

TURPENTINE

GENERAL

Turpentine is released from wood chips during kraft cooking of coniferous species such as pine, spruce and fir. It is recovered by condensation and phase separation from digester relief gases.

Emissions of turpentine vapour to the workplace atmosphere at kraft mills may occur from turpentine storage tanks, brownstock washers, knotters, batch digester loading areas, and chip steaming vessels. Airborne concentrations of turpentine sampled using carbon adsorption tubes at various locations at six kraft mills in B.C. in 1980/81 were normally less than 10 mg/m³, but a sample collected over the knotters at one mill contained 136 mg/m³ measured by gas chromatography.

Low concentrations of turpentine vapour have a pleasant fragrance of pine oil. Above 30 mg/m³ the odour becomes more "aggressive", and at the knoter location referred to above, 136 mg/m³ irritated the nose, throat and eyes.

The main components of kraft turpentine are α -pinene, followed by β -pinene (total 75-80%), and smaller amounts of Δ^3 -carene, phellandrene, camphene, dipentene, p-cymene, and other C₁₀H₁₆ terpenes.

Until the 1940's the largest use for turpentine was as a solvent for paint, but it has now been largely replaced for this purpose by petroleum-based hydrocarbons. There is still some turpentine used in paints, varnishes, waxes and shoe polishes, but its main uses are in value-added products derived from the terpene constituents. Examples include polymeric resins from the pinenes for use in adhesives and chewing gum; pine oil; chlorination of camphor to give the pesticide toxaphene; and use of individual terpenes or combinations of them in flavours and fragrances. In earlier times, turpentine was used in cough remedies; to cure intestinal "worms"; as a means of inducing abortion; and as a "stimulating remedy for the skin".