Taken from Playground Safety Handbook

TABLE 1 — CRITICAL HEIGHTS (in feet) OF TESTED MATERIALS

MATERIAL	UNCOMPRESSED DEPTH			COMPRESSED DEPTH
	6 inch	9 inch	12 inch	9 inch
Wood Chips*	7	10	11	10
Double Shredded Bark Mulch	6	10	11	7
Engineered Wood Fibers**	6	7	>12	6
Fine Sand	5	5	9	5
Coarse Sand	5	5	6	4
Fine Gravel	6	7	10	6
Medium Gravel	5	5	6	5
Shredded Tires***	10-12	N/A	N/A	N/A

* This product was referred to as Wood Mulch in previous versions of this handbook. The term Wood Chips more accurately describes the product.

** This product was referred to as Uniform Wood Chips in previous versions of this handbook. In the playground industry, the product is more commonly known as Engineered Wood Fibers.

*** This data is from tests conducted by independent testing laboratories on a 6 inch depth of uncompressed shredded tire samples produced by four manufacturers. The tests reported critical heights which varied from 10 feet to greater than 12 feet. It is recommended that persons seeking to install shredded tires as a protective surface request test data from the supplier showing the critical height of the material when it was tested in accordance with ASTM F1292.

be obtained from the manufacturer because, as stated above, some unitary materials require installation over a hard surface while some do not.

Loose-Fill Materials — can also have acceptable shock absorbing properties when installed and maintained at a sufficient depth. These materials include, but are not confined to, sand, gravel, shredded wood products and shredded tires. Loose-fill materials should not be installed over hard surfaces such as asphalt or concrete.

Because loose-fill materials are generally sold for purposes other than playground surfacing, many vendors are unlikely to be able to provide information on the materials' shock absorbing performance. For that reason, CPSC has conducted tests to determine the relative shock absorbing properties of some loose-fill materials commonly used as surfaces under and around playground equipment. Appendix D contains a description of the tested materials. The tests were conducted in accordance with the procedure in the voluntary standard for playground surfacing systems, ASTM F1292. Table 1, above, lists the critical height (expressed in feet) for each of eight materials when tested in an uncompressed state at depths of 6, 9, and 12 inches. The table also reports the critical height when a 9 inch depth of each material was tested in a compressed state.

Table 1 should be read as follows: If, for example, uncompressed wood chips is used at a minimum depth of 6 inches, the Critical Height is 7 feet. If 9 inches of uncompressed wood chips is used, the Critical height is 10 feet. It should be noted that, for some materials, the Critical Height decreases when the material is compressed.

The Critical Heights shown in the above table may be used as a guide in selecting the type and depth of loose-fill materials that will provide the necessary safety for equipment of various heights. There may be other loose-fill materials such as bark nuggets that have shock absorbing properties equivalent to those in the above table. However, CPSC has not conducted any tests on these materials.

The depth of any loose fill material could be reduced during use resulting in different shock-absorbing