

Preliminary Tests of Double-Coated Ambrite

C.E.Waltham, D.Branch and L.McGarry,
University of B.C.

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1 Introduction

"Ambrite" is what used to be called "Omega-Mirror". It is made by Optical Coatings Laboratories Inc. of Santa Rosa, California.

Because of the sealing properties of TiO (the top layer of the optical coating), it was decided that potentially the best way to seal the unpolished back surface was simply to coat both sides the same way.

A sheet of 0.5mm aluminum sheet was double-coated at OCLI on 5th June. A shipment of 10 sheets of 0.3mm aluminum sheet has arrived at OCLI from Germany. It will be coated during the week of the 17th June.

2 Ageing and Spectrophotometer Tests

The 0.5mm sheet has been aged in 95° DI water. The integrity of the back coating is easily checked in a spectrophotometer. The coated surface shows a similar shape of response as a function of wavelength as does the front, except that the reflexion is completely diffuse (figs. 1,2). An uncoated back shows the characteristic ripples of anodized aluminum (fig.3). Physically, the uncoated back shows signs of smutting after one day's boiling.

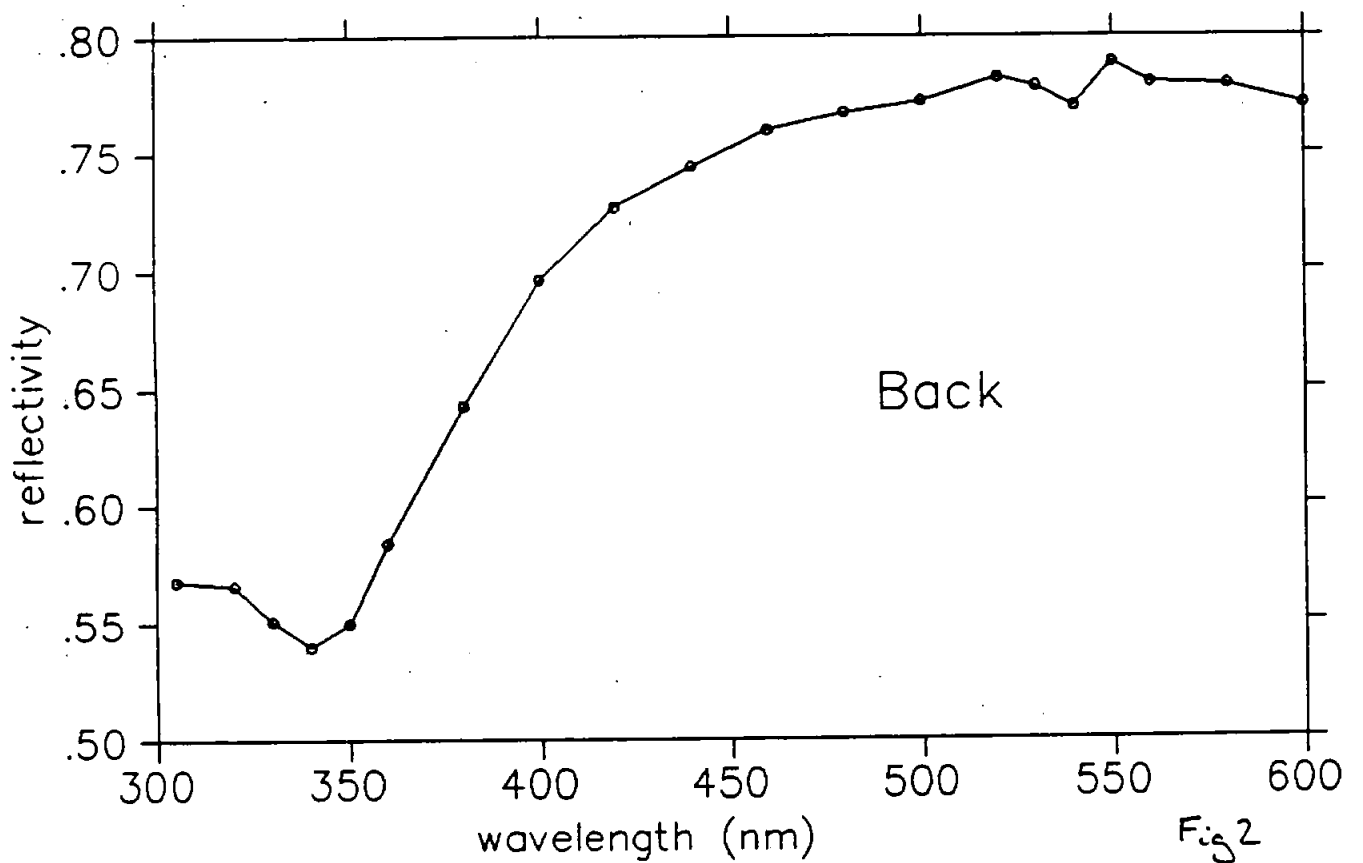
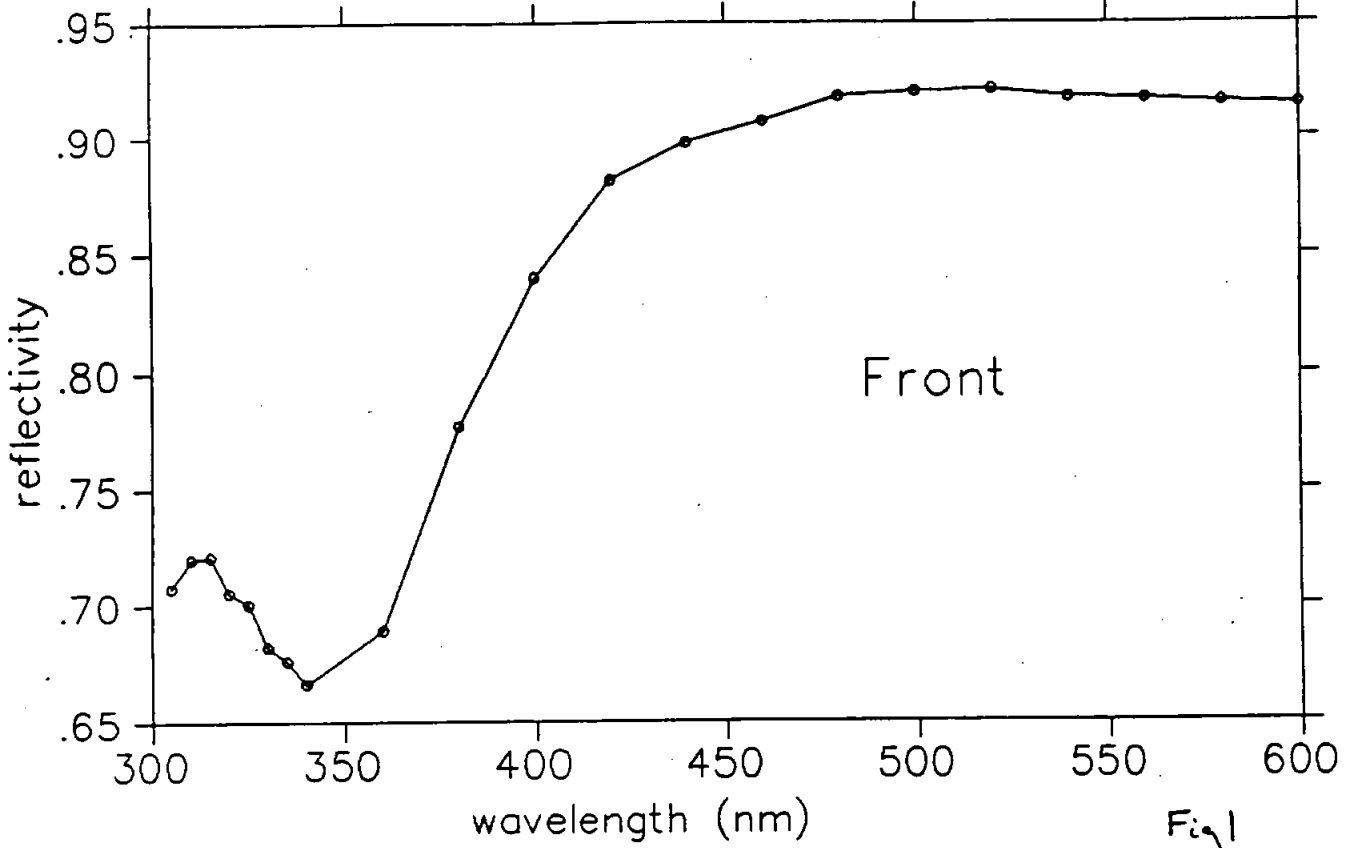
The figures show the results of two day's boiling. The aged back surface is duller and rougher to the touch. The reflectance of the back shows the ripples of bare anodized aluminum, indicating the dissolution of the coating (fig.4).

The samples tested were all taken from near the edge of sheet. We are repeating the tests with samples from the centre to see if the problem is one of incidence angle in the coating.

We have suggested to OCLI that improved surface preparation techniques be used for the larger coating of 0.3mm sheet next week.

Nick Jelley is contacting Alanod regarding the possibility of polishing both sides of the aluminum sheet, as we know the coating sticks to the polished surface.

Ω Dbl Sided Refl. - Aged (1 Day)



Coated (Aged 2 days) vs Uncoated

