1023-14-1123 **H Schenck*** (`schenck@math.tamu.edu`), Mathematics Department, Texas A&M University, College Station, TX 77843-3368, and **John Little** (`little@mathcs.holycross.edu`), Mathematics Department, College of the Holy Cross, Worcester, MA 01610. *Toric surface codes and Minkowski sums.*

Toric codes are evaluation codes obtained from an integral convex polytope $P \subset \mathbb{R}^n$ and finite field $\mathbb{F}_q$. They are, in a sense, a natural extension of Reed-Solomon codes, and have been studied recently by Hansen, Joyner, and others. In this paper, we obtain upper and lower bounds on the minimum distance of a toric code constructed from a polygon $P \subset \mathbb{R}^2$ by examining Minkowski sum decompositions of subpolygons of P. Our results give a simple and unifying explanation of bounds of Hansen and empirical results of Joyner; they also apply to previously unknown cases. (Received September 25, 2006)