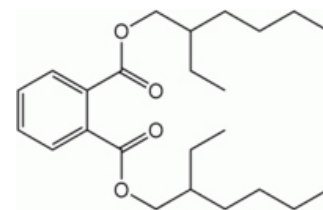


Bis(2-ethylhexyl) phthalate

Also known as: Di(2-ethylhexyl) phthalate Abbrev.: DEHP, DOP
Formula: C₂₆H₄₄O₄ CAS#: 117-81-7



Phthalates in Some Vinyl Tile May Pose Health Risk

Plasticizers for plastics are additives, most commonly phthalates, that give hard plastics like PVC their desired flexibility and durability. Plasticizers work by embedding themselves between the chains of polymers, spacing them apart (increasing the "free volume"), and thus significantly lowering the glass transition temperature for the plastic and making it softer. For plastics such as PVC, the more plasticiser added, the lower its cold flex temperature will be. This means that it will be more flexible, though its strength and hardness will decrease as a result. Some plasticizers evaporate and tend to concentrate in an enclosed space; the "new car smell" is caused mostly by plasticizers evaporating from the car interior.

Bis(2-ethylhexyl) phthalate or DEHP/DOP in Flooring

At low levels, DEHP/DOP is currently believed to pose minimal risk to humans. However, according to the ASTDR, the large surface area-to-volume ratio of vinyl flooring may "allow DEHP to volatilize more readily than it does in other products with smaller surface area-to-volume ratios." The EU lists Di-2-ethylhexyl phthalate (DEHP, DOP) as one of their "Substances of Very High Concern" (SVHC); this ruling requires that the DEHP/DOP content in products exported into the EU be reported. In the United States, DEHP/DOP is included in the priority list of hazardous substances identified by the ATSDR and the EPA.

A report on the health hazards of DEHP prepared by a section of the California EPA states that: "Release of the material [DEHP] from plastics containing it into the air are relatively small, but may be important in special circumstances, such as contamination of indoor air. For example, Wams (1987) reported indoor air concentrations of 0.2 to 0.3 mg/m³ in rooms with newly installed floor coverings." This higher concentration of DEHP is due to out-gassing that normally occurs in newly installed vinyl flooring.

The risk is not limited to new vinyl floors. In most cases, vinyl floor tiles are not sealed or waxed, and are maintained using high-speed buffing equipment. The elevated temperatures of the buffing process may also create out-gassing of VOCs and DOP plasticizers.

DOP plasticizers are not the only plasticizers capable of enhancing the performance of PVC floor tile. Safer plasticizers can be substituted without negatively effecting performance. The only advantage DOP seems to offer is its low cost. Factored into a risk-analysis equation, the few cents manufacturers save by using DOP in their industrial flooring products may not be worth the hazard or liability.

Children that live in homes with vinyl floors, which can emit phthalates, are more likely to have autism, according to research by Swedish and U.S. scientists published in May 2010. The study of Swedish children is among the first to find an apparent connection between an environmental chemical and autism. The scientists were surprised by their finding, calling it "far from conclusive". Because their research was not designed to focus on autism, they recommend further study of larger numbers of children to see whether the link can be confirmed. Bernard Weiss, a professor of environmental medicine at University of Rochester and a co-author of the study, said the connection between vinyl flooring and autism "turned up virtually by accident".