

feel

How you feel is very important to us. We would like you to feel good. It is only when you feel good that thought vibrations can be positive and beneficial to yourself and all of us. Feelings determine the final outcome

anutone[®]

makes you feel good[™]



Innovative • Lightweight • Faster • Sustainable • Intelligent



Tufbloc 2011

Release 2.0 • April 2011

www.anutone.com

CONTENTS

INTRODUCTION	4
APPLICATIONS	5
PRODUCT SELECTOR	6
INSTALLATION	8
FINISHING	9
TECHNICAL	10
COMPARATIVE	11
PROPERTIES	12
• ENVIRONMENT, HEALTH & SAFETY	
• IMPACT, DURABILITY	
• FIRE	
• WATER	
• ACOUSTICS	
SYSTEM COMBOS	14
OTHER PROPERTIES	15
• CHEMICAL	
• THERMAL	
• LIGHT REFLECTIVITY	
• SIESMIC	
SITE GUIDELINES	16
TUFBLOC VIN	17
SERVICES	18
LIMITATIONS	19
SPECIFICATIONS	20
LIMITED WARRANTY	21
FREQUENTLY ASKED QUESTIONS	22



Tufbloc HDFR Board

Step up to the top of the evolution in building boards

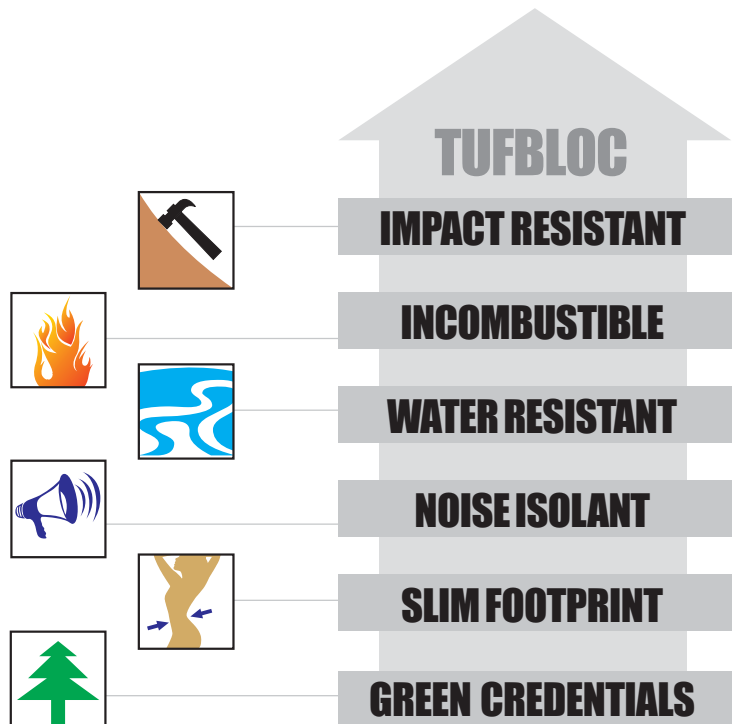


The next-generation building board for *the rest of* the 21st century is here.

Step up from the traditional wood-based or cement-content or paper-wrapped boards to Tufbloc!

Tufbloc is highly impact-resistant, incombustible, water-resistant, noise-isolating and a green building material.

Use Tufbloc for external and internal walls, ceilings, floors ... and enhance the value of your buildings!



INTRODUCTION

Tufbloc is High Density Fibremesh Reinforced (HDFR) magnesia board. The FR also means Fire Rated as Tufbloc enjoys a very high fire-rating - upto 4 hours!

Tufbloc is an economically viable alternative and superior to existing building boards in the market - a technologically advanced, compact construction panel that does what other products - traditional wood, gypsum and cement based boards - combinedly do.

Tufbloc has a monolithic core and is the ideal building product for the most demanding of projects and has a positive and lasting impact on health and safety aspects even as it extends the lifecycle of investment in a building.

Manufacturer

Tufbloc comes from Anutone that has almost five decades of expertise and experience in similar products.

Right from woodwool boards introduced to India in 1966 to its many variants in the 1990s and the invention of best-selling microfibre panels in 2000, Anutone's Ekcel division has been at the forefront of innovation in magnesium-based products, refractory chemicals and inorganic bonded composites.

After the mega success of microfibre panels (MAT) in the year 2000, the design and development (D&D) team at Anutone's Ekcel, since 2005, research engineered for five years and now after thorough in-house testing and evaluation, has introduced Tufbloc.

Thus Anutone's Ekcel division, which is ISO 9001 2008 and 14001 2004 certified, now boasts of three major product categories:

- Woodwool Boards
- Microfibre Tiles
- Tufbloc HDFR

Standards

Tufbloc conforms to all current international building codes and standards. Extensive testing has been performed in-house at the Anutone's Bildware Research Facility (BRF) and also tested by independent testing laboratories (includes CBRI, NPL, IPIRTI in India and TUV SUD Singapore) for validation.

Classification

Class 19 – Building Material. Basic # 190186 - Xyloolith

CSI MasterFormat

Section 061653 – Moisture-resistant Sheathing Board
078200 – Fireproofing Board

ICC-ES AC386. International Code Council's Evaluation Service for Acceptance Criteria as mandated by International Building Code (IBC).

Variants

Tufbloc is available as the original in Normal and Mirror finishes. New finishes include Wud and Ruf! See next page.

And as has become habit with Anutone, to continuously improve, another value-added variant is Tufbloc Vin which is laminated tiles for grid ceilings. See page 17.



APPLICATIONS



Tufbloc is used wherever the ecosystem places a high value on a building. When a building and its occupants, including equipment, need fire protection. Where there is a high concern for safety and health. And for green buildings where every product needs to add to the LEED rating of the project.

Surface-wise



Interiors

– drywall and ceiling, backer board or underlayment



Speciality

– shaft walls, data centre shells, firewalls, doors



Structures

– steel and concrete fire protection



Encasement

– cable trays, pipes & tubes, ducts



Exteriors

– siding, sheathing, fascia, canopy soffits

Area-wise



High-risk fire areas

– kitchens, warehouses, labs, shafts



High-security areas

– data centres, safe-deposit lockers, banks



Wet areas

– washrooms, kitchens, swimming pools



High-humid areas

– laundry, saunas, markets, factories



High-usage areas

– corridors, schools, hospitals, retail shops



High-grade finishes

– hotels, apartments, high-end commercials



High-bracing areas

– earthquake bracing, windload bracing



Noise isolation areas

– offices, hotels, hospitals, theatres, studios

Segment-wise



Offices



Hotels



Hospitals



Education



Transport



Leisure



Sports



Public



Residential



Industrial

PRODUCT SELECTOR

Tufbloc is available at Anutone Shoppes and distributor stockpoints as precut sheets in matt surface 'Normal' or smooth-glossy 'Mirror' finish both of which with a rough rear-side.

Taper edge option is available in Normal 8, 10, 12mm thickness but is not recommended. Square edge with 3~4mm gap filled with Anutone's Seam best results in smooth, seamless finish making Tufbloc different from other building boards in this aspect. Taper edge, in fact, weakens the long edges of Tufbloc.

Also available is

- Tufbloc Square - tile format or grid ceilings
- Tufbloc Vin - vinyl-laminated tile for grid ceilings
- Tufbloc Wud - surface embossed to render woodgrain finish
- Tufbloc Ruf - very rough surface to receive ceramic tiling or similar

Given Anutone's innovative track record, expect more from Tufbloc in the future. More in making building interiors faster, better, cheaper, meeting highest standards of quality, safety and good practices.

While selecting the right product for your project, you must make the following three choices:

- **By surface finish** – for the original Tufbloc choose either 'Normal' if being used as a backer board or 'Mirror' if being used as a finished, exposed surface that requires Level 5 trim (eggshell finish); Wud or Ruf for speciality finishes



Tufbloc Normal

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
4	Square	1100x2400	4.4	11.6
6	Square	1100x2400	6.6	17.5
8	Square	1100x2400	8.8	23.2
10	Square	1100x2400	11.0	29.0
12	Square	1100x2400	13.2	35.0

Tufbloc Mirror

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
6	Square	1100x2400	6.6	17.5
8	Square	1100x2400	8.8	23.2
10	Square	1100x2400	11.0	29.0
12	Square	1100x2400	13.2	35.0

Tufbloc Square

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
6	Square	595x595	6.0	2.1
8	Square	595x595	8.0	2.8

Tufbloc Vin

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
6	Square	595x595	6.0	2.1
8	Square	595x595	8.0	2.8

Tufbloc Wud

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
11	Square	140x3600	12.0	34.6
11	Square	190x3600	12.0	34.6

Tufbloc Ruf

Thickness (mm)	Edge	Size (mm)	Surface Density (kgs/m ²)	Weight / Board (kgs)
8	Square	1200x2400	9.6	27.7
12	Square	1200x2400	14.4	41.5

Note

- Density 1000~1100 kgs/m³ (Approximate Average ~1050 kgs/m³)
- Surface density and weight per board are approximate
- 1100/1200x2400mm boards can be field cut in half for easy handling in high ceiling applications, if necessary
- * Panel width - 1100mm standard; 1200mm optional or as per stock

INSTALLATION

Tufbloc is very easy to handle and install. It is easier to work with, using all types of hand tools and wood working equipment. It can also be cut with a quick saw, and it snaps off faster than plasterboard, as it is paperless.

Tufbloc can be installed on wood and/or metal framing or directly on to steel structure and masonry work with mechanical fasteners (screws, bolts, rivets, staples, nails) and can also be used to laminate over existing surfaces using adhesives and cements.

Cutting - Circular saw with carbide blade

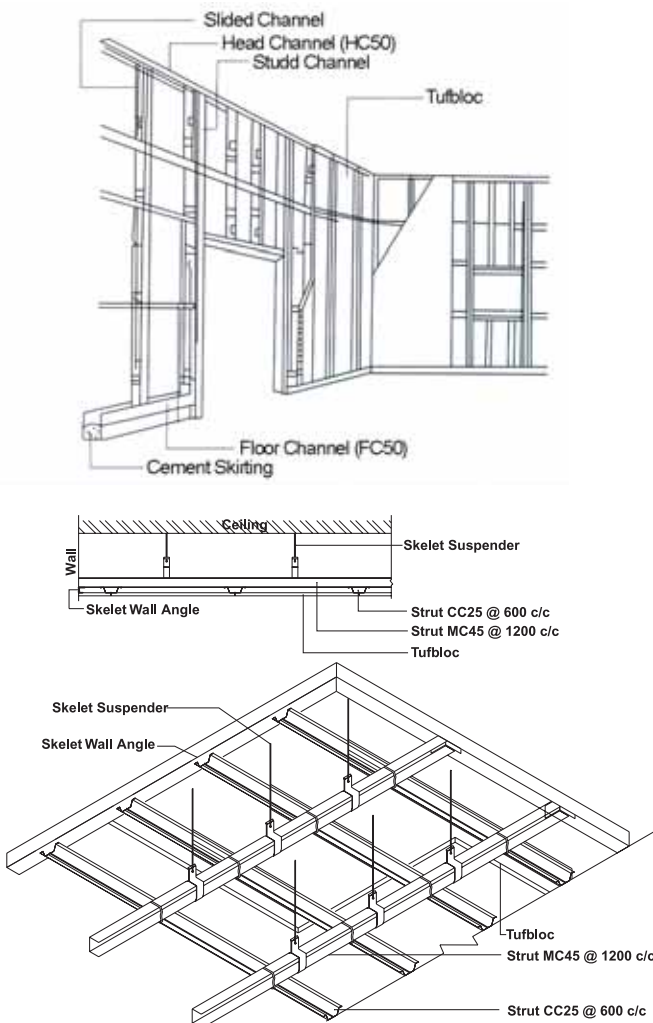
Screw fixing – self drilling screws, self countersinking; no pre-drilling necessary

Nailing – Pneumatic nails, pressure dependant on thickness and framework

Tufbloc is installed with 3mm gap between the boards which is filled with Anutone Seam and Anutone Strap. Apply this seam over the dry surface only. Allow each coat to dry before applying another coat (*Refer detailed instructions on Anutone Seam bucket*).

Tufbloc is a smooth-finished lining board. It can be painted, stucco, papered or tiled to create complementary design looks. Both square and taper edge with a 3~4mm gap, filled with Anutone's Seam, results in a smooth and seamless surface finish.

The front-side of Tufbloc is smooth to take any paint finish. The rear-side is rough, breathable and porous for strong coating and adhesive bond.



Note: Closer spacing of Strut CC22/25 is necessary for lower thicknesses of Tufbloc. For 4, 6 and 8mm Tufbloc used in ceilings, 300~400mm cc spacing is recommended.

Joint gaps, as usual, must be 3~4mm, both for square and taper edge, filled with Anutone's Seam to ensure no post-install cracks due to building or board movement.

Taper edge is not recommended as it weakens the long edges and serves no useful purpose. Square edge, with 3~4mm gap at joints, works best

FINISHING



Tufbloc can be finished just about any way including but not limited to:

Exterior



Paint



Stucco



Stone



Brick



ACP



Tile

Interior



Paint



Stucco



Stone



Brick



Wallpaper



Fabrics



Plaster



Tile

Summary technical data below is for **12mm** thick Tufbloc unless otherwise stated.
For detailed data please view the following pages.

Water

- Moisture Absorption 6.8% after 2 hours and 11.3% after 24 hours soaking
- Wet expansion < 0.02% from ambient to saturation
- Dry Contraction \leq 0.02% from ambient to evaporation
- Moisture Movement - 0.02%
- Freeze/Thaw – Meets 25 cycles requirement of ASTM C666-B



Strength

- Compressive Strength - 27.3 N/mm²
- Flexural Strength - 10.87 N/mm²
- Tensile Strength - 3.38 N/mm²
- Modulus of Elasticity - 6123 N/mm²
- Impact Strength (4kg hammer) - 175 mm
- Screw Holding Strength - 2450 N



Fire

- Fire Resistance \leq 180 minutes under 1200°C
- BS476 Part 4 - Non-combustible
- BS476 Part 5 - 'P'
- BS476 Part 6 - Fire Propagation Index - 1.5
- BS476 Part 7 - Class One



Sound

- Acoustic Rating upto 54 Rw dB - see acoustics section for details



Thermal

- Thermal Conductivity - 0.11792 W/m⁰K



Physical

- Surface Density \leq 13.2 kgs/m²
- Face Density \leq 1200 kgs/m³
- Volume Density \leq 1100 kg/m³
- Moisture Content \leq 10%



Green

- Toxicity, Pollutants – Nil (below measurable level of instruments)
- Heavy Metals – Nil (below measurable level of instruments)

As per EN 12457-2



Tolerances

- Thickness \pm 0.5mm
- Width \pm 1mm
- Length \pm 1mm
- Diagonal \pm 1mm

COMPARATIVE



Tufbloc is one product that suits every application. It is a hard, inert board that is integrated (homogeneous), paperless – hence there is no delamination.

Tufbloc boasts of superior characteristics over cement, gypsum, wood, pulp. Research studies prove the equivalent use of 8mm Tufbloc instead of 12.5mm gypsum or 10mm Tufbloc instead of 15mm gypsum.

The ceramic-like properties make Tufbloc superior to cement board, calcium silicate boards, water resistant drywall, gypsum board, plywood and particle board in diverse applications. While moisture-resistant (MR or WR grade) gypsum board does not absorb water as fast as normal gypsum board, it still does absorb some water which results in its softening and failing.

There is a dramatic improvement in project sites when Tufbloc is used in lieu of gypsum drywall and cement board as it is usable for both indoor and outdoor purposes. It provides a very hard, long lasting surface that

look and feel like hard cement plastering but is fireproof and resistant to damage from water, humidity, freeze/thaw, organisms, salt and more.

As a component for light steel framing, Tufbloc allows structures to be taller, bigger and lighter, much faster than other board products. With more options in thickness, for interior and exterior applications, it can be left natural with clear finishes or ready to receive finishings, better than other boards by inherent superior bonding property.

Tufbloc offers a faster and better alternative to plastering and hence used to line masonry walls and concrete roofs. Tufbloc can be installed with taped joints like a drywall plasterboard; or spliced using specific fillers without taping; or without any filling or taping to save time and money for plastered tough walls at less cost. A great substrate to receive exterior and interior decorative coatings directly to its surface.

Tufbloc is used for fast drywall boarding that is installed and painted within hours using fast setting fillers

trimmed with a sharp blade (reducing sandpaper and sanding). Fillers can be cut flush without a tape over the panel joints and without needing corner-bead, metal trims etc. while giving perfectly true square corners and edges naturally. Panels can be spliced between studs without needing to land joints over studs. i.e., using strips of Tufbloc behind the seam as a back-blocking splicer stapled or screwed together results in seamless flush joints on the front.

A concrete-hard dry wall material ideal for high impact areas, hot wet and humid areas. It receives paint directly or as a wall tile or floor tile backerboard. A backerboard that provides a strong substrate for wall tile, screwed or nailed in place without pre-drilling or laminated in layers to obtain any thickness. When nailed in place with a light nail gun a whole room can be made ready to tile in minutes. Every thickness from 4mm to 12mm can be nailed in place to wood studs, plywood subfloors, particleboards ... even Tufbloc to Tufbloc with pneumatically applied nails.

Tufbloc Comparative

Value	Tufbloc	Cement Board	Plywood	Gypsum Board	Gypsum Sheathing
Flame Spread	0	0	High	Low/15	Low/10
Smoke Developed	None	None	High	Low	Low
Water Resistance	Yes	Low	No	No	No
Mould Resistance	Yes	Yes	No	No	No
Termite Resistance	Yes	Yes	No	Yes	Yes
Thermal Insulation R-value per 25mm	1.2	0.8	1.2	0.9	1.1
Impact Strength	High	Medium	High	Low	Low
Combustibility	Non	Non	Burns	Facing	Facing
Structural	Yes	No	Yes	No	No
Environmental	Good	Good	Good	OK	OK
Freeze/Thaw Cycle	Good	Good	Good	Poor	Poor
Finish					
Interior	Fill gap & joint/paint	Provide cladding	Provide cladding	Tape & joint/paint	Tape & joint/paint
Exterior	Apply stucco or cladding	N/A	Apply paper and stucco or cladding	N/A	Apply stucco or cladding

PROPERTIES

ENVIRONMENT, HEALTH & SAFETY

Green

Tufbloc is one of the most environment friendly building boards in the industry.

It is made from the world's eighth largest resource – magnesium mineral – which makes up 2% of earth's crust. Magnesium mineral is also the third most plentiful material dissolved in the oceans.

Tufbloc consumes only 50% of energy to manufacture compared to cement board and gypsum board. It is produced without wasting large amounts of fossil fuel or releasing significant CO2 into the atmosphere in production.

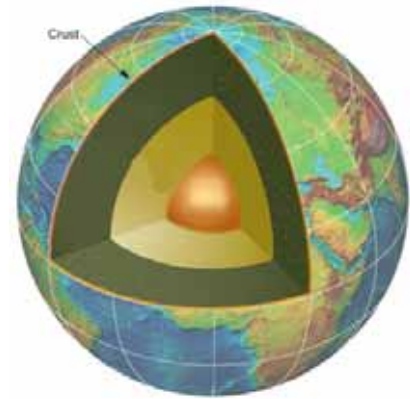
The entire production process is conducted at room temperature, and scraps or drop-offs are reground and recycled in the production.

Tufbloc does not contain any organic solvents, formaldehyde, asbestos, oils, methyl alcohols or any other toxic substances that adversely impact the environment. Further, Tufbloc is non-hazardous, natural, non-toxic, non-radioactive and disposable as crushable clean fill in sites without contamination or environmental damage to land, streams or bodies of water.

Health

Tufbloc is termite, mildew and insect proof. It is non-nutrient and hence does not feed mould, bacteria, fungus, rodents and other organisms as per ASTM G21.

Tufbloc has no VOCs. Hence it does not adversely affect IAQ (Indoor Air Quality).



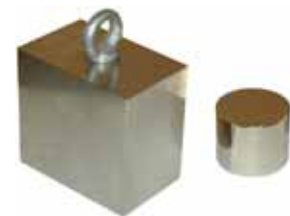
IMPACT, DURABILITY

Strength

Tufbloc boasts very high impact resistance. It can be safely used at pedestrian height in corridors. It lowers maintenance costs while ensuring higher finish. Thus it eliminates the damage due to rough tenants which is always an issue for space owners, and helps protect assets.

Impact testing as per ASTM D1037 shows superficial crack from a drop height of 150mm and hairline crack from a height of 450mm which meets the standard.

Being stronger and more rigid, it allows thinner material to do the same job and hence is not only economical but space saving – a boon in the current boom of skyrocketing real estate prices!



Bracing

Tufbloc boasts a high level of bracing ability. All lined areas will provide the same brace rating when installed using the approved fixing design.

Flexibility

The diaphragm stiffness is high which means it can be bent like thin plywood. Hence Tufbloc can be used for barrel-vaulted ceilings and other curved surfaces, including domes, provided the radius of curvature is narrow.

The screw-holding ability is superb and hence it eliminates the need for ply between plasterboards which has become the norm in commercial interiors today to facilitate suspension of wall fixtures.



Durability

Tufbloc resists swelling, losing strength or deterioration in wet applications. It maintains dimensional stability even when wet and hence is a very durable product.

Only Anutone offers an unique 25-year warranty on product life, which is a supreme confidence on its longevity.

FIRE

Tufbloc is made from refractory xylolith – the same material used to pyroline blast furnaces in steel mills. Hence it has an inherent, natural ability to resist fire. It is inherently non-flammable.

Tufbloc as a product is non-combustible and as a system offers upto four hours fire resistance. It qualifies as a Class O/A building material fulfilling all fire code requirements across geographies.

- Fire Resistance \leq 180 minutes under 1200°C
- BS476 Part 4 - Non-combustible
- BS476 Part 5 - 'P'
- BS476 Part 6 - Fire Propagation Index - 1.5
- BS476 Part 7 - Class One

The use of Tufbloc results in zero spread of flame and hence it is perfect for fireproofing wooden frame construction, structural steel and concrete. Used as a lining material it prevents damage to the structure and hence has the ability to influence a reduction in insurance premiums.



WATER

Tufbloc is water resistant more than any other building board. Accidental water contact is no problem as it causes no swelling, melting or delamination.

Water permeability is nil with no water drops observed on the rear when water is sprinkled on the front surface.

Tufbloc boasts humidity resistance of upto RH99 and hence suits tropical Asia's hot, humid climate. Can be safely used in coastal regions near the equator that experience harsh climates of heat, humidity and excessive rainfall.

Tufbloc does not alter its physical appearance or mechanical stability significantly after exposure to water. After evaporation or gravity flow of water, Tufbloc returns to its original state.

Tufbloc is weatherproof. It has been subjected to numerous freeze/thaw cycles and hence is suitable for cold, temperate climates too. No change in the product has been observed with an accelerated 25 year freeze/thaw cycle. The procedure is to subject Tufbloc to controlled immersion test wherein samples are placed in closed container of water and exposed to continuous freeze thaw cycles for 36 months since 2007. In 2010 the sample showed no change in physical properties.

Tufbloc can be safely used to line the walls and ceilings of wet areas like washrooms and kitchens.



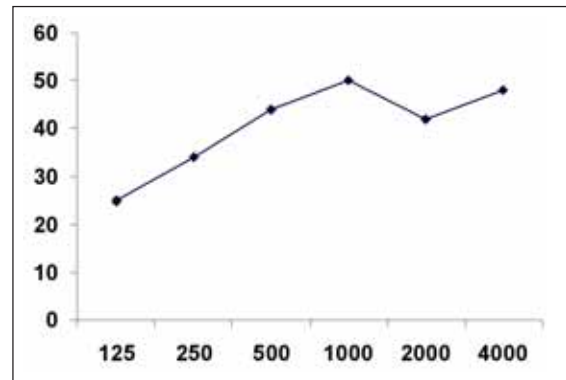
ACOUSTICS

Tufbloc is an excellent acoustic dampening material with high density and elasticity. The panel has mass more than known building boards but the flexibility of bending like plywood. Sound Transmission Loss Test as per ISO '140-3 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.



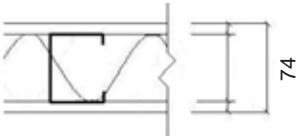



1 layer of 12mm Tufbloc
 50mm Studd framework
 50mm Synth infill (10x50)
 1 layer of 12mm Tufbloc
 Joints & perimeter – Soundfire caulking
 3 hour fire-rating - 44 STC

Hz	STC (dB)
125	25
250	34
500	44
1000	50
2000	42
4000	48



Compare this to gypsum board that gives only 2 hour fire-rating with special fire-rated boards and similar acoustic rating with multiple layers of gypsum board on either side of framework.

SYSTEM COMBOS

	System thickness (mm)	Fire-rating (hours)	Acoustics (Rw dB)
	74 12mm Tufbloc 50mm FC 50mm Synth	2.5	44
	88 8mm Tufbloc 72mm FC 75mm Synth	3.0	44
	92 10mm Tufbloc 72mm FC 75mm Synth	3.5	46
	138 10+12mm Tufbloc 94mm FC 100mm Synth	4.0	54

Tufbloc achieves much more with single layers that are slimmer too thus saving valuable space, money and labour time for installation.

Caution! Laboratory results are under ideal testing conditions. Field results are usually lower by 5dB and 0.5 hour. Other field factors like flanking transmission paths of noise and fire need to be considered. The services of professional consultants is recommended.

OTHER PROPERTIES

CHEMICAL

Tufbloc is chemical-resistant. It is an inert material and can be safely used in research labs and chemical-intensive spaces.

Tufbloc resists the debilitating effects of salt (sodium chloride) brines and salt water, chlorine bleach (sodium hypochlorite) and related pool chemicals and hence can be safely used in indoor swimming pools.

Tufbloc also resists ammonia (ammonium hydroxide) & related chemicals. Surface alkalinity is ~10pH.

MSDS data

- Magnesia minerals
- Natural silicates
- Perlite
- Wood flour
- Water
- Proprietary additives
- Other trace substances

Anutone will provide detailed data on request.

THERMAL

Tufbloc is made from refractory chemicals that are used to line the blast furnaces at steel mills. Hence it naturally resists changes in temperature upto 800°C.

Tufbloc can be safely used as a refractory material for infrared radiation (heat) assisting to reduce loss of energy when heating or cooling by reducing conductivity.

LIGHT REFLECTIVITY

Tufbloc is available naturally in a off-white colour and hence reflects light. Unlike wood-based boards it does not need excessive paint to render its surface into light-reflectivity.

SIESMIC

Tufbloc being a strong, durable material, makes it the perfect choice for seismic-proof constructions.



SITE GUIDELINES

Store Tufbloc flat on pallet trays that allow air movement. Stack each lot to a maximum height of 1m and each stack to a maximum of 3 lots or 3m. Protect from exposure to harmful environment.

Verify site is ready for install and all wetworks are completed. If Tufbloc is accidentally wetted then allow to dry prior to installation. Construction guidelines issued by central, state and local government must be observed at all times. In case of conflict with Anutone guidelines, the government guidelines will override. Please contact Anutone for clarification.

Cutting

Position cutting station so that wind will blow dust away from user or others in working area and allow for ample dust dissipation. Always wear protective gear including dust mask, goggles and earplugs. Use of gloves is recommended to prevent abrasion injuries.

Use one of the following methods based on the required cutting rate and jobsite conditions.

Best Under score and snap using carbide-tipped scoring knife or utility knife (Ability to use this method depends on thickness being installed.)

Better Dust reducing circular saw equipped with appropriate blade and vacuum extraction.

Good (for low to moderate cutting only) Dust reducing circular saw with appropriate saw blade.

NOTES

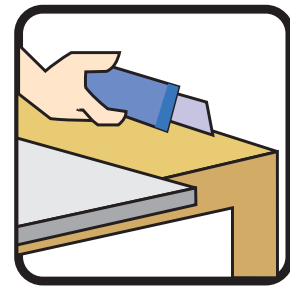
- Always use correct tools when executing cutting operations.
- Even though Tufbloc is a non-toxic building material, always wear a dust mask, safety glasses and follow MSDS Guidelines.
- Tufbloc panel ends must always be supported on metal framework. Tufbloc must not be cantilevered.
- Any surface coverings or fixtures must be supported by driving the fasteners through the Tufbloc onto the metal framing. Do not fasten such fixtures directly and independently on Tufbloc alone.

Cleaning

During clean-up, dust and debris, never dry sweep as it may excite dust particles into the user's breathing area. Instead, wet debris down with a fine mist to suppress dust during sweeping, or use vacuum to collect particles.

NOTES

- For maximum protection (lowest respirable dust production), Anutone recommends always using "Best" level cutting methods where feasible.
- Never use a power saw indoors.
- Never use a circular saw blade that is inappropriate for the specific operation being undertaken.
- Never dry sweep - use wet suppression methods or vacuum.
- Never use a grinder or continuous rim diamond blade for cutting.



TUFBLOC VIN



Tufbloc Vin is ceiling tiles for grid applications. The tiles are laminated on the exposed surface with vinyl film and on the non-exposed surface with metallised polyester film. All edges are sealed so the product is safe for cleanroom applications in pharmaceutical, food processing, biotechnology, electronics, research labs, medicine and healthcare.

Tufbloc Vin tiles are lightweight, safe to handle, easy to install on Skelet frameworks like Omni O15 and Trelis T15. Complete ceiling systems including A-chain accessories are offered by Anutone.



Pharmaceutical



Food Processing



Biotechnology



Electronics



Research Labs



Healthcare

SERVICES

Availability

Tufbloc is stocked by Anutone at its own warehouses in India, Bengaluru and Bhiwandi, apart from stockpoints at distributors in India and overseas.

Packing

Tufbloc is available in loose sheets for retail that requires careful handling or as pallet packing for forklift movement and storage.

Identification

Look for the Anutone and Tufbloc brand printed on the backside of each panel. Trace product origin from Anutone and contact a rep in case of any doubt.

Support

Our technical service can provide complete assistance for detailed installation methods and design solutions including unique applications that are not possible with other board material. The use of specialist consultants like fire and acoustical consultants is however recommended for speciality spaces as performance is system-dependant on other elements of the building.

Our products, together with our high-level expertise in general building applications and manufacturing, make Anutone a leader in developing unique innovative applications based on our core competency of refractory materials and inorganic bonded composites.

Maintenance

Tufbloc is long-service, durable, maintenance-free product. It requires virtually no maintenance services.



LIMITATIONS

Though Tufbloc is a strong board and impact-resistant, it is brittle and susceptible to chipping during transit, handling & installation. So handle with care!

Tufbloc can only be used for non-load bearing applications. The head channel needs deflection gap for slab movement when used in wall partitions. Max height of partitions is 4000 mm.

Joints between panels, whether used in walls or ceilings, must be aligned to the expansion joint of the building.

Where exposed to continuous damp or moisture conditions, the panels including edges must be sealed by primer painting or equivalent to prevent water absorption and staining.

When Tufbloc is used as a noise isolating medium care must be taken of flanking noise transmission and other issues related to acoustics. Services of a professional acoustical consultant is recommended.

Most of the properties are reported on the basis of laboratory tests under controlled conditions. The specifier/purchase must determine the suitability of the product to suit site conditions.

Most of the properties are claimed on the basis of complete system that may include metal framing, sealants, infill etc. Use of the product with accessories by others may render the performance and warranty void.

Tufbloc has been researched by Anutone since five years. It has been extensively tested in-house & field trials.



INTERIOR SPECIFICATIONS – 3-LINE

<p>CEILING</p>	<p>Supply and Installation of Tufbloc of size 1100mmx2400mm & ____ thick, as supplied by Anutone, using Strut suspended ceiling system. Strut WC25 is fixed to the wall along the perimeter with fasteners. Strut MC38/45 at 1200mm cc is tied to suspenders Strut SA25 and Strut CC22/25 at 600mm cc is then fixed perpendicular to the MC38/45. The suspension is done with all accessories like soffit cleat and wire rods as per drawings. Tufbloc is screw-fixed to Strut CC25 at 300mm cc. Joints are gapped 3~4mm, (if taper edge then taped), filled with Seam and finished.</p>
<p>PARTITION</p>	<p>Supply and Installation of Tufbloc as supplied by Anutone. The perimeter framing (floor channels and head channels to abutments) is securely fixed by using fasteners at 300mm staggered centers with an underlay of Silica caulking compound. The Studs are then placed into the floor and ceiling channels at 600mm centers and turned into position.</p> <p>Resultant airgap between studs is lined with Synth PF. On either side of the stud partition system, layers of Tufbloc of size 1100x2400mm ____ mm thick, is fixed on to the studs by using self-tapping screws. Gap between two panels shall be gapped 3~4mm, lined with Seam+Strap+Seam (no Strap for square edge boards).</p>
<p>LINING</p>	<p>Supply and Installation of Tufbloc as supplied by Anutone. Strut CC10/CC22/CC50 to be screw fixed on existing masonry wall at 600mm centres to which Tufbloc is screw fixed and joints gapped 3~4mm (taped for taper edge), filled with Seam to smooth finish.</p> <p>Tufbloc is a smooth-finished lining board. It can be painted, stucco, papered or tiled to create complementary design looks. With options of taper edge for flush jointing, smooth, seamless surface</p>

ARCHITECTURAL SPECIFICATIONS – 3-PART

PART 1 - GENERAL

1.01 - SUMMARY

Related Sections:

- Metal Framing: Division 05 structural metal stud framing sections.
- Wood Framing: Division 06, rough carpentry sections.

1.02 - REFERENCES

ASTM International (ASTM)

- ASTM C1280 Standard Specification for Application of Gypsum Sheathing.
- ASTM D6109 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products.
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
- ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

1.03 - SYSTEM DESCRIPTION

Performance Requirements:

Fire Performance:

- Fire-Rated Assemblies: Provide panels suitable for use in fire-rated assemblies in accordance with ASTM E119.
- Surface burning characteristics when tested in accordance with ASTM E84:
- Flamespread: 25, maximum
- Smoke Developed: 450, maximum

1.04 - SUBMITTALS

General: Submit listed submittals in accordance with Conditions of the Contract and Section [01 33 00 - Submittal Procedures] [_____].

Product Data: Submit product data, for specified products.

Quality Control Submittals:

- Manufacturer's Instructions: Manufacturer's installation instructions.

Closeout Submittals:

- Warranty: Manufacturer's standard warranty document executed by authorised company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1.05 - QUALITY ASSURANCE

Regulatory Requirements: In accordance with Section [01 41 00 - Regulatory Requirements] [_____].

1.06 - DELIVERY, STORAGE & HANDLING

General: Comply with Section [01 61 00 - Common Product Requirements] [_____].

Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1.07 - WARRANTY

Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

Manufacturer's Warranty: Submit in accordance with Section [01 78 36 - Warranties] [_____] for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Warranty Period: [_____] years commencing on Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 - MOISTURE-RESISTANT BOARD

Manufacturer: Anutone Acoustics Limited

Contact: 231, 7th Cross, Indiranagar 1st Stage, Bangalore 560038, India
Tufbloc

Size: 1100 x 2400mm

Thickness (mm): 4, 6, 8, 10, 12

Edges: [Square] [Taper]

Physical Characteristics:

- Flexural Modulus:
- Flexural Strength:
- Shear Strength:
- Fungus/Mould:

2.02 - ACCESSORIES

Metal framing, Infill, Fasteners.

2.03 - PRODUCT SUBSTITUTIONS

Substitutions: Substitutions in accordance with Section [01 25 13 - Product Substitution Procedures] [No substitutions permitted] [_____].

PART 3 - EXECUTION

3.01 - MANUFACTURER'S INSTRUCTIONS

Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product pack instructions for installation.

3.02 - EXAMINATION

Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 - INSTALLATION

In accordance with ASTM C1280.

3.04 - CLEANUP

Proceed in accordance with Section [01 74 23 - Final Cleaning] [_____].

Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

LIMITED WARRANTY

1. Coverage

Anutone warrants to the first owner of the structure to which all Tufbloc (hereinafter Product) is applied and the first transferee of such structure that, for a period of 25 years from the date of purchase, the Product will be free from manufacturing defects, including rotting, swelling, delamination and damage from termites, when properly installed and maintained according to Anutone published installation instructions. Should any such defect appear, Anutone will provide replacement material ex-works, at its option, for the defective Product. Anutone also reserves the right to replace the Product, subject to the prorating schedule set forth herein.

Under no circumstances and in no event shall Anutone be liable for any product payment refund, any labour charges or other expenses whatsoever in connection with the removal or installation of either the original or replacement Product. In the event of repair or replacement under the terms of this warranty, the original warranty shall apply to the replaced or repaired product and will extend for the balance of the warranty period in effect at the time the Product proved defective.

The coverage offered by this warranty is intended to cover first purchasers only. If during the Warranty period, any Product proves to be defective, Anutone, in its sole discretion, will replace the defective Product before it is installed, during the first year. During the 2nd through the 25th year, the Warranty replacement will be reduced by 3% each year such that after the 25th year no warranty will be applicable.

If the original cost cannot be established by the covered person, the cost will be determined by Anutone in its sole and reasonable discretion. Anutone replacement of the defective Product shall be the sole exclusive remedy available to the covered persons with respect to any defect. Anutone will not refund or pay any costs in connection with money refund, labour or accessory materials. Any material replacement by Anutone shall constitute a full settlement and release of all claims of any covered person hereunder for damages or other relief, and shall be a complete bar to any litigation filed subsequently to the covered person's acceptance of such agreement.

2. Conditions of Warranty

The Product must be stored according to the manufacturer's instructions at all times between purchase and installation. The Product must be installed according to Anutone printed installation instructions with Anutone accessories and all building codes adopted by central, state or local governments or government agencies and applicable to the installation. Failure to install and finish the Product per the manufacturer's published instructions and accessories may affect Product performance and voids the Warranty.

3. What the Customer must do

The claimant must provide proof that he/she is a covered person and notify Anutone in writing within 7 days after discovery of any claimed defect or failure covered by this Warranty and before beginning any permanent repair.

The claimant must provide proof of the date of purchase and installation, as well as proof of property ownership. All notifications should be sent to Anutone.

Upon discovery of a possible defect or failure, the covered person must immediately, and at the covered person's own expense, provide protection of all property that could be affected until the defect or failure is remedied.

The property owner will be required to submit a sample and photographs of the defective material to Anutone for the analysis. Anutone will then investigate the claim and examine the material claimed to be defective.

If requested, the property owner must provide access for examination by an Anutone rep. If a defect covered by this warranty is confirmed, Anutone, within a reasonable amount of time after the inspection, will repair or replace the Product, pursuant to the terms of this warranty.

4. Limitations

This warranty does not provide protection against any failure, defect or damage caused by situations and events beyond normal exposure conditions, including but not limited to:

- Misuse, abuse, neglect or improper handling, shipping, storage or installation of the Product.

- Improper application or application not in strict adherence to Anutone written application instructions.
- Improper installation of stubs or other accessories.
- Settlement or structural movement and /or movement of materials to which the Product is attached.
- Damage from incorrect design of the structure.
- Exceeding the maximum designed wind loads.
- Use of accessories that do not properly receive and/or secure the Product.
- Impact of foreign objects, fire, earthquake, flood, lightning, hurricane, tornado, severe weather (including, but not limited to, unusual climate conditions) or other casualty or act of God.
- Growth of mold, mildew, fungi, bacteria, or any organism on any surface of the Product (whether on the exposed or unexposed surfaces) and in this respect, any claims of damage caused by mold or mildew are expressly excluded.
- Lack of proper maintenance or any cause other than manufacturing defects attributable to Anutone. Anutone will have no responsibility hereunder for defective Product subjected to further processing or alteration after shipment.
- Anutone reserves the right to discontinue or modify any of its Products without notice to the property owner/consumer and shall not be liable as a result of such discontinuance or modification. If Anutone replaces any material under this warranty, it may substitute Product designated by Anutone to be of comparable quality or price range in the event the Product initially installed has been discontinued or modified.

5. Other Conditions:

IN NO EVENT WILL ANUTONE BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING ANY DAMAGE TO THE BUILDING, ITS CONTENTS OR ANY PERSONS THEREIN, WHETHER RESULTING FROM NONDELIVERY OR FROM THE USE, MISUSE, OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT.

What is Tufbloc?

Tufbloc is a mineral based product that meets the criteria established to be considered the best for a building board or construction panel.

Why use Tufbloc?

Tufbloc is a unique product that combines the features of several products in one. It has been engineered to eliminate the toughest problems facing architects, engineers, contractors, builders and consumers today: Fire, Water, Sound, Insects, Fungus and Toxins.

Tufbloc is virtually impervious to fire, water and insects; is non-flammable and non-combustible; does not feed mould or mildew; is unaffected by any insects and termites; and is non-toxic. Literally crores of rupees or millions of dollars get spent every year as a result of damage caused by these problems, and more on the deaths directly resulting from these problems.

Is Tufbloc a green building product?

Yes. Tufbloc is a mineral product, completely free of toxins such as asbestos, formaldehyde or silica. It is manufactured completely at ambient temperature, and is considered a green product.

Has Tufbloc been tested?

Yes. Tufbloc has been subjected to some of the toughest tests conducted on building materials today including the freeze/thaw and 2,000 hour weathering test which is a 20 year accelerated weathering test. It thus far exceeds ASTM requirements. All testing has been done in-house as required by AC308 issued by the International Code Council (ICC) and in accordance with ASTM requirements. Anutone is ISO certified and is audited periodically to ensure consistent quality in every order. External validation is under progress.

Is Tufbloc dimensionally stable in freeze, thaw, heat and humidity cycles?

Yes it is. Unlike cement type materials, the coefficient of expansion for Tufbloc is extremely low; therefore, when selecting and installing products such as our exterior lap siding, there is no need to leave gaps between butt joints to accommodate for such expansion and contraction. This provides a much more aesthetically pleasing finish for many years to come.

What are the adhesion values of Tufbloc?

Excellent. Allows you to finish with any product you desire such as paint, cement stucco, synthetic stucco, wallpaper, stone, tile, brick, metal as in ACP and much more. The excellent adhesion properties of Tufbloc also make it a perfect product for Structural Insulated Panels (SIPS), Exterior Insulated Finish Systems (EIFS) and interior wall systems using fabric cladding.

Is Tufbloc cost competitive with other products?

Yes, considering overall installation and lifecycle costs. By using Tufbloc you don't have to worry about such things as insect damage caused by termites, ants and other such pests; decay caused by moisture and UV; warping, swelling and rot caused by water; mould and mildew; and, toxins that are found in many wood, plastics, gypsum and cement based products. Much thinner panels achieve much higher saving you expensive space costs.



In what applications can I use Tufbloc?

Tufbloc is extremely versatile and a product available for a most every application. For example:

<u>For the exterior</u>	<u>For the interior</u>	<u>Other applications (OEM)</u>
• sheathing	• wallboard	• Structural Insulated Panels (SIPs)
• fascia	• ceiling board	• Exterior Insulated Finish Systems (EIFS)
• soffit	• tile backer	• Room Dividers
• trim	• underlayment	• Office cubicle wall panels
• lap siding	• ceiling tiles	• Liners for Safes
	• fire walls	• Shaft liner



Can I order non-standard sizes?

Yes. But Minimum Order Quantity (MOQ) applies.

How do I store Tufbloc?

Storage and handling of Tufbloc is easy. It does not require the same attention as wood or gypsum type products do. Tufbloc can actually be submerged in water for months with virtually no dimensional change whatsoever; and, it leaches water quickly, never feeding fungus or mildew or suffering decay or warping as do most wood and gypsum products. And since Tufbloc is a homogenous product, there is no delamination ever.

Is Tufbloc easy to install?

Yes. Tufbloc installs with mechanical fasteners - screws or pneumatic nailers - depending on the application. Always follow the Anutone installation recommendations. Finishing interior walls and ceilings is also easy using Anutone's Seam joint compound filled in 3~4mm gapped joints.. Since Tufbloc is smooth on one side, you can achieve a 'Level 5' trim with much less work (man-hours) than typical gypsum board.

When installing Tufbloc as underlayment or backer board there are no changes in preparation for installation from processes being used today when installing other materials; however, use only thin set materials and not mastics.

Is Tufbloc safe for installers?

Yes. In fact installing Tufbloc is as safe if not safer than installing any other material in the market today. Tufbloc is a mineral-based product free of carcinogens and silica. It has been tested and found to be non-toxic. So, Tufbloc is extremely safe for installers and consumers alike. You may obtain a copy of our Material Safety Data Sheets (MSDS).

How can Tufbloc be finished?

Tufbloc can be finished with just about anything in the market today including paint, cement stuccos, synthetic stuccos, wallpaper, plaster, brick and stone and much more. As with most products, manufacturers of these products will guide and in some cases their authorised applicators will perform the installation.

Where can I purchase Tufbloc products?

To accommodate your needs, we are in the process of establishing distribution points around the country and overseas. Please contact us to find out the nearest location to your project. If you are interested in becoming a Distributor, call us and we can tell you how we can make it rock together!

How does the Tufbloc warranty compare to other product warranties?

Anutone warrants Tufbloc lifecycle for 25 years. No other building board comes close.

Tufbloc @ ILFS Expo



Anutone is an Associate Sponsor of ILFS 2011 and six-city roadshow and tradeshow at New Delhi to create awareness on the future of building interiors.

anutone®

makes you feel good™

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