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# ARMORED MEDICAL RESEARCH LABORATORY

FORT KNOX, KENTUCKY

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Report On

PROJECT NO. T-6 - TEST OF GLASSES, SUN

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Project No. T-6

29 March 1945



ARMORED MEDICAL RESEARCH LABORATORY  
Fort Knox, Kentucky

Project No. T-6  
SPMEA 470.72

29 March 1945

1. PROJECT: No. T-6 - Test of Glasses, Sun.

a. Authority: 2nd Ind. by Office of The Surgeon General to letter, Office of the Quartermaster General, Washington, D. C., File SPQRD 400.112, dated 18 December 1944, Subject: Glasses, Sun - OQMG - 364.

b. Purpose: To evaluate the characteristics of Glasses, Sun: Type 1 M-1944 JQD 597, Type 2 JQD 206C, Type 3 F-1 AAF 3204, Type 4 (Clip-on) JQD 206C.

2. DISCUSSION:

The primary purpose of sun glasses is to reduce the effect of excessive glare at high light levels. One-density sun glasses cannot do this optimally for all glare conditions because of the wide range of light intensity and distributions encountered. A one-density universal sun glass must, therefore, represent a compromise with density somewhere in the range between the density of ski goggles and the density necessary to overcome mild glare. Used within this range, and for glare relief only, well designed sun glasses are effective and beneficial and will result in better seeing. Used outside this range, they may be inadequate and actually reduce seeing ability. This report considers the adequacy of the subject sun glasses for use within this "average" glare range.

3. CONCLUSIONS:

a. Type 1, M-1944. This sun glass is comfortable to wear, has adequate visual field and the density seems about optimum for average glare. The neutral character of the lens is an outstanding desirable characteristic; there is no apparent modification of color. The optical specifications are adequate. The plastic lens is a desirable safety feature but has the disadvantage of being easily scratched. Back reflection is pronounced due partially to the wide visual angle. The relatively light color of the forehead piece transmits an amber light which is annoying. The forehead piece should be of dark, opaque material. Research to develop more scratch resistant lens material and reduce back reflection, at the same time maintaining the wide visual field, should continue. Improvement in these features should be incorporated into this sun glass.

b. Type 2. This sun glass is generally considered less comfortable to wear than Type 1. The light transmission is too high and the green color interferes slightly with color rendition. Other optical specifications are adequate.



Protected field of view is limited, leaving large undesirable side light area. Back reflection is less than Type 1, but is still present. Fitted with a denser neutral lens this sun glass would be preferred to Type 1 for applications where wide uninterrupted field of view and safety lens are not requirements and where the back reflection of Type 1 is prohibitive.

c. Type 3. This sun glass is very comfortable to wear and has a wide visual field. The density is adequate and the color is not sufficiently pronounced to interfere seriously with color rendition for most purposes. Back reflection is present but is not as pronounced as in Type 1. The large glass lens will be objectionable from a safety standpoint for certain applications. Other optical specifications are satisfactory.

d. Type 4 (Clip-on). Despite the undesirable side light areas, clip-on lens are more satisfactory for use with GI spectacles than are Types 1, 2, or 3 sun glasses worn over the spectacles. The lens supplied with the clip-ons are too light in density and have too much color. The lens should be essentially neutral and about equal in density to Type 1 sun glasses. The metal rimmed clip-ons fit onto GI spectacles better than the plastic rimmed clip-ons. The clip arms should be sturdier, and arranged to fasten together more securely when folded for carrying in the case.

e. Carrying cases. For use by armored troops, a substantial carrying case for the sun glasses is required. The case should be dust tight, padded inside, and have room for carrying lens cloth. A rectangular, light metal box is preferred to the tailored cases supplied. (Sun glasses may be packed for extended periods and may often be in transit in a box with heavy articles. When in use, a rectangular box is about as convenient to carry as the cases now supplied).

f. None of the sun glasses tested interfere with head gear or articles of clothing with which they normally will be used.

#### 4. RECOMMENDATIONS:

a. That Glasses, Sun, M-1944, and Glasses, Sun F-1 AAF 3204 be considered satisfactory for protection against excessive glare where dust is not a problem.

b. That clip-on type sun glasses be supplied with essentially neutral density lens with transmission of 8% - 18% and otherwise conforming to optical characteristics JGD No. 594, 18 October 1944, except that arms shall be made sturdier and arranged to clip together better.

c. That strong, light, metal, rectangular, dust-proof case with inside padding be supplied as carrying case for Glasses, Sun, M-1944 and F-1 AAF 3204.

d. That strong, light, metal, circular, or square dust-proof case with inside padding be supplied as carrying case for clip-on type sun glasses.



e. That lens cloths be included in carrying case c and d above.

f. That research be continued by CM to reduce back reflection and provide more scratch resistant lens and that changes be made as improvements are found.

NOTE: The recommendations as set forth in this project were concurred in by Colonel Fred W. Makinney, Chief of Staff, Headquarters Armored Center, with further recommendation that consideration be given to inclusion of a means of attaching carrying case to belt for ease in carrying.

Submitted by:

Major Lester B. Roberts, Sn C

APPROVED BY Willard Machle  
WILLARD MACHLE  
Colonel, Medical Corps  
Commanding

