Product Safety Summary Sheet

**Creosote**

Coal tar creosote is produced by the distillation of coal tar. A byproduct of the steelmaking process, coal tar is distilled to make pitch for the aluminum industry, and coal tar creosote is a co-product of that process. Coal tar creosote is used as a wood preservative for commercial purposes only; it has no registered residential uses.

Applied by pressure-treating methods to industrial wood products such as railroad ties, utility poles, marine pilings and bridge timbers, creosote is valued for its ability to preserve wood against weather decay, insect infestation and mechanical wear. Creosote used in these applications must conform to standards established by the American Wood Protection Association (AWPA, 1995).

Creosote oils describe various unrelated substances including resin from the leaves of certain bushes, residue from burned wood and coal tar distillation products. While these substances share a common name, they are not interchangeable as each possesses unique physical and biological properties.

**Chemical Identity**

Chemical formula: Creosote is a highly complex mixture containing hundreds of individual compounds. Although the actual composition of creosote may vary somewhat due to differences in the source material, when used to preserve wood creosote may only be manufactured by the distillation of tar obtained from coal and must conform to standards (designated as P1/P13 or P2) established by the American Wood Protection Association (AWPA, 1995). These standards identify the source material for creosote as well as the physical-chemical characteristics of the pesticide product. AWPA defines the P1/P13 and P2 (creosote) fractions for use as heavy duty wood preservatives as "a pure coal tar product, derived entirely from tar produced by carbonization of bituminous coal."

CAS registry: 8001-58-9

Other names:
Coal Tar Creosote
**Uses and Benefits**
Coal tar is a byproduct from the coking plants of steel mills. Distilling coal tar into creosote, a wood preservative, is a useful alternative to disposal of coal tar. Creosote wood preservatives are used in the pressure treatment of railroad crossties, utility poles/cross-arms, bridge timbers and marine pilings.

As opposed to most pesticides which are applied directly in an open environment, creosote is applied in a controlled and limited setting under closed process conditions. Only after creosote has been applied in such a controlled process are the creosote-treated wood products released into the chain of commerce. While workers at wood treating plants which use creosote face the greatest potential exposure to the product, such exposure is well-controlled and far more limited than the application of pesticides in an open-field setting.

Creosote is one of the most commonly utilized products to preserve and protect wood in United States. In fact, the average lifespan of a creosote-treated railroad tie is 30 to 35 years as opposed to approximately 5 years for an untreated wood tie.

**Physical and Chemical Properties**
Creosote is a brown to black, oily liquid.

**Health Effects**
Creosote may be harmful if inhaled, harmful if swallowed and harmful on contact with the skin. It may cause respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, skin cancer or lung cancer.

Volume 35 of the IARC (International Agency for Research on Cancer) monograph states that there is limited evidence that coal tar derived creosotes are carcinogenic in humans and sufficient evidence for the carcinogenicity of creosote in experimental animals. IARC’s evaluation of the effects of coal tar creosote in humans is based on older occupational studies in the wood-preserving and construction industries. When applied to the skin of mice in experimental studies, creosote produced skin tumors and in one study produced lung tumors.
Today, with the use of engineering controls and personal protective equipment, occupational exposure to creosote components is expected to be below permissible exposure limits.

**Environmental Risks**
Toxic to aquatic organisms.

**Exposure Potential and Risk Management Measures**

**Industrial Use**
In 2005 Dr. Otto Wong conducted a mortality study of creosote workers and found no evidence supporting an increased risk of cancer death as a result of exposure to creosote. Based on the findings of the largest mortality study to date of workers employed in creosote wood treating plants, there is no evidence that employment at creosote wood-treating plants or exposure to creosote-based preservatives was associated with any significant mortality increase from either site-specific cancers or non-malignant diseases. The study consisted of 2,179 employees at eleven plants in the United States where wood was treated with creosote preservatives. Some workers began work in the 1940s to 1950s. The observation period of the study covered 1979-2001. The average length of employment was 12.5 years. One third of the study subjects were employed for over 15 years.

**Consumer Use**
EPA has designated coal tar creosote a restricted-use pesticide. This means it can only be sold by companies registered with the EPA and bought and only used by certified applicators for those uses covered by the applicator's certification.

Consumers who purchase creosote treated wood should strictly adhere to the guidelines set forth in the EPA approved customer information sheets.

**Regulatory Information**
Creosote, a restricted use pesticide, is a “heavy duty wood preservative” that was first registered in the United States in 1948. Presently, 13 products are registered as industrial wood preservatives for above-ground wood protection treatments, as well as wood used in marine environments. In 1986 the EPA placed restrictions on the use of creosote, which curbed general public use of the product and led to improved handling practices in industry.
In 2008 EPA completed its reregistration eligibility decisions (RED) for heavy duty wood preservatives, including creosote. In general, EPA has determined that creosote contributes benefits to society and is eligible for reregistration provided the mitigation measures and associated label changes identified in the REDs are implemented and required data are submitted. In its risk assessments, the Agency identified risks of concern associated with occupational exposure (i.e., treatment plant workers) and ecological exposure.

The revised labeling, which creosote registrants started using in August 2010, incorporates new, EPA-required administrative and engineering controls for risk mitigation at creosote wood treatment plants.

**Conclusion**

Today’s strong health and environmental safety record of creosote-treated wood is a result of modern production and treatment technologies, strict adherence to Federal requirements, and commitment by the makers and users of creosote to the latest and best practices available.

Creosote has been used since the 1850s to protect wood used for railway ties, bridges and marine structures. For more than 150 years, creosote has provided a safe, cost-effective means to extend the service life of wooden railroad ties, utility poles and bridge timbers. Creosote-treated railroad ties supported the United States’ expansion into the West and even today they facilitate the transport of goods throughout the nation by rail. Furthermore, creosote has protected marine pilings against attack by a host of marine borers that quickly decimate untreated wood.

To this day, creosote remains the material of choice for preserving and protecting wooden railroad ties and continues to be an effective treatment for wooden utility poles and foundation and marine pilings.

**Contact Information**

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