

Case study of suspected moldy metal kitchenware

I - Introduction

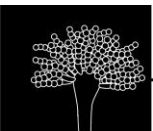
When mold grows, it usually produces a filamentous structure. Therefore, when a brand or manufacturer finds a similar structure on a product, it is often immediately assumed to be mold. However, this assumption is not always correct, as filamentous structures do not necessarily indicate mold presence. For instance, the filamentous structures that occasionally appear on the surfaces of metal steel, aluminum, or magnesium products can also be caused by filamentous corrosion, in addition to the possibility of mold growth.

Filiform corrosion is a localized corrosion phenomenon that occurs beneath the surface coating of metals. It arises due to incomplete coating or gaps that allow moisture to penetrate. This type of corrosion typically manifests as linear filaments that branch out along the surface. Its distinctive filamentous appearance is often mistaken for mold growth structures. Furthermore, both filiform corrosion and mold thrive in humid environments, further increasing the likelihood of misidentification.

There are several key factors that can help differentiate between filamentous corrosion and mold growth

on metal surfaces. Firstly, through cleaning or wiping, if the filamentous structures persist, it is likely filamentous corrosion. Conversely, if they can be effectively removed using appropriate cleaning methods, they are likely mold growth structures. Secondly, filamentous corrosion typically only affects the metal surface, while mold may grow on other parts or packaging materials of the product. Lastly, mold growth may emit a musty odor, whereas filamentous corrosion does not have this characteristic smell.

Understanding the above information allows us to recognize that the subsequent treatment methods for moldy and non-moldy metal products are significantly different. Therefore, when encountering such filamentous structures, it is necessary to first confirm whether they are mold-related in order to determine the appropriate course of action. Recently, the YCM Mold Research Center (MRC) assisted Brand S in clarifying whether the filamentous structures on their metal knives were moldy and provided improvement and preventive measures accordingly.



II - Result

The metal knives submitted by Brand S showed visible spotted contamination. After being tested by

YCM MRC, no mold growth structures were found (Figure 1).

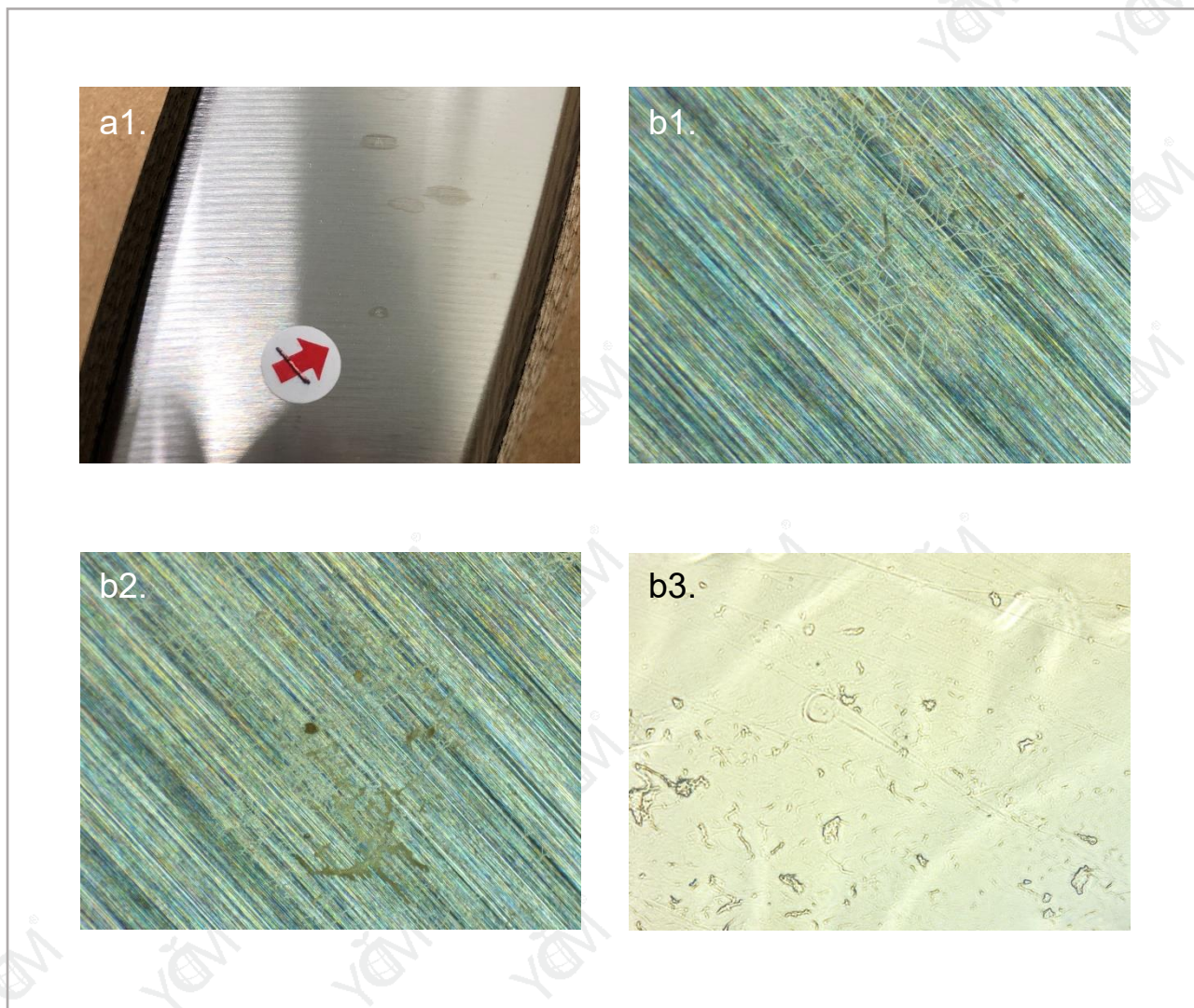
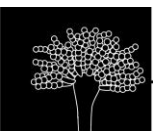


Fig 1. Metal products sent by Brand S for Inspection

a1. Suspected moldy metal kitchenware from Brand S ; b1 - b3. Metal products from brand S were observed under a microscope at different magnifications, and no mold growth structures were found.



III 、 Conclusion

After being tested by YCM MRC, it was determined that the spotted contamination on the knives of Brand S was not caused by mold. Although the filamentous structures on the spotted contamination may resemble mold in appearance, a detailed analysis of their morphology and material characteristics can accurately distinguish the two. While mold growth and filamentous structures have different causes, with the former occurring under suitable conditions of temperature, humidity, and nutrients, and the latter resulting from moisture

intrusion, both have a significantly increased probability of occurrence in humid environments. Therefore, regardless of the cause of product damage, environmental control is a fundamental and crucial aspect of preventing such harm.

Through this collaboration with Brand S, not only was the source of contamination identified, but also dual preventive measures for mold prevention and corrosion prevention were provided, assisting in product quality control, and reducing losses in costs.