

INTACE

March 15th, 2014

PROTECT YOUR PACKAGING AND LABELS AGAINST MOULD

RICHARD JOHNSON—CHEMICAL ENGINEER RENSSELAER POLYTECHNIC INSTITUTE, PRESIDENT OF INTACE, FRANCE.

PROTECTION AGAINST MOULD GROWTH ON CONSUMER PACKAGING AND LABELS HAS LONG BEEN A CONCERN FOR AESTHETIC REASONS. IN RECENT YEARS, HOWEVER, MOULD HAS BECOME A SERIOUS HEALTH ISSUE. STUDIES HAVE SHOWN THAT SOME MOULDS ARE HUMAN PATHOGENS WHICH CAN CAUSE SERIOUS ILLNESSES OR TRIGGER STRONG ALLERGIC REACTIONS. IN CERTAIN COUNTRIES, HEALTH PROBLEMS RESULTING FROM EXPOSURE TO MOULD ARE GENERATING AN INCREASING NUMBER OF LEGAL CLAIMS.

Fortunately, it is now possible to protect paper packaging and labels from mould growth by treating them with an appropriate fungicide. These increasingly efficient products, which prevent fungal spores from developing into moulds, are relatively safe to use, easy to apply and will provide protection against mould growth for several years. This is especially important for wine labels which often become discoloured and illegible while stored in damp cellars.

The principal applications for mould resistant papers are bar soap packaging and labels for bottles of mineral water, wine and beer. However, with the increasing emphasis on packaging as a medium for advertising and publicity, there is a growing need for mould resistant paper to preserve the quality of the package. The phenomenon of mould growth on cellulose substrates is well-known. Fungal spores that are present in the paper, either at the time of its production or later when it has come into contact with a contaminated environment, may develop into active moulds in the presence of both water and moderate-to-warm temperatures (10-50°C). Although paper machine systems contain bacteria, yeasts and fungi, the bacteria and yeasts are generally killed by the high temperatures (90-100°C) used to dry the paper sheet.

However, fungal spores may survive the drying process and remain alive but dormant in the paper, until favorable growing conditions develop. Once these conditions are achieved, the fungi (moulds) grow rapidly, feeding on the cellulose fibers and whatever other nutrients may be present.

**PROTECT YOUR
PACKAGING AND
LABELS AGAINST
MOULD**



Publisher: INTACE

91, Rue du Fbg St Honoré
75008 Paris, France
www.intace.com

Telephone: +33 (0) 153 69 96 66
Fax: +33 (0) 153 69 96 67
E-Mail: info@intace.com



The family of moulds is large and complex. Until now, about 80 000 different species have been identified. Recent estimates suppose, however, that the real number exceeds 1 million.

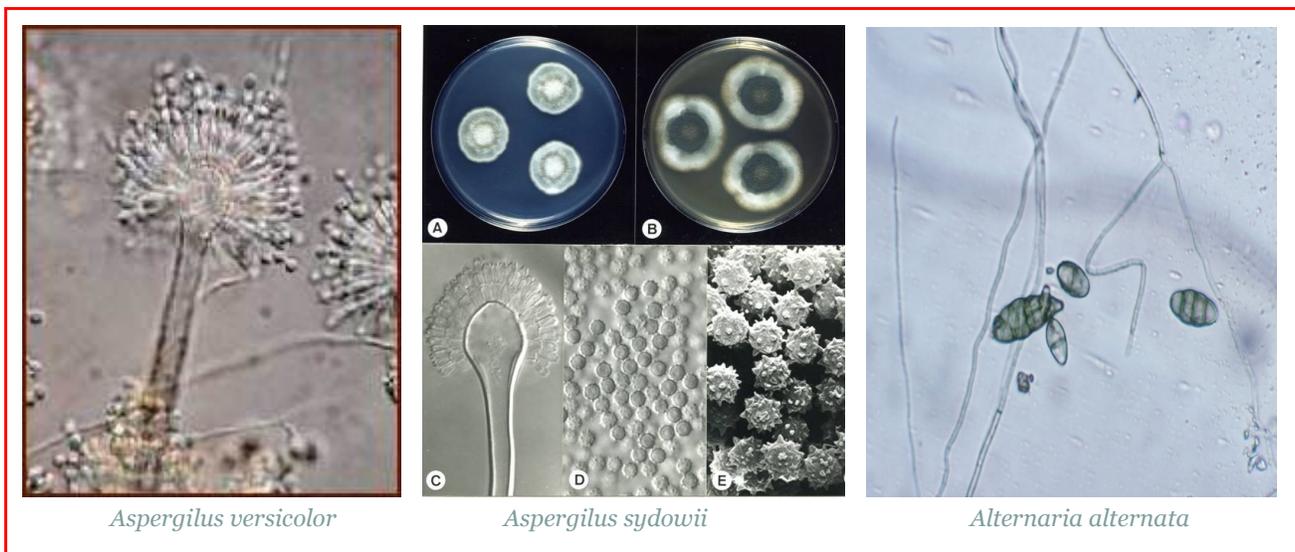
It occurs often that a cocktail of 30 or 40 different molds are found on one single wine or champagne label. Most frequently found species are hereby: *Aspergillus sydowii*, *Aspergillus versicolor* and *Alternaria alternata*

Mould growth can be prevented, however, by applying an appropriate fungicide to the paper or paperboard. The most effective way to prevent mould growth is to apply the fungicides directly to the cellulose substrate during the paper manufacturing process. This places the fungicide in

close contact with the fungal spores present in the paper. Fungicides can also be applied during the printing process by incorporating them in a water based varnish.

Originally, the fungicides used in the production of mould resistant papers were relatively toxic products, such as chlorinated phenol compounds and 2 (thiocyanomethylthio) benzimidazole.

These products were replaced by less toxic fungicides, such as thiabendazole and carbendazim. However, during the past several years, moulds resistant to thiabendazole and carbendazim have appeared and new more effective fungicides are required.



Aspergillus versicolor

Aspergillus sydowii

Alternaria alternata

CHARACTERISTICS OF FUNGICIDES

The most important characteristics of fungicides used in mould-resistant papers, other than the fact that they must be effective against a wide range of fungi, are:

- **Water insolubility:** so that they will not be leached out of the paper and will not migrate from the packaging to the contents
- **Thermal stability:** so that they will not decompose in the drying process.
- **Chemical and physical stability:** enabling them to remain active in the paper for at least two years, and producing a very low level of toxicity.

In order to obtain the largest possible spectrum of activity and prevent the proliferation resistant moulds, new fungicide formulations generally incorporate two or three different active ingredients. By selecting fungicide actives with different modes of action and complementary spectra of activity, it is possible to provide protection against almost all moulds that commonly grow on cellulose. Intace fungicides B-3377 and B-9713 are examples of this new generation.

As part of its service program, INTACE identifies the types of fungi found on contaminated papers and tests these fungi with papers treated with a range of different fungicide formulations to determine which product is most effective for a particular application.

Fungicide treated labels are available for wet glue and self-adhesive applications on uncoated, embossed, clay coated one side papers as well as cast coated grades.

Ask your label supplier for more information, or contact Intace directly at

info@intace.com or **+33 (0) 153 69 96 66**.