$$\begin{aligned}\text{div}\mathbf{F} &= \tfrac{\partial}{\partial x}\left(x^2z^3\right) + \tfrac{\partial}{\partial y}\left(2xyz^3\right) + \tfrac{\partial}{\partial z}\left(xz^4\right) \\ &= 2xz^3 + 2xz^3 + 4xz^3 = 8xz^3,\end{aligned}$$

so by the Divergence Theorem,

$$\begin{aligned}\iint_S \mathbf{F}\cdot d\mathbf{S} &= \iiint_E \text{ div } \mathbf{F}\, dV = \int_{-3}^{3}\int_{-2}^{2}\int_{-2}^{2} 8xz^3\, dz\, dy\, dx \\ &= 8\int_{-3}^{3} x\, dx \int_{-2}^{2} dy \int_{-2}^{2} z^3\, dz \\ &= 8\left[\tfrac{1}{2}x^2\right]_{-3}^{3}\left[\,y\,\right]_{-2}^{2}\left[\tfrac{1}{4}z^4\right]_{-2}^{2} = 0\end{aligned}$$