Shell Chemicals

HSE overview: linear detergent range and plasticizer alcohols

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Physical Hazards

The detergent range includes C9 to C17 primary alcohols. Plasticizer alcohols are C7 to C11 primary alcohols with essentially linear alkyl chains. NEODOL and LINEVOL alcohols do not have any defined physical hazards. They will burn but are not readily ignitable. Hazardous decomposition reactions may occur when primary alcohols are stored in aluminum at temperatures exceeding 120 degrees F.

Human Health

The detergent range and plasticizer alcohols generally do not present any human health hazards. They are not regarded as toxic by ingestion. The oral LD50 is greater than 5 g/kg (>20 g/kg in most cases). They are not toxic by dermal exposure. The dermal LD50 is consistently greater than 5 g/kg. Alcohols in this carbon range are no more than mildly irritating to the eyes and moderately irritating to the skin. They can act as defatting agents on the skin with prolonged or repeated skin contact resulting in dermatitis. Detergent range and plasticizer alcohols do not produce sensitization reactions (allergenic) in guinea pigs or humans.

Use

The detergent range alcohols are primarily used as chemical intermediates in the production of surfactants, eg, alcohol sulfates, alcohol ethoxylates and alcohol ethoxysulfates. The plasticizer alcohols are used principally as chemical intermediates in the manufacture of esters (phthalate esters) which are used as plasticizers in the production of flexible PVC. Since these products are almost exclusively used as chemical intermediates in closed systems, the opportunity for worker exposure is limited. Consumer exposure is limited, occurring mainly as a result of low levels of unreacted alcohol remaining in derivatives.

Environmental Fate and Effect

In general, the toxicity to aquatic organisms increases with increasing chain length up to C13-alcohol, and is then limited by the solubility of the material in water. Even though log Kow is above 3, evidence for biotransformation mechanisms suggests that these alcohols will not bioaccumulate. Linear alcohols are readily biodegradable.

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