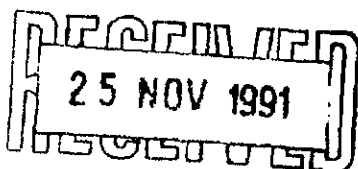




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Mr J Lamb  
Viamed  
15 Station Road  
Keighley  
West Yorkshire

Your reference: R/I1002/59

Our reference:

Date: 20 Nov 1991

Dear John

New design of phototherapy shields - Amber 300 perspex

Following our meeting here on the 1/11/91 I have since checked the efficiency of the cylindrical headbox with the fitment of lids of Amber 300 perspex of varying diameter.

Measurements were taken of the changing effects of light output within the headbox by using different amber 300 lid combinations and the results are noted on the attached report of the tests.

A further measurement was attempted with the Fluorolite positioned such that the lights were angled 45, their output passing through the rear of the canopy onto the cylindrical headbox covered by the larger 303mm amber disc. It was difficult to establish a consistent measurement and thus the efficiency of the positioned disc in preventing the transmission of blue light under this or vertically angled lights could not be confirmed.

It can be seen from the results that the larger 304mm amber 300 disc was more efficient in preventing the transmission of blue light from the fluorolite into the cylindrical headbox than the amber discs of lesser diameter. You can see that the complete square headbox of amber 300 is the most efficient filter of blue light following additional tests of the other amber 300 shields under this phototherapy unit.

I will contact you further about further preliminary tests of the Medap portable incubator by Cardiff EC.

Yours sincerely

S. Bishop

MDD/PG4e

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## Result of tests of Viamed cylindrical perspex headbox

The top of the headbox as shown in the sketch fig 1 can be fitted with various types of removable lid from plain clear perspex to different diameters of amber 300 perspex which is intended to filter out the blue light from phototherapy units.

The following results of tests of effectiveness of these perspex lids are given from tests at Russell Square of the output of a Fluorolite positioned over the canopy of a baby incubator. The circular lids were available in two diameters:

Clear perspex	224mm dia
Standard amber 300 perspex	224mm dia
Large amber 300 perspex	303mm dia

## Results:

- |   |       |                                     |
|---|-------|-------------------------------------|
| 1. Uncovered cylindrical headbox                    | ..... | $1.30 \times 10^{-3} \text{W/cm}^2$ |
| 2. Clear perspex lid added                          | ..... | $1.15 \times 10^{-3} \text{W/cm}^2$ |
| 3. Clear lid replaced by Amber lid                  | ..... | $4.81 \times 10^{-6} \text{W/cm}^2$ |
| 4. Clear lid combined with Amber lid                | ....  | $6.80 \times 10^{-6} \text{W/cm}^2$ |
| 5. Clear cover combined with large dia<br>amber lid | ..... | $2.21 \times 10^{-6} \text{W/cm}^2$ |
| 6. Narrow headbox shield                            | ..... | $5.25 \times 10^{-6} \text{W/cm}^2$ |
| 7. Wide headbox shield                              | ..... | $2.61 \times 10^{-6} \text{W/cm}^2$ |
| 8. Complete amber 300 headbox                       | ..... | $3.27 \times 10^{-8} \text{W/cm}^2$ |

Note : These results were obtained from this particular Fluorolite phototherapy unit was based upon the blue light output from the four new Phillips 20W blue fluorescent tubes fitted to this unit.

A much higher blue light output can be produced from a Heraus phototherapy unit fitted with a new light source. A blue light output of  $3.8 \times 10^{-3} \text{W/cm}^2$  was measured from one unit that was checked. A complete amber 300 headbox filtered the blue light from this unit to  $4.88 \times 10^{-7} \text{W/cm}^2$ . Both the narrow and wide headbox shields produced much lower levels of light filtration from this unit of the order of  $8.29$  and  $1.47 \times 10^{-5} \text{W/cm}^2$  which was not acceptable.

It is estimated that the large diameter amber 300 lid would filter the blue light from this unit to a level of about  $2.5 \times 10^{-5} \text{W/cm}^2$ , which would't be acceptable.

However, the output from most Heraus phototherapy units which have been tested is of a lower level ranging from about  $1.3$ – $2.5 \times 10^{-3} \text{W/cm}^2$ .

R/I1002/59

Viamed

Cylindrical headbox fitted with large diameter amber 300 lid.

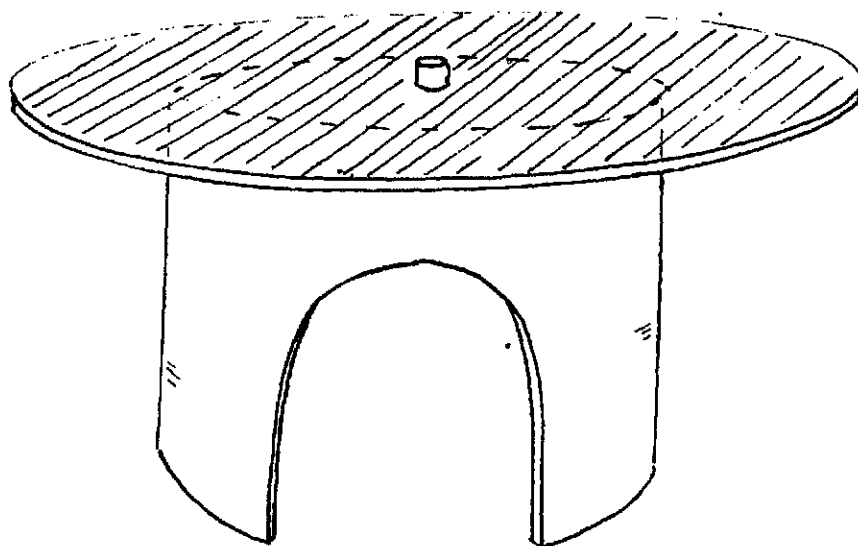


FIG 1

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8" circular headbox, height ~~180mm~~ 140mm (Prototype was higher)  
10" ————— 180mm

Can the thickness of the shield be reduced to say 3mm.

