

PERSONAL PROTECTIVE EQUIPMENT

(Text continued from page 36-11.)

son with glass Findings are summarized below*

Plastic specimens with sufficient section thickness passed the drop-ball test of the ASA and the Federal Government for safety goggles At 75 F, resistance is comparable to that of heat treated glass At 0 F, glass is generally much stronger than plastic However, cellulose acetate 0.080 in. thick passes existing specifications from 0 to 150 F

Glass lenses have slightly lower resistance than plastic to breakage from sharp objects Both glass and plastics have somewhat less resistance to sharp objects than to rounded objects

Tests on resistance to small objects moving at high rates of speed were more favorable for plastic lenses than for glass

In the evaluation of all these impact tests, the thickness of the cross section and the area of the specimen, as well as the composition of the material, must be considered Material of the same general type produced by different manufacturers showed different properties

The abrasion resistance of plastic was not good, although coated plastics and one allyl casting resin appeared better than other plastics

The resistance of plastics to hot materials was equal to, or exceeded, that of glass However, a minimum section of 0.08 in seems desirable for plastic Hot metal invariably shattered glass lenses but did not break plastic lenses Hot metals tended to adhere to glass

All plastics tested showed surface reaction to some chemicals, but satisfactorily stopped splashes and protected the eyes

All plastics appeared satisfactory as lenses, but undesirable cylindrical and prismatic effects might be introduced by curving plano sheet plastic

Slight fogging occurred almost immediately on all glass and plastic samples, but on the average complete fogging of plastic took longer to produce than complete fogging of glass

For spectacle goggles, the frame must be rigid enough to hold the lenses in proper position in front of the eyes If the nose bridge is not adjustable, goggles should be

available in enough sizes to fit faces of various shapes. Most manufacturers make a spectacle goggle that has a bridge design which will fit the majority of faces These are not, however, generally recommended for prescription-ground lenses

Frames should be of corrosion-resistant material which will neither irritate nor discolor the skin Goggles should be of simple design for easy cleaning and disinfection

Cup goggles should have cups large enough to protect the eye socket and to distribute impact over a wide area of the facial bones. Cups should be flame-resistant, corrosion-resistant, and nonirritating to the skin

To give the widest possible field of vision, goggles should be fitted as close to the eyes as possible without bringing the eyelashes into contact with the lenses For that reason also the lenses should be comparatively large.

Lenses must not have appreciable distortion or prism effect Federal Specification GCG-C-501b** limits the nonparallelism between the two faces to $\frac{1}{4}$ prism diopter (4 minutes of arc) and both the refraction in any meridian and the difference in refraction between any two meridians to $\frac{1}{4}$ diopter

Both when supported in the eye cups of goggles and when supported on a rubber gasket on a wood tube, lenses are required to withstand the impact of a 22 mm ($\frac{7}{8}$ in), approximately 44 gm (1.58 oz) steel ball dropped from a height of 127 cm (50 in)

If corrective lenses are required, it is preferable to grind the correction into a goggle lens Goggles which cover ordinary spectacles may be worn, but they require cups deep and wide enough to admit the whole spectacle The depth noticeably restricts the field of vision

Furthermore, if the correction is critical,

*National Safety Council, 425 North Michigan Ave., Chicago *Plastic Eye Protectors* Final Report on the ASSE Research Project, 1947.

**U S Treasury Department, Washington, D C *Federal Standard Stock Catalog*