

Why Vertrel™ specialty fluids are suitable replacements for nPB

Technical Information

The National Toxicity Program issued a report, dated August 2011, "Toxicology and Carcinogenesis Studies of 1-Bromopropane in F344/N Rats and B6C3F1 Mice (Inhalation studies)" http://ntp.niehs.nih.gov/ntp/htdocs/LT_rpts/TR564.pdf. The report concluded that there was "clear evidence of carcinogenic activity" in female mice and rats. As a result of this finding, Cal/OSHA has set an 8-hr worker permissible exposure limit (PEL) of 5 ppm. In addition, the American Conference of Governmental Industrial Hygienist (ACGIH) in 2011 proposed a TLV of 0.1 ppm.

Vertrel™ specialty fluids can replace nPB, providing the cleaning efficacy needed while addressing safety and health concerns.

Here are five reasons Vertrel™ is an excellent replacement for nPB:

- **Exposure Limit**

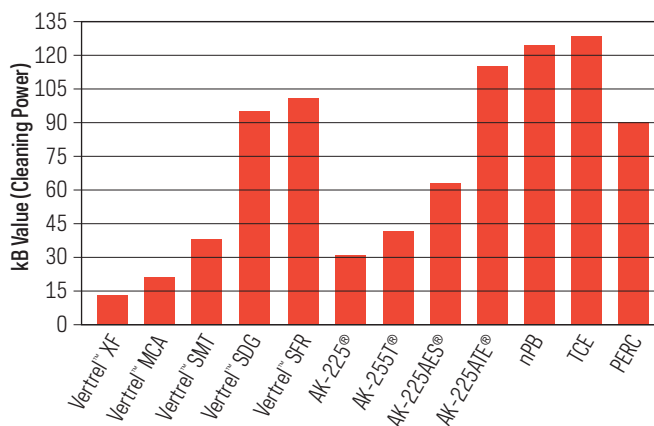
Vertrel™ specialty fluids have exposure limits around 200 ppm. By comparison, isopropyl alcohol (rubbing alcohol) has an exposure limit of 200 ppm. The exposure limit of nPB exposure limit is measured between 5-10 ppm by varying standards organizations.

- **Cleaning Performance**

Vertrel™ specialty fluids have the broadest range of cleaning power of any solvent family. kB values (a measure of cleaning power) range from 11 to a high of 110. Vertrel™ can match nPB's cleaning power.

- **Solvent Maintenance**

Vertrel™ specialty fluids are inherently stable and do not need acid acceptance testing or stabilizer maintenance, unlike nPB.



In addition, the relatively high exposure limit of Vertrel™ enables the use of open top vapor degreasers, and solvent air monitoring can be kept to a minimum.

- **Solvent Usage**

Today's cleaning equipment manufacturers have improved system design, resulting in significant reductions in the amount of solvent emissions and reducing overall operating costs. Vertrel™ is cost competitive with nPB, as a result of the emissions reduction.

- **Global Acceptance**

Vertrel™ specialty fluids are globally accepted as a safe cleaning material. Many countries have classified nPB as a reproductive toxin. In Europe, nPB is labeled as R60 (may impair fertility); R63 (possible risk of harm to the unborn child); and R48/20 (harmful: danger of serious damage to health by prolonged exposure through inhalation).

Summary

Vertrel™ specialty fluids have similar solvency strength as nPB. Vertrel™ is nonflammable, safe, and requires no stabilizers, making Vertrel™ an ideal replacement for nPB.

For more information on Vertrel™, please visit opteon.com or call (800) 235-7882.

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