We depend on it to get to work in the morning and to shuttle the kids from soccer practice to birthday parties. In fact, if not for this ubiquitous substance, it would be hard to get anywhere at all. We’re talking about bitumen, the material used to make the asphalt that coats over ninety-six percent of America’s roads and highways.

A natural by-product of the distillation of crude oil, bitumen is a thick, gooey substance usually black or dark brown in color. Although its chemical composition is highly complex, bitumen consists of roughly eighty percent carbon, ten percent hydrogen, six percent sulfur, one percent oxygen and one percent nitrogen.

Combined with trace metals in the form of inorganic salts, these chemicals give bitumen the ability to last for long periods under different weather conditions. When hardened through a process of cooling and mixed with a pebble-based aggregate, bitumen’s weather-resistant longevity makes it an ideal main ingredient in the production of asphalt.

Aside from building roads, bitumen is also a powerful sealant used for laying roofs, for soundproofing and for waterproofing. In fact, as early as the third century, natural bitumen gleaned from tar pits was used as a sealant in the brick walls of reservoirs. The modern use of manufactured bitumen to build roads dates to the late 1800s, when it was used to build Fifth Avenue in New York City.

我们依靠它来早上上班，并将孩子们从足球训练班带到生日派对。事实上，如果不是因为这种普遍存在的物质，就很难得到任何东西。我们谈论的是沥青，用于制造沥青的材料覆盖了超过百分之九十六的美国公路和高速公路。

沥青是天然蒸馏原油的天然副产物，是一种粘稠的粘稠物质，通常为黑色或深棕色。虽然其化学成分非常复杂，但沥青含有大约80％的碳，10％的氢，6％的硫，1％的氧和1％的氮。

与无机盐形式的痕量金属结合，这些化学品使沥青能够在不同的天气条件下长期使用。当通过冷却过程硬化并与基于卵石的骨料混合时，沥青的耐候性使其成为沥青生产的理想主要成分。

除了修建道路外，沥青还是一种强力密封剂，用于铺设屋顶，隔音和防水。实际上，早在公元3世纪，从焦油坑中收集的天然沥青就被用作储层砖墙中的密封剂。现代使用人造沥青建造道路的历史可以追溯到19世纪后期，当时它被用来建造纽约市的第五大道。