

# Handling and Storage of Papers and Boards

**Paper is hygroscopic – it readily gives up moisture and absorbs moisture to and from its surroundings.**

Paper loses moisture to its surroundings from its edges rather than uniformly across the sheet and, quite naturally, when it loses moisture it will shrink. Because of this inconsistent moisture loss the sheet will distort; the edges will shrink much more than the centre of the sheet leading to saucer-shaped paper with what is known as tight edges or a baggy middle. An example of this may be seen in the following picture:



The exposed paper has lost moisture from its edges and this has led to the edges shrinking and the associated ‘curling up’ of the corners to give a saucer-shaped stack.

Attempting to print such a sheet will cause creasing in the baggy middle and the strong likelihood of mis-register of multi-colour printing.

When paper takes moisture from its surroundings through its edges then the opposite effect will happen.

The edges will expand more rapidly than the sheet centre leading to wrinkled, wavy edges and attempts to print will result in creasing especially at the back edge of the sheet.

The result of such a distortion is seen on the next photograph:

Unprotected paper and the uptake of moisture has resulted in a wavy and distorted edge.

Provided, therefore, that the paper delivered from the mill is of an acceptable standard then the key to successful running is to ensure that before printing and between machine passes, all paper remains protected from the surrounding atmosphere to ensure no gain or loss of moisture.

This is of particular importance in the late autumn and winter months to ensure that paper is kept wrapped or covered when otherwise not in use. In these months when press rooms are heated, as the temperature increases so the surrounding atmosphere will dry out – unprotected paper will lose moisture from its edges resulting in tight edges and curl.



- Always leave paper in its original moisture-proof wrapping until it's used and wherever possible bring the unopened ream/pallet to the press room and allow it to acclimatise to its surrounding temperature before opening and putting to the press. The table below gives guidelines for paper brought into a room with an ambient temperature of 20° Centigrade.

Stored at 20°C	pallet = 0 hours	carton/ream = 0 hours
Stored at 15°C	pallet = 14 hours	carton/ream = 3 hours
Stored at 10°C	pallet = 26 hours	carton/ream = 7 hours
Stored at 5°C	pallet = 38 hours	carton/ream = 11 hours
Stored at 0°C	pallet = 75 hours	carton/ream = 21 hours

- Between press passes i.e. before backing up or between separate passes on a single or two colour press where multi-colour work is involved, rewrap or cover stacks to assist moisture protection.
- Paper should be protected from extreme variations in temperature – never store paper near sources of heat or extreme cold for example near open shutter doors.
- Paper should be stored flat in its original ream or bulk packing on pallets and clear of the floor and therefore clear of damage and damp.
- Any damage to wrapping should be repaired.
- Any distortion of paper by its overhanging its pallet will cause irreparable damage.
- Paper guillotine-trimmed by the printer should always be 'knocked up' into square stacks and covered; allowing reams to overhang pallets or be stacked indiscriminately can be a potential source of damage.
- With regard to copier and laser papers the above guidelines for moisture protection are critical and attention is drawn towards guidelines published separately.
- Copier and preprint papers are made at a moisture content lower than that of traditional offset litho papers and it is essential that reams remain wrapped until use.
- It is also recommended that only paper to be used immediately is removed from its wrapper and that opened paper is not left overnight in the machine feeder tray.
- In common with offset printing papers copier papers should be allowed to acclimatise in the print room in their wrappers before use.
- Copier and laser papers should again be stored away from extreme variations in temperature.

**Reference to these guidelines should assist in problem-free handling and printing of papers.**