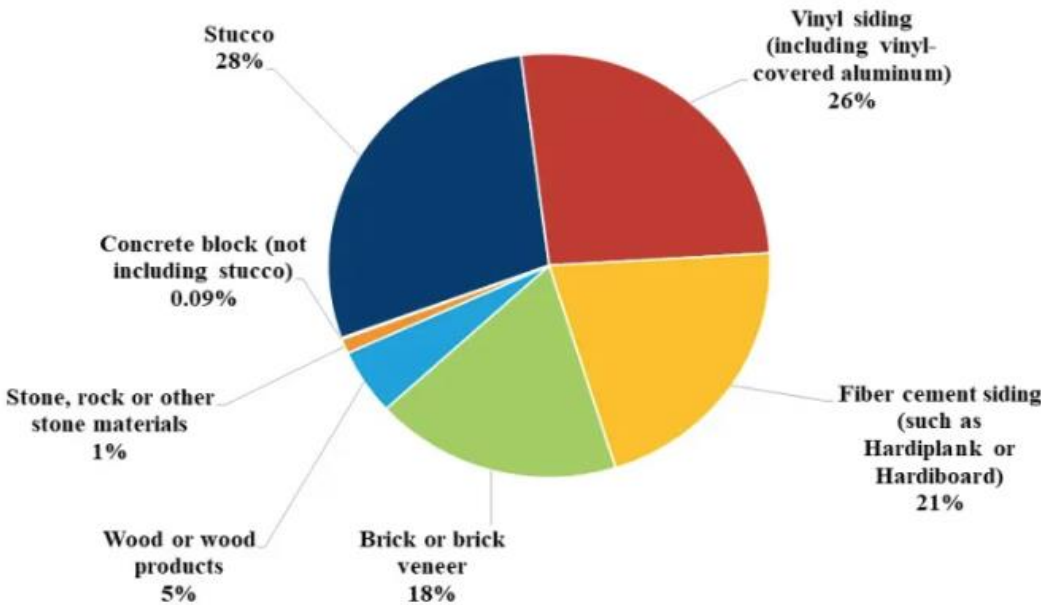
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STUCCO MARKET SHARE

The National Association of Home Builders (**NAHB**) broke down cladding market share using data from the US Census Bureau report by principal exterior wall materials for new homes built in 2022. Similar to recent past, stucco was #1 with 28% market share. Followed by vinyl siding at 26%, fiber cement siding at 21% and brick at 18%. These four claddings make up over 90% of the claddings used in America.

Developers and homeowners want a durable and attractive exterior cladding. Price is always a major consideration for the selection of an exterior cladding material. Affordability helps explain the popularity of claddings in particular regions. Stucco is very affordable out west. In the south and east central US, brick is only a slight up charge compared to stucco. Vinyl siding makes head way where stucco and brick are deemed a premium cost. The fiber cement siding is a close second in many markets.

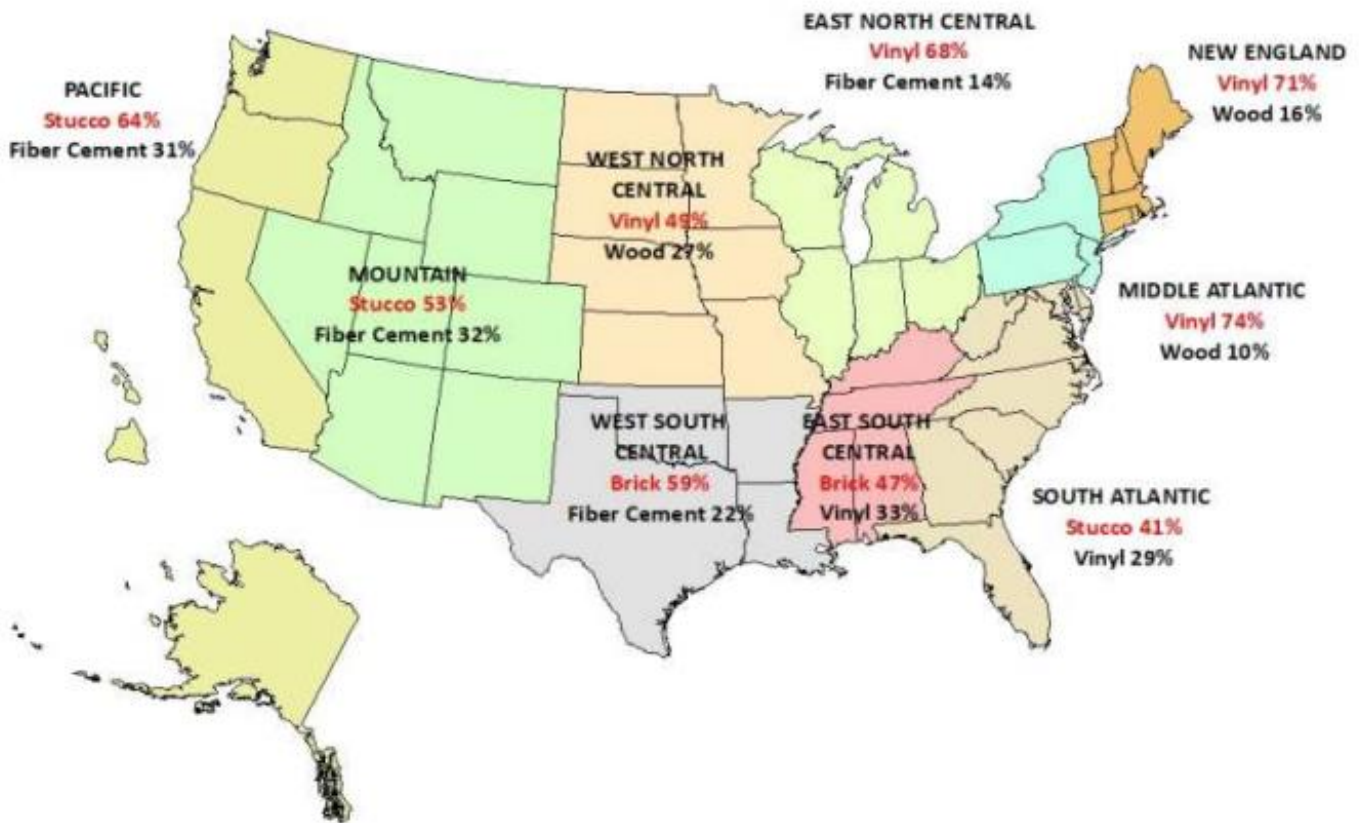
Principal Exterior Wall Material Used on New Homes in 2022



Stucco being kept affordable is important to retain market share. Fortunately for stucco you have options of basic to elaborate. Basic stucco is functional, durable and affordable. Upgrades include Continuous Insulation, Decoration foam shapes, smooth coat finish plaster, Venetian plaster finishes, stone finishes, crack suppression membranes, rainscreen, ventilated stucco or high-end trim accessories. At the end of the day, affordability stucco keeps the market share high.

Market Share by Region

Share of New Single Family Homes with Top 2 Exterior Wall Materials in 2022



Source: NAHB tabulations of data on New Single Family Homes Started, from Survey of Construction data, U.S. Census Bureau and HUD.

Why Is Stucco Affordable out west? The lower cost of installed stucco in the southwest is due in large part to the use of the plaster pump. These “gun” crews and the expert supervisors who have learned how to run them very efficiently with high production. The crew is like an NFL offense. Everyone must know their job and be disciplined to execute. If one player/worker fails, everything falls apart quickly. The proof of productivity is that these crews do not talk about stucco in square feet, they use square yards. It is not uncommon to have gun crews plaster up to 1,500 sq. yards, that is 13,500 square feet of plaster every day, day in and day out. Even vinyl siding cannot compete with those numbers.

RAINSCREEN STUCCO

The building code is historically written for generic stucco without bells and whistles. The mandate for rainscreen is pushed by another group and is currently limited to Climate Zones A and C. That group seems driven for rainscreen to be mandated on all stucco walls. This would be less concerning if the mandate were for all claddings and not limited stucco on frame walls over a wood-based sheathing.

The rationale is to increase water drainage from behind the cement membrane. Historically stucco applied over a wood-based sheathing required two layers of Grade D paper or a water-resistant barrier (WRB) with equal performance. Thankfully stucco is versatile and we have options for mandated rainscreen and most are affordable.

DRAINMAT: using a drainage mat over a single layer of water-resistant barrier (meeting Grade D 60 performance) meets the code for all Climate Zones. The WRB can be asphaltic paper, felt, housewrap or a fluid applied product. Drain mats are applied over the WRB, many SMA manufacturers produce thin drain mats specially designed for stucco. They should be tested to verify 90% drainage per ASTM E2273 or Annex A2 of ASTM E 2925 to ensure building code compliance.

TWO LAYERS WRB: drainage for two layers of Grade 60 minute asphaltic paper has been done. In 2002, through US government grants, Oakridge National Labs tested stucco with various water-resistant barriers. Panel #6 (two layers of Grade D 60) was found to be excellent in drainage. The Oakridge report states “Water drained almost as fast as it was poured (2L in 10 s). Unfortunately, code authorities were never shown this study. A copy of the 2002 Oakridge Hygrothermal Phase I report is online or available upon request.

FOAM: One-coat stucco over a layer of foam may be a rainscreen-compliant assembly. The one-coat system should have a current Evaluation Report from ICC or IAPMO. The layer of foam is typically EPS with tongue and groove edges. The rigid foam acts as the standoff to the WRB. Once completed per the Evaluation Report, one-coat with insulation is Continuous Insulation (CI) and Rainscreen in one easy, affordable installation. The rigid foam does need to have drainage channels on the backside. These assemblies have been tested to comply with the 90% drainage requirement set by the code.

VENTILATED RAINSCREEN STUCCO: cladding ventilation is the newest craze for “high-performance” building envelopes. The concept allows air circulation behind the cladding for enhanced drying. The SMA has developed a generic “ventilated rainscreen stucco”. This ventilated

WHAT IS RAINSCREEN AND HOW DID IT START?

There are several definitions of a rainscreen cladding. Most are by firms or organizations seeking market share advantages.

While Wikipedia is not always the best definitional source, the following definition is pretty accurate and unbiased.

A “rainscreen” is an exterior wall detail where the siding stands off from the moisture resistant surface of an air/water barrier applied to the sheathing.

A screen is defined as a barrier and while cement plaster is a proven barrier to rain penetration, unless it stands off the wall, it is technically not a rainscreen.

Original Rainscreens were developed in early 1960. It was a kind of “double-wall” construction developed in Norway. In 1963, the Canadian promoted the use of rainscreen with the National Research Council publication of “Rain Penetration and its Control”.

Vancouver BC began to mandate rainscreen in 1999 due to the “Leaky Condo Crisis” that plagued the city.

Rainscreen is likely here to stay and become a standard. Most rainscreen proponents want to see enhanced ventilation between the outer cladding and the air/water barrier covered sheathing. The SMA ventilated stucco assembly can meet the most stringent ventilation requirements.

assembly also has a series of constructible details by the SMA to help the designer, code authority and contractor make

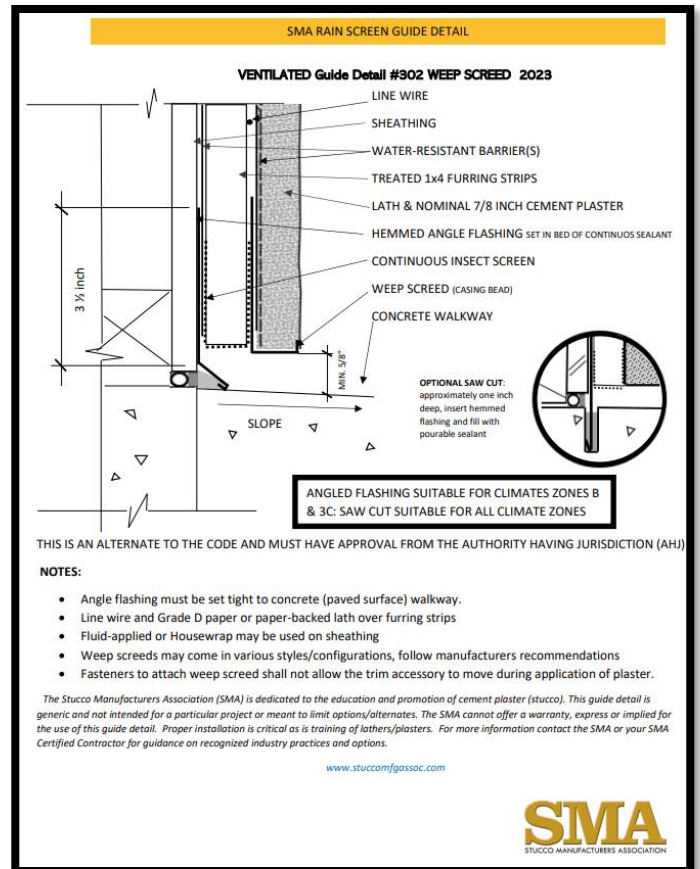
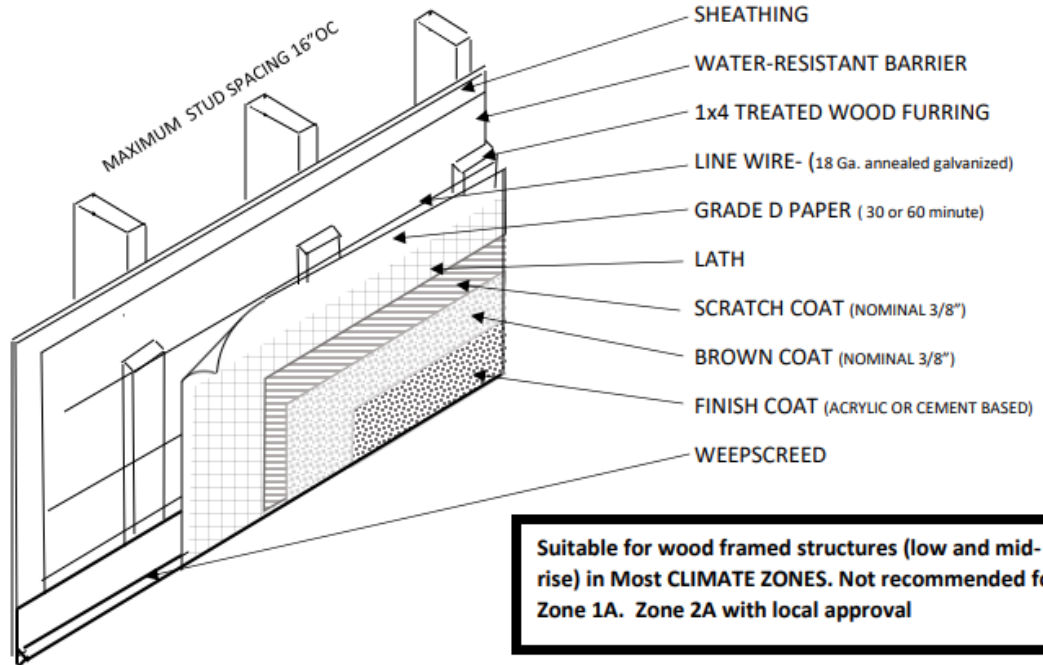
VENTILATED STUCCO assembly cost-effective to install. This assembly may seem new to some, but in reality, it is a proven assembly with modifications. The result is generic, code compliant and affordable for those demanding high-performance durable ventilated claddings.

The SMA ventilated stucco assembly is limited to wood framing and incorporates

pressure treated wood furring strips. The two layers of water-resistant barrier are separated by the 1x4 furring strip to provide a 3/4 inch drainage and ventilation cavity between the structure and the cement cladding. There are also options that can be incorporated into this assembly. The single layer of water-resistant barrier over the wood sheathing may be grade D paper, felt, house wrap or a fluid applied product. The furring strips are aligned with the studs over the WRB. The furring strips can have a paper-backed lath applied to the furring or use a line wire backing. This method of backing has been used for decades in many climates with proven success. The practice of line wire backing is still being done today in much of the southwestern US. For the TV home renovation junkies, it is not uncommon to see television shows where older homes have the drywall and insulation removed to expose thin lines of wire on the black paper. The SMA has a Tech Paper to walk lathers through the process of placing line wire backing step by step.

Drain mats are the simplest option, but if an SMA contractor is under value engineering pressure to meet rainscreen requirements, this may be an option to keep stucco on that building.

VENTILATED RAINSCREEN STUCCO



CMU Walls

Concrete Masonry Units (CMU) are an excellent base for cement plaster. Europe has been doing this for centuries over Clay Tile Blocks, which is essentially CMU. Today, consultants demand more performance such as greater insulation or extra protection against moisture. Both are possible with CMU, but with caveats.

CONTINUOUS INSULATION : The SMA is often asked about putting rigid insulation behind a cement plaster. This is proven and works well with framed walls. However, over CMU, the SMA advises against doing this. The issue is weight and lath attachment. It becomes almost impossible and certainly impractical to apply a lath to the foam, More specifically to secure the lath to the CMU.

Powder actuated fasteners would seem fast and simple as they are used on CMU walls all the time. That works well with the installer can physically see the fastener in the CMU grout joints to ensure it is in secure. With the rigid insulation being opaque, it becomes a guess. A pull test would be possible, but that would require every fastener to be tested and possibly weakened. Why would anyone do this when Exterior Insulation and Finish Systems (EIFS) are readily available to do the job for less cost and proven to work. If the designer wants insulation of the CMU wall, use EIFS.

BUILDING PAPER: The other common request is to put a building paper on the CMU prior to plastering. The issue is similar to the rigid insulation. Attaching lath is a blind proposition again. Did that fastener go in all the way? Did not spall the block? The lather is guessing.

It gets worse with paper. The paper or house-wrap becomes a slip sheet. The stucco membrane has no bond to the CMU and is cantilevered out on questionable fasteners. This should make anyone nervous. If extra water protection is needed, add a fluid applied coating to the CMU and self allows cement to bond to it.

Concrete Masonry Units (CMU) are excellent bases for Cement plaster. The CMU should be clean and free of coatings. Cement plaster also enhances the water-resistance of the wall



Typical South Florida Home



A black paper over this CMU substrate resulted in stucco panels working loose from the wall.



HEAT ILLNESS

While summer is over, OSHA is more focused than ever on heat illness. According to the Center for Protecting Workers Rights 6% of Americans work in construction, but account for 36% of all heat-related deaths. A renewed focus for OSHA will be “acclimatization”. This refers to a worker’s ability to get used to working in high heat. The concern is centered around new hires and those coming back from time off. It is a challenge and OSHA is taking it to a new level. For information, the SMA suggest all employers visit www.99calor.org. This website has a lot of good information and even a pocket guide that makes a great toolbox talk for supervisors. The guide is available in English and Spanish. Things you must know about heat illness:

1. Employers must have a written plan for Heat illness. OSHA prefers it to be separate from your written Safety Plan.
2. A “**Heat Wave**” is considered to start at temperatures that exceed 80 degrees. “**High Heat**” is over 95 degrees.
3. Provide water, shade and offer rest during a heat wave. Be extra vigilant during High Heat periods as this is when OSHA gets more serious about citations. **NOTE:** A toolbox talk is required at the start of a shift during “High Heat” periods.
4. You must train your employees to look for and report signs of heat illness. While not required, documenting employee/supervisor training is recommended.
5. You must have an emergency response plan for heat illness. Just calling 911 is not enough as property the address or cell location can be confusing on job sites and time is of the essence. Assign a person who is responsible for carrying out the plan. **TIP:** Possibly assign flaggers to direct first responders to the impacted worker. A routine OSHA visit is likely to inquire “Do you have a plan for an emergency?”

The good news is that most of this is based on common sense, the rules are not overly complex, and OSHA is not looking to punish employers that make reasonable and sensible efforts to protect their workers from heat illness. For construction, cool drinking water continuously available during working hours is a high priority. The drinking water must be within a reasonable distance and easily accessible. Note that OSHA offers consultation at no cost and will not cite violations on a consultation visit. **TIP:** Having employees carry and understand the free OSHA wallet pocket guide from www.99calor.org is looked upon by OSHA compliance officers as a step in the right direction. While the heat is winding down, starting planning for next year, because OSHA is adding indoor heat illness regulations and enforcement will likely increase.

HEAT ILLNESS

Prevention Tips

- Provide cool drinking water at all times close to employees.
- 4 cups of water per hour in High Heat is recommended
- Have a “buddy” system where workers watch each other in High Heat.
- Supervisors can watch over a maximum of 20 employees.
- Provide shade and rest periods as needed.
- Have a PLAN should an emergency occur.
- Supervisor must watch weather for High Heat
- Get Pocket Guides from www.99calor.org
- Mandate a toolbox talk in the morning on days over 95 degrees
- Allow new hires and returning working to acclimate during High Heat event (over 95 degrees)