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**Odorants In Plastic Fuel
Gas Distribution Systems**



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Foreword

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The purpose of this Technical Note is to provide recommendations for the use of odorants in gas pipelines that are manufactured of plastic materials.

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ODORANTS IN PLASTIC FUEL GAS DISTRIBUTION SYSTEMS

To enhance safety, the fuel gas industries add chemical compounds, with a unique odor, to alert the user if a leak occurs. This odor is designed to be readily detectable when the fuel gas mixes with the atmosphere at low concentrations.

CFR 192, Minimum Federal Safety Standards, paragraph 192.625 establishes requirements for odorization of fuel gases supplied through regulated distribution systems. National Fire Protection (NFPA) Bulletins, No. 58: Storage and Handling of Liquefied Petroleum Gases, and No. 59: Liquefied Petroleum Gases at Utility Gas Plants provide the requirements for odorization of LP Gas and LP-Air gases. For detailed information on current regulations review these documents.

The compounds used as odorants usually consist of aliphatic mercaptans, such as propyl and tertiary butyl mercaptan, and sulfides, such as thiopane or dimethyl sulfide at ordinary temperatures. Most gas odorants are liquids at full concentrations, and, in this state, might be harmful to some plastic pipe materials. However, in the small amounts sufficient to odorize a gas they are in the vapor state and cause no harm to plastic piping.

Scope

This technical note provides recommendations when using odorants in fuel gas systems utilizing plastic pipes.

Procedure

The mercaptans and sulfides used as odorants are liquid hydrocarbons. Liquid hydrocarbons, in sufficient concentration, can swell and soften most plastic pipe materials. Odorants should never be introduced into a plastic pipe system in a concentrated liquid state. Also, liquid odorants should not be used to locate leaks in plastic pipelines.

Odorants are typically introduced in a liquid form and are vaporized before the gas reaches gas mains and gas distribution piping. Concentrations, in the gaseous form, should be low enough to prevent condensation at the lowest temperature and/or the highest pressure encountered in the system. When odorants are injected at normal rates the concentration rarely exceeds 25 parts per million by weight, in gaseous form. At this concentration, odorants are not harmful to plastic pipe.

Plastic gas mains and service lines do not require the pre-treatment with odorant normally used to saturate mill scale and rust in steel pipe.