

The difference between mold and chemical discoloration of wooden products

I \ Introduction

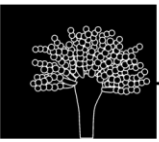
Many brands or factories of crude wood, wooden equipment or wooden products often face the problem of discoloration, and the discoloration of such wood or wood products can often be divided into two causes, one is fungal discoloration, which is commonly known as "mold"; the other is chemical discoloration, including oxidative discoloration or tannin discoloration, etc. In comparison, the cost loss and other impacts caused by fungal discoloration are more serious.

The occurrence of mold is due to the reproduction and growth of mold spores on the surface of wood, basically only the surface and surrounding areas of wood will be discolored. This discoloration mechanism can be initially identified by visual observation. For example, the change in coloration is usually lighter than with a chemical discoloration Fungal discoloration often presents itself as spotty or cottony. The common species that cause wood mold are *Aspergillus* sp.,

Penicillium sp. and *Trichoderma* sp., etc.

Wood chemical discoloration is when the wood is exposed to an external stimulus, which will trigger its protective mechanism, producing a chemical reaction, such as the oxidative condensation reactions of phenols, sugars or tannins, etc., which will cause the wood discoloration. This may lead to an inconsistent appearance of wooden products, and thus resulting in a loss of value of wooden products; deterioration of wood may reduce product quality or make products more susceptible to decay, among others.

Mold Characteristic Analysis (MCA), a technical service by YCM Microbiology Research Center (MRC) not only determines whether the discoloration of wooden products is caused by mold contamination, but also serves as a reference for subsequent product processing or attribution of responsibility. Recently, the wooden products of brand M faced quality incidents of suspected



mold, thus entrusting YCM to clarify if the products are contaminated by mold or a chemical discoloration caused by environmental factors, in order to facilitate the formulation of subsequent improvement strategies.

II - Result

The wooden products sent by brand M can be observed to have discolored areas. After being inspected by the YCM MRC through the ISO-certified method, no mold was detected; this wooden product was determined to be free of mold (Figure 1).

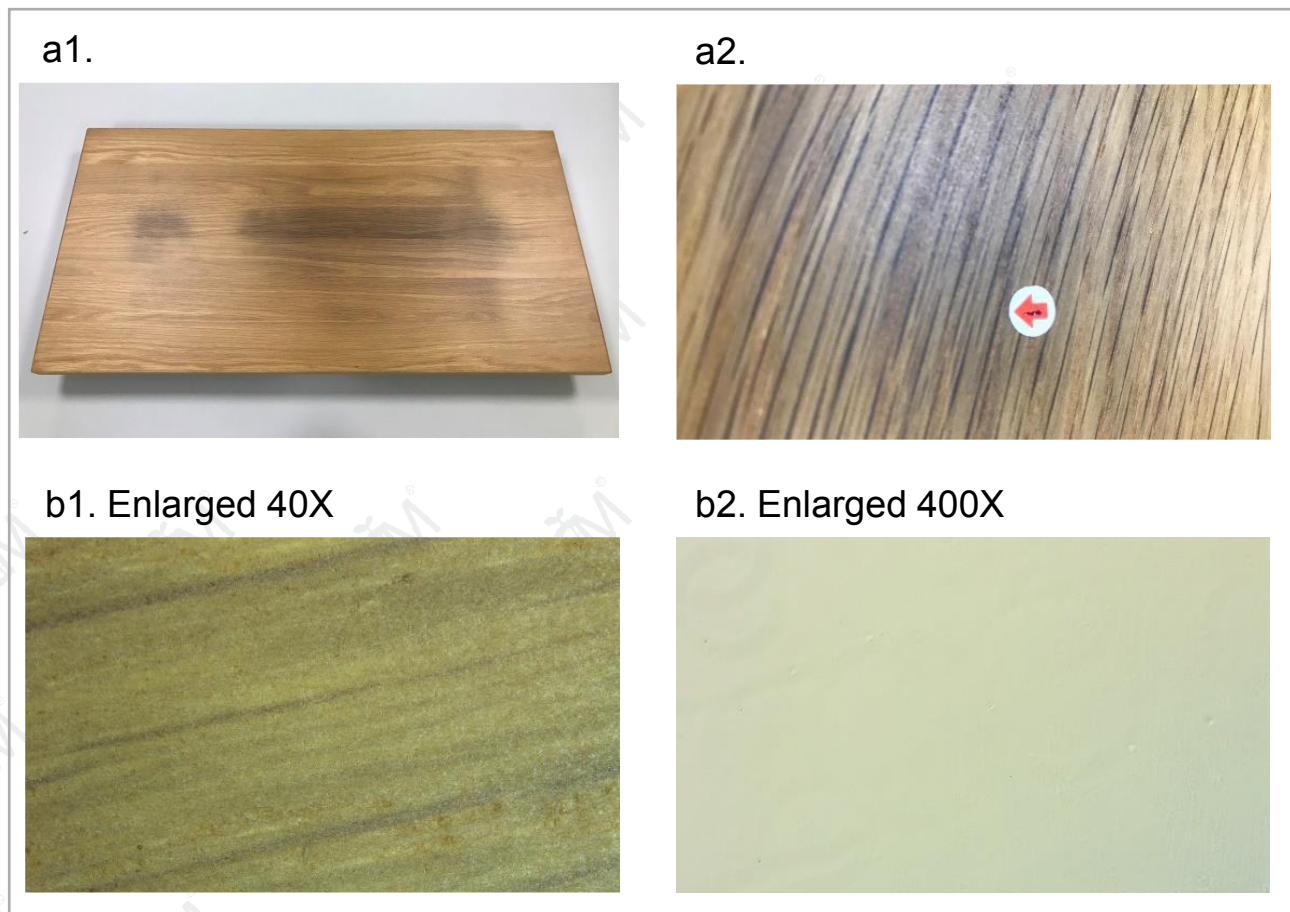
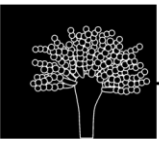


Fig 1. Wooden products sent by brand M for Inspection

a1 – a2. Discoloration areas of wooden products; b1 – b2. Wooden products were observed under a microscope at different magnifications, and no mold was detected.



III ․ Conclusion

MCA service of YCM MRC can determine whether an item is moldy based on the observation of mold growth structures, and can also identify the discoloration of wood or wooden products as a consequence of mold or a chemical reaction.

After YCM MRC conducted further professional inspection and analysis, the contamination point was determined not to be caused by the mold growth. It remains possible that the wood reacted to light, temperature, moisture or a physical impact in its environment, causing specific components in the wood to trigger chemical changes, such as oxidative discoloration or tannin discoloration.

For this entrusted case, and to avoid the factory's loss, and solve the clients'

pain points, it is recommended that the crude wood is dried out, processed and preserved as soon as possible after being cut down, in order to reduce the invasion of biological factors, such as pest gnaw, termite rot, mold and bacteria growth, etc. The moisture content of the wood should be reduced to below 20% as soon as possible to ensure its dryness, and to reduce the possibility of mold spores obtaining nutrients. For wooden products, polymer coatings can be used to isolate oxygen and moisture, reducing the chance of chemical discoloration caused by environmental stimulation.

YCM MRC can assist to find out the source of discoloration, deterioration or suspected contamination of wooden products, solve the risk source as soon as possible for cost saving.