

The literature on polyamides was reviewed to determine the nature and extent of information available on these materials which are commonly used in consumer and industrial applications. This review was limited to aliphatic polyamides normally called nylon and excludes aromatic polyamides such as Nomex and bicomponent polymers consisting of nylon and other polymers. The review was further limited to those publications in English through June 1984.

Typical pyrolysis products from a broad range of nylons do not appear to differ greatly. Many of the decomposition products detected in vacuum pyrolysis experiments appear as products of thermal degradation in inert and air atmospheres. In air, a general reduction in the quantities of heavier hydro carbons is noted along with an increase in the production of CO, CO₂, H₂O, NH₃, HCN and NO_x.

The toxicity of the thermal degradation products from various types of nylon has been evaluated by nine different protocols. Reported LC₅₀ values range from 10.8 ml-1 to 61.9 mg. Dyes apparently do not affect the material's combustion products toxicity but an increase in the amount of back coating on a nylon fabric increases toxicity. Time to death measurements show that volatile products from nylons are less toxic than those from rayons or cotton, while the blending of wool with nylon greatly increases the toxicity of the thermal decomposition products. In general, however, the overall toxicity of the thermal degradation products from nylon do not appear to be greatly different than those from many other polymeric materials. Large-scale test results are ambiguous, and it is difficult to interpret the results in terms of a single component in a multi component system.