

SITE CONDITIONS, STORAGE & HANDLING

It is the responsibility of the ceiling contractor to ensure that materials delivered to the installation site are safeguarded from the time of purchase until the finished ceiling is handed over. However, it is usually the main contractor who is responsible for the conditions on site and so both parties must be aware of the requirements of suspended ceilings for flat, dry, clean and safe storage conditions.

Armstrong packaging of ceiling tile and grid varies from material to material, but all is designed to withstand careful site handling. However, poor or rough handling, rolling or dropping of cartons on their corners or edges may cause damage to the product or the product

to deteriorate, irrespective of the material. Long grid and trim cartons should not span between points as any load applied mid-span may cause product damage.

Mineral fibre tiles are packed as cartons with a cardboard sleeve and then shrink-wrapped; however the shrink-wrapping is not waterproof. Grid sections, soft fibre tiles, wood veneer tiles and metal tiles are all packed in full cardboard cartons.

Cartons of mineral fibre and soft fibre tiles should be stored and stacked with the tiles face up (horizontally) and without any other heavy objects on top of them.

Cartons of wood veneer and metal tiles should be stored with the tiles standing on their sides (vertically).

All cartons may be stacked on wooden pallets and secured with shrink-wrapping for transportation but when on the installation site they should never be stacked higher than when originally delivered to the site.

Consideration should be given to the advice of the Health & Safety Executive (HSE) regarding the manual handling of heavy cartons. An assessment should be made of any associated risks and if necessary mechanical lifting equipment should be used.

INSTALLATION CONDITIONS

Armstrong suspended ceilings are interior finishes and the site conditions during installation should reflect this.

Ceiling tiles should be stored for 24 hours before they are installed, in the area in which they are to be fixed, within a temperature range of 11°-35°C.

The stability of the temperature range is important as this can have a great affect on the relative humidity within a space and for products with lower humidity resistance in particular, the stability of the temperature is critical as an appreciable drop in the temperature may create humidity conditions which could be detrimental to the ceiling materials both installed and uninstalled. During winter months, heating of the jobsite may be necessary and the use of 'dry' heating should be considered because the burning of fossil fuels produces additional water vapour. Increased ventilation to eliminate the risk of condensation may be appropriate and also in summer months to control the temperature fluctuation due to solar gain.

The use of thermal insulation on the back of a ceiling tile will alter the temperature gradient within a construction and its effect on the position of the dew point must be considered. If there is a risk of condensation, ventilation of the ceiling void and the use a vapour control layer between the suspended ceiling and the insulation may be necessary. Advice on these matters can be obtained from a specialist thermal engineer.

The Armstrong range of ceiling tiles provides the industry with a choice of humidity resistance performances which will affect their suitability for different installation conditions.

The Armstrong Design range of tiles have 70% (max.) relative humidity (RH) resistance while many of Armstrong's most popular plain, textured and performance tiles offer a 10 year warranted performance when fixed and maintained in humidity conditions not exceeding 95% RH (max.) providing enhanced building programme flexibility and suitability for a wider range of applications and environments⁽¹⁾. Dune Supreme and Dune Max provide a lifetime Humiguard warranted

performance for installations and conditions up to 99% RH (max.) enabling installation in a wider temperature range (0°-49°C) and in more extreme humidity conditions⁽²⁾.

Armstrong Optima and Nevada soft fibre tiles, although only rated as 95% RH, are 100% RH dimensionally stable, meaning that they can withstand temporary peaks of up to 100% relative humidity.

For consistently high humidity environments Armstrong Ceramaguard and Newtowne are 100% RH resistant. For these conditions they should be installed on corrosion resistant grid.

Corrosion resistant grid is also appropriate for Parafon Hygien tiles if it is intended to subject them to a high pressure wash regime.

Armstrong Orcal metal tiles provide 95% RH (max.) performance and certain Orcal products are available back-painted for 100% RH resistance.

1) See the 95% RH 10 year Warranty for full details (page 9). 2) Please contact Internal Technical Sales for the Dune Supreme/Max 99% RH lifetime Humiguard Warranty.

INSTALLATION

Installation of Armstrong ceiling tiles should be conducted in the appropriate site and environmental conditions as described above and as per Armstrong's manufacturer's recommendations (see pages 42-43). Due consideration should be given to the relevant British and European Standards, COSHH and health & safety regulations and the use of the correct personal protective equipment (PPE).

Cartons should be opened carefully with the cardboard sleeve on mineral fibre cartons released to ensure that tiles can be removed without damaging the edges of the tiles.

It is recommended that mineral fibre tiles are cut with a sharp knife. Unnecessary breakage of tiles should be avoided. Newtowne, Madera wood products and Axiom aluminium extruded sections are best cut using a powered saw with the correct blade for the material.

Metal tiles are painted with a highly durable polyester powder coat finish which provides a paint surface that does not readily chip, crack or flake as can be associated with 'wet' paint finish to metal tiles. Metal tiles will often need to be cut at room perimeters or junctions with columns and when this is necessary it is important that a flat clean cut edge results. This is

best achieved using aviation snips, electric shears, or a high speed jig or bandsaw. The cut edge should then be masked by an appropriate perimeter section and held down using wedges or spring clips as necessary.

Care is necessary when handling and installing tiles, especially metal and soft fibre tiles, to prevent finger marking of the surface from soiled or greasy hands, and where appropriate, clean cotton gloves should be worn.

Ceilings that are required to provide structural fire protection must be installed in accordance with the relevant fire test report.

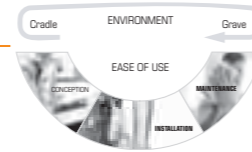
(see fire resistance page for further information).

AFTER COMPLETION

Once a building is handed over to the client, it is not always occupied at once. In this situation heating and ventilation may sometimes be decreased or switched off to save energy costs. In these circumstances conditions above and below the ceiling should be equalised and it may be necessary to temporarily remove tiles to facilitate this.

This may not be possible if the ceiling is being used to provide passive fire protection to the building. Attention must also be paid to ensuring that the internal conditions are not allowed to exceed those that the ceiling tiles are designed to withstand. Heat build up due to solar gain may need dispersing by ventilation to reduce

the risk of condensation occurring as the temperature falls. The effect of insulation on the back of the tile or in a roof construction also needs consideration and sufficient ventilation may be required to prevent surface condensation and a vapour control barrier to control the effects of surface or interstitial condensation.



MAINTENANCE, REPLACEMENT, REDECORATION & CLEANING

Armstrong mineral fibre tiles are marked on the back for ease of identification and maintenance.

Maintenance on suspended ceilings should only take place after the effect of the work on the technical characteristics of the installation has been fully considered.

Ceiling tiles should require no more maintenance than a painted plasterboard ceiling, however, when maintenance is necessary, certain procedures should be followed to ensure that the performance and appearance of the ceiling is maintained.

Minor damage to mineral fibre tiles can be repaired using commercially available fillers and Armstrong touch-up paint, although due to natural aging of the installation an exact colour match may not be possible.

Similarly when replacing tiles, new material is likely to introduce colour variation. This effect can be substantially reduced by redecoration of the entire ceiling, or by replacing all tiles in a particular area and using the re-usable existing tiles for refurbishment elsewhere.

Most ceiling tiles and grids can be redecorated, however, consideration should be given to the appropriate type of paint to be used and to the effect on the reaction to fire and acoustic performance. Redecoration by spraying is the preferred method, using the minimum amount of paint applied in an even manner. Ceiling tiles should be removed from the grid and laid on a flat surface prior to painting, whilst grid can be repainted in situ, but with the tiles removed. Tiles should only be moved or replaced once dry and the grid must dry before replacing the ceiling tiles.

If a professional firm of decorators is used, assurances should be sought that the necessary performances will be maintained. It should be noted that any repainting would invalidate Armstrong's warranty for the product.

Different ceiling tile materials have different requirements for cleaning.

Mineral fibre ceiling tiles should first have any surface dust removed using a soft brush. Pencil marks, smudges etc. may be removed with an ordinary gum eraser. Alternatively, a moist cloth or sponge dampened in water containing a mild soap or diluted detergent can be used. The sponge should contain as little water as possible and the ceiling must not be made wet. The process should be repeated again in a similar manner with a damp sponge but with clean water only to remove any residual soap or detergent. No abrasive cleaners should be used.

The Bioguard paint finishes on Armstrong Bioguard, Bioguard Acoustic and Orcal Bioguard products have been tested for resistance to disinfectants with different active ingredients:

- Hexanios (active agent - Quaternary Ammonium)
- Minncare (active agent - Hydrogen Peroxide)
- Klercide CR B (active agent - Chlorine)

Ceramaguard and Newtowne tiles are unaffected by moisture and may be cleaned with increased amounts of water. As Ceramaguard can absorb moisture without detriment to the stability of the tile consideration should be given to the additional weight of the ceiling and the required centres of main runners.

Soft fibre ceiling tiles can normally be easily cleaned if their surface becomes soiled, however, the frequency of cleaning should be carefully considered as once any dirt becomes ingrained, or the surface stained, cleaning is less likely to be successful. The choice of cleaning method depends upon the product type and degree of soiling.

Any surface dust should be removed from the face of the tile using a soft brush or a vacuum cleaner with a clean brush attachment. Pencil marks, smudges etc. may be removed using

a 'Scotch Bright' abrasive faced foam pad, lightly rubbed across the soiled area. Excessive force should not be used otherwise glossy patches may occur. An alternative method of cleaning is with a moist cloth or a sponge dampened in water containing mild soap or diluted detergent, but abrasive cleaners must not be used. The sponge should contain as little water as possible and the tile then wiped with a cloth dampened in clean water to remove any soapy residue.

Parafon Hygien can be high pressure washed, however, the following precautions must be observed to avoid damage to the tiles and it is recommended that a small trial area should be initially attempted.

The tiles must be clipped down with the appropriate Armstrong clip using a minimum of 2 clips per 600 edge and 3 clips per 1200 mm edge. First apply a coating of cleaning foam, and then ensure it is thoroughly flushed off with clean water. The water pressure must not exceed 80 bars and the flow limited to 6-8 litres per minute. The maximum water temperature should be 40°C. The nozzle must not be closer than 300 mm from the tile and the water should be applied in a fan spray (not the jet or cutting mode). The angle of application should be 45°. In hygienic areas, only permitted cleaning agents should be used and the pH-value of the water/detergent mixture should be between 7 and 12. Although water penetrates into the product and around its edges, after 1-2 days the water should evaporate. The temperature and ventilation of the ceiling void are important factors in minimising this time. This cleaning process should be limited to no more than twice per year.

Metal ceiling tiles should be cleaned as soon as they become soiled to prevent the dirt becoming ingrained or the surface stained, otherwise the cleaning is less likely to be successful. Surface dust can be removed by wiping with a lightly moist clean soft cloth. For grease and fingerprints use a moist cloth or sponge dampened, with as little water as possible, containing a mild soap or detergent. After cleaning, the soapy film should be wiped off with a cloth or

sponge lightly dampened with clean water. Orcal Clip-In Plain tiles can be high pressure washed when the product is installed with a high resistance silicone seal between the joints. The water pressure must not exceed 80 bars and the flow limited to 6-8 litres per minute. The maximum water temperature should be 40°C. The nozzle must not be closer than 300mm from the tile and the water should be applied in a fan spray (not the jet or cutting mode). The angle of

application should be 45°. Orcal Bioguard tiles should be cleaned in the same way as standard Orcal tiles. Specialist contractors may offer cleaning services using chemical solutions. Where these methods are considered, it is recommended that a trial is first carried out in a non-critical area of the building so that the result and overall effect can be assessed.

HEALTH & SAFETY

Armstrong ceiling products are CE marked with the essential safety performance criteria as required by EN 13964:2004 (Suspended ceilings - Requirements and test methods) in order to comply with the Construction Products Directive (89/106/EEC). For ceiling tiles (membrane components) these include reaction to fire, release of asbestos and release of formaldehyde. For grid (substructure components) they are reaction to fire, load bearing capacity and durability.

Products should be installed in accordance with Armstrong's manufacturer's recommendations, the relevant British and/or European Standards and The Control of Substances Hazardous to Health (COSHH) Regulations 2002. When ceilings are installed in accordance with these instructions, no excessive dust or hazards should be created. However, if excessive dust is created, approved respiratory protection complying with EN 449 FFP1 or FFP2 should be worn. Such protection is deemed to be required if the total weight of inhalable dust exceeds 5mg/m³, or 2 fibres/ml, when averaged over an 8 hour TWA reference period.

Reference may also be made to the following:
Health & Safety at Work Act 1974
Manual Handling Operations Regulations 1992 (as amended)
Personal Protective Equipment at Work Regulations 1992 (as amended)
HSE Guidance Note EH 40/2005 – Workplace Exposure Levels
HSE Guidance Note EH 46/1990 – Man-Made Mineral Fibres.