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The 2-groups of odd strong symmetric genus.

Let G be a finite group. The *strong symmetric genus* $\sigma^0(G)$ is the minimum genus of any Riemann surface on which G acts preserving orientation. We show that a 2-group G has strong symmetric genus congruent to 3 (mod 4) if and only if G is in one of 14 families of groups. A consequence of this classification is that almost all positive integers that are the genus of a 2-group are congruent to 1 (mod 4). (Received August 27, 2009)