Test Ideals in Diagonal Hypersurface Rings

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Let $R = k[x_1, \ldots, x_n]/(x_1^d + \cdots + x_n^d)$, where k is a field of characteristic p, p does not divide d, and $n \geq 3$. If $p < d$, then the test ideal for R is contained in $(x_1, \ldots, x_n)^{p-1}$. If $d = p + 1$, then the test ideal for R is equal to $(x_1, \ldots, x_n)^{p-1}$.

Key Words: test ideal, tight closure, characteristic p