Zbl 235.10008
Erdős, Paul; Turán, P.
On some problems of a statistical group theory. VI. (In English)
J. Indian Math. Soc., n. Ser. 34 (1970), 175-192 (1971).

[Part V, Periodica Math. Hungar. 1, 5-13 (1971; Zbl 223.10005).] Let S_n be the symmetric group of n elements, $p(n)$ the number of unrestricted partitions of n. It is well known that there are $p(n)$ conjugacy classes in S_n. Denote by $O(H)$ the order of the elements of S_n in the conjugacy class $O(H)$. Let $\omega(n)$ tend to infinity arbitrarily slowly. The authors prove that for all but $o(p(n))$ classes H, $O(H)$ is divisible by all primes p not exceeding

$$\frac{2\pi}{\sqrt{6}} \frac{\sqrt{n}}{\log n} \left(1 + \frac{5 \log \log n}{\log n} - \frac{\omega(n)}{\log n} \right).$$

They also show that the result is best possible.

Classification:

11N60 Distribution functions (additive and positive multipl. functions)
00A07 Problem books