BODYFORMS FOR USE IN MOTOR VEHICLE PASSENGER COMPARTMENT IMPACT DEVELOPMENT—SAE J984 JUN80

SAE Recommended Practice

Report of the Body Engineering Committee, approved March 1967, reaffirmed without change June 1980.

1. Introduction—This recommended practice specifies various bodyforms for use in motor vehicle passenger compartment impact development and test work. Although various degrees of bodyform articulation are possible, an attempt has been made to limit the number of forms and their complexity to help eliminate additional variables and provide uniformity. Individual test procedures will specify which particular body form should be used for that test. As additional forms are devised and changes to existing ones are made, this recommended practice will be modified as necessary.

2. 6½ in. Metal Bodyform—This headform is beneficial for testing purposes since, due to its rigidity, it imparts all the impact energy into the test specimen. It consists simply of a 6½ in. OD metal hemispherical shell. Wall thickness, transducer placement, mounting methods, and the type of metal used may vary provided: (1) the effective weight of the form is as prescribed in the procedure specifying its use and (2) the headform retains its shape and properties during and after impact. See Fig. 1 for details of a typical metal bodyform.

3. 6½ in. Tissue Simulating Bodyform—This form is a qualitative aid in development work to study pressure concentration to the head and knee. It consists of a 6 in. diameter pine hemisphere covered with a suitable simulated scalp and skin of approximately 0.25 in. thickness. The effective weight of the form is as prescribed in the procedure specifying its use. See Fig. 2 for details.

4. Skin and Underlayer Characteristics—As a guide to what constitutes a suitable skin and underlayer, the characteristics listed in Table 1 are offered. No one substance, or combination of substances, presently fits all the parameters of human tissue so the values are merely representative for a synthetic skin and underlayer.

5. Other Bodyforms—Other specialized bodyforms may be developed for specific tests and these will be included in the related procedures. Examples of this are the body block reported in the SAE J944 and crash test dummies to be described in a report under development.

TABLE 1—SKIN AND UNDERLAYER CHARACTERISTICS

	Thickness, in.	Tensile Strength, psi	Elongation, %	Penetrometer[a]
Synthetic Skin	0.030 ±0.003	1000 ±5%	100 ±5	16–18
Synthetic Underlayer	0.250 ±0.025	250 ±10%	50 ±10	Not applicable

NOTE: Animal skin such as Napa goat skin or wet chamois may be used. When this type of skin is used the skin thickness requirement does not apply.

[a] See C. W. Gadd, "Strength of Skin and its Measurement," ASME 65-WA/HUB-8.