

Keywords: Obviousness (§ 103); *Prima facie* obviousness; “Obvious to try”; Patentability; Validity.

General: In this nonprecedential opinion the Board reverses examiner’s § 103 rejection stating that the prior art references do not sustain a *prima facie* case of obviousness. Further the Board explains that at best the references satisfies an “obvious to try” standard, which is insufficient for conclusion of obviousness.

Ex parte Hillyer
68 U.S.P.Q.2d 1222 (Bd. Pat. App. & Inter. 2003)
Decided March 21, 2003

I. Facts

The applicants claimed a method for removing residues that may remain after etching a via during fabrication of integrated circuits. The method included exposing the etch residue to a plasma formed from ammonia and oxygen. The examiner found the applicants’ method obvious in light of four prior art references of Chen, Savas, Molloy and Honda and rejected the application.

On appeal, applicants did not contest the rejections of claims 20-28 effectively withdrawing the appeal as to those claims. All of the remaining independent claims were rejected over the combined teachings of Molloy and Savas.

II. Issue

Whether the prior art references of Molloy and Savas cited by the examiner meet the evidentiary requirements of the obviousness inquiry under 35 U.S.C. § 103.

III. Discussion

The examiner relied upon Molloy for disclosure of a process for forming a via in an insulating layer so as to uncover a metal layer. The examiner further cited Molloy as teaching that both a photoresist layer and photoresist residues that may remain at via holes must be removed when etching vias in integrated circuits. Finally, the examiner found that Molloy teaches bombarding a wafer surface with a mixture of gases that may include oxygen, but it was deemed that Molloy does not disclose mixing ammonia with oxygen plasma. (Note footnote 1, the court states that Molloy discloses oxygen and “amine gases” as possible mixtures.)

The examiner relied on Savas for teaching a process to clean a via by removing resist and residue using an ammonia and other compounds mixed with oxygen plasma. The court included an excerpt from Savas that the examiner relied upon for his rejection. In that excerpt, the Savas reference teaches the adding of small concentrations of gases to oxygen to enhance stripping of residues formed on the resist during etching. Also, Savas lists a series of 12 common additives which include ammonia.

The applicants argued that from the list of 12 elements and compounds referenced in the Savas reference there is no motivation to select ammonia. The court quickly disposes of this argument citing to case law and stating that disclosure of a multitude of effective combinations does not render any particular formulation less obvious. *Merck & co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 806-807 (Fed. Cir. 1989) (holding claimed combination of two drugs held to have been obvious in view of reference which disclosed 1200 possible combinations, without highlighting preference of two that were claimed).

The applicants also argued that Savas does not teach the combination of oxygen and ammonia as being effective for uses claimed by the applicants. Notwithstanding the examiner's argument that Savas teaches a step directed to cleaning a via, the court could not find any such teaching in Savas. The court stated, "we find no specific teaching in Savas that any of the [listed additive] for mixing with oxygen are suitable for treatment of a via following an etch." Because the applicants' claims were narrowly drawn to uses involving vias, the court accepted the applicants' argument on this point.

VI. Conclusion

This was a close case, but ultimately, the evidence relied upon falls short of establishing *prima facie* obviousness of the claimed invention. The teachings of Molloy and Savas meet only a standard of "obvious to try." *See, e.g., In re Gieger*, 815 F.2d 686, 688 (Fed. Cir. 1987) (explaining that in view of the references, one skilled in the art might find it obvious to try the combinations, but that "obvious to try" is not the standard of 35 U.S.C. § 103 obviousness). Ultimately, the court reversed the § 103 rejection of the appealed claims.