

## SITE CONDITIONS

Whilst it is the contractor's responsibility to ensure that materials delivered to the installation site are safeguarded from the time of his purchase until he hands over the finished ceiling, specifiers will find it useful to know what conditions must be observed to obtain best results.

## SITE STORAGE

Site storage and handling to the place of installation is generally provided by the Building Contractor. He must be informed as to the desirability of flat, dry, clean and safe storage facilities. Armstrong pack their products so they will withstand careful site handling. Shrink-wrapping is not waterproof. As a carton may be handled as many as 8 or 10 times from manufacturer to erection, any rough handling, rolling of cartons or dropping cartons on their edges may cause the product to deteriorate.

## INSTALLATION CONDITIONS

Armstrong suspended ceilings and Soundsoak wall panels are interior finishes and the conditions during the installation within the building should reflect this. Armstrong recommend during installation that the relative humidity (RH %) should not exceed RH95/99 Prima/HumiGuard Plus 0-49°C, RH100 HumiGuard Max 0-49°C. To allow temperature adjustment, the tiles, or panels should be stored for at least 24 hours before installation in the room in which they are to be installed. Stability of temperature within the range quoted above will provide the most suitable conditions within the building. If there is an appreciable drop in temperature there will be a resultant increase in the RH % which may be to the detriment of the ceiling materials, both installed and un-installed. At lower temperatures, particularly below 11°C, small reductions in temperature cause disproportionately high increase in RH%. The closer the temperature falls towards 0°C the more volatile the relationship becomes (Prima/HumiGuard Plus and HumiGuard Max reduce this volatility). The required stability of site conditions is only likely to be achieved if the building is weatherproof, dried out, fully glazed, and during the winter months some form of dry heating is provided. Increased ventilation should be used to reduce excess heat build up during the day caused by solar heat gain.

Controlled ventilation should be used to disperse moisture-laden air. Mechanical de-humidifiers are designed to reduce the moisture content in the air within the building. The direct burning of fossil fuels such as butane or propane gas is not recommended as these liberate approximately 2.2 litres of water for every 500g of fuel burnt. It is better to use dry heat such as electricity or indirect hot air and to use de-humidifiers only to reduce the % RH created by moisture emitting from the structure.

A new building does not normally contain a reservoir of heat absorbed into the structure, thus during holiday periods the temperature within the shell may drop rapidly so that condensation could occur. Consideration should be given to delaying the installation of tiles or panels until after the holiday period, when the heating and any de-humidification are in operation. Where the fixing programme will not allow this, it may be possible to install the grid work and the tiles or panels in separate operations. This is generally more costly due to the increased labour costs and extended use of scaffolding and other services. There is also additional risk of damage to the installed grid by other trades during the enforced break.

## AFTER COMPLETION

Sometimes buildings are not occupied after completion and hand over to the client. In such cases the building is allowed to cool and minimum background heating is provided to protect the finishes. Below 11°C the likelihood of condensation increases. To allow equalisation of the prevailing conditions above and below the ceiling, panels or access tiles should be temporarily removed. The sheet lenses of recessed luminaires may also be left out to achieve the same effect. These options may not be available if the ceiling is to provide the passive fire protection of the building. Heat build up caused by solar heat gain may need dispersing to reduce the risk of condensation at or after dusk. The risk with RH95-99/RH100 products is greatly reduced.

Special attention should be given to the situations where the presence of additional insulation, either on the back of the ceiling or within the roof construction, alter the temperature gradient in the construction with the

corresponding movement of the dew point. The installation should therefore be checked by calculation and if there is a risk of condensation, the ceiling void should be sufficiently ventilated to avoid this. It may be necessary to fit a vapour barrier or vapour check between the suspended ceiling and the thermal insulation so as to control these effects.

## MAINTENANCE AND CLEANING

All maintenance on suspended ceilings should only take place after the effect of this work upon the technical functions of the installation has been fully appreciated. If in doubt, please consult your nearest Armstrong Ceiling Systems Division sales office. The specialists there will help you in assessing your projected maintenance operation and offer advice on future performance of the existing ceiling after it has been carried out.

Armstrong mineral fibre ceilings require no more maintenance than painted ceilings. However, when maintenance is necessary, certain procedures should be followed to ensure continued high performance and attractive appearance.

## CLEANING

Dust and loose dirt may easily be removed by brushing or with a vacuum cleaner. Vacuum cleaner attachments such as those designed for upholstery do the best job. It is best to clean in one direction only. This will help to reduce the amount of dust rubbed into the surface.

Pencil marks, smudges etc. may be removed with an ordinary art gum eraser. An alternative method of cleaning is with a moist cloth or sponge dampened in water containing mild soap or diluted detergent. The sponge should contain as little water as possible. The ceiling must not be made wet. After washing, the soapy film should be wiped off with a cloth or sponge lightly dampened in clear water.

- Abrasive cleaners must not be used.
- Ceramaguard ceilings are unaffected by moisture and can be made damp with no adverse results.
- Clean Room Mylar and VL ceilings in their Plain surface pattern variation can be repeatedly washed and will withstand mild detergent and germicidal cleaners. Care should

be exercised when cleaning perforated finishes to avoid that water or other cleaning solutions are forced into the small perforations in these products.

- Soundsoak wall panels and Soft Look fabric faced ceiling tiles should first be vacuumed to remove loose dust. Surface stains may be treated with a dry cleaning fluid or dry shampoo. Cleaning agents of these types should be tested on a small unobtrusive area prior to wider application. Abrasive cleaners should not be used and the panel or tile must not be made wet during cleaning.
- Specialist contractors offer cleaning services using chemical solutions. Where these methods are employed, it is recommended that a trial operation is first carried out so that the result and overall effect can be assessed. It is best in this case to conduct such a test in a non-critical area of the building.

## REPLACEMENTS OF INSTALLED PRODUCTS

While minor damage on ceiling tiles and boards can be repaired using commercially available fillers, a colour match is almost never achieved. When surface damage is extensive, consideration should be given to replacing the damaged tiles or boards.

Methods exist of replacing installed ceiling tiles or panels and Soundsoak wall panels. The installation of new material in this situation is likely to introduce colour variation. This effect can be substantially reduced either by redecoration of the complete surface or by using tiles or panels obtained by the replacement of a less significant area with new material.

## RE-PAINTING

Most Armstrong ceilings can be re-painted without appreciable loss of acoustical efficiency provided the "Painting Precautions" outlined below are adhered to. Spraying is the preferred method since it is more economical and will cover irregular surfaces more uniformly than roll coating or brushing. Roll coating is very acceptable for flat smooth-faced items, particularly where a contrast is required between the face of the pattern and the underlying pattern. For best results, panels should be removed from the grid suspension, laid flat for painting and allowed to dry thoroughly while still flat before being re-installed.

- Certain Armstrong products cannot be re-painted due to the manufacturing techniques involved. These are Soft Look and Soundsoak.

## TYPE OF PAINT

Regardless of the method of paint application employed, a good grade of paint from a reputable manufacturer should be used. Centrally, water-bound emulsion paint is applied in accordance with the supplier's recommendations. Where colour matching is desired, paints of this type are readily available from stores which tint their own paint.

## SPRAY PAINTING

Airless spraying usually gives the best results. First remove loose dust from the ceiling with a soft brush or a vacuum cleaner. Thin the paint only as much as is necessary. If the paint is too thick for proper spraying, care should be taken that it is thinned only with the solvent recommended by the manufacturer. When spray painting, apply the paint with a stream directed perpendicularly to the surface of the material, moving the spray gun back and forth to get a uniform coating. Under normal conditions, one coat should be sufficient. In applying this coat on a ceiling installed on a concealed or semi-concealed suspension system, the tile joints should be first painted and then the face of the tile, passing over its surface two or three times to obtain a uniform finish.

## BRUSH PAINTING

First remove loose dust from the ceiling with a soft brush or a vacuum cleaner. Then, if necessary, thin the paint to such a consistency that it does not close the perforations or pattern within the ceiling tile. Wet the brush thoroughly with paint. Wipe excessive paint from the outside of the brush, then apply it on all four edges of the ceiling tile. Touch the paint on to the surface of the tile at several points so as to distribute the paint evenly. Then brush the paint out to a uniform coating.

## ROLL COATING

The main advantage of roll coating is the speed of application. Even though the applicator may have to touch in the work by brush painting relief detail and the bevels on the tiles after the roll coating, this method is faster, in general, than either the spray or overall brush method of application.

## PAINTING PRECAUTIONS

When painting acoustical materials, the painter should be very careful that he does not close up the perforations or pattern in the material. It is through these openings in the surface that the sound waves enter the body of the acoustical material and are absorbed. Following the simple instructions above will help the painter to retain the sound absorbing properties of the ceiling material.

## THERMAL INSULATION

### Mineral Ceilings

The use of overlaid insulation place on, and supported by, mineral ceiling panels is not recommended. The additional weight supported by the panel could result in panel sag in high humidity conditions. If job requirements are such that insulation is necessary at recommended occupancy conditions, limit such insulation to a maximum of 1.27 kg/m<sup>2</sup>. Only roll insulation is recommended and must be applied perpendicularly to the cross tees with the grid supporting the weight of the insulation.

Thermal insulation should not be installed on the back of Fire Guard panels in a fire resistive ceiling membrane unless so designated in the specific UL roof/ceiling or floor/ceiling design assembly assigned to the structure.

### Fibreglass Ceilings

Armstrong fibreglass ceiling panels are recommended for use when additional thermal insulation is required to be overlaid on the back of the ceiling panels. Specific limitations apply. Please contact TechLine for specific fibreglass backloading recommendations.

## SELECTING LIGHTING

When selecting any type of lighting, it is important to evaluate the fixtures (lighting system) and ceiling panels or tile as components that work together in an integrated system. Important considerations include both initial and long-term costs, energy consumption and perhaps even the lighting system's potential impact on worker effectiveness within the space. It is also always advisable to consider the effect it will have on the appearance of an acoustical ceiling. Typically, grazing light and indirect lighting should be avoided with 300 x 300mm concealed grid tile installations.