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HYDROCARBON REFRIGERANTS



Hydrocarbon refrigerants are a type of liquefied petroleum gas (LPG) being promoted in some quarters as alternatives to a range of refrigerants

Many existing refrigerants are regarded as environmentally undesirable. Hydrocarbon refrigerants may seem an attractive alternative both in terms of environmental effects and power efficiency, and they are promoted on this basis. They are also promoted because the conversion process is said to be easy.

However the hydrocarbon in question is generally propane (or a mixture containing propane) which is highly flammable with the potential for ignition and explosion in the event of a leak. The flash point is as low as minus 104⁰C with a lower explosive limit of 2.4%.

From the viewpoint of risk and insurance we offer these observations. Any coldstore owner or operator considering switching to a flammable hydrocarbon refrigerant should consider the following issues:

1. The insurers must be advised BEFORE such work is undertaken. A conversion to hydrocarbon is likely to be considered a material fact by insurance underwriters and if not disclosed to insurers a future claim for loss or damage could be declined.
2. Because of the explosive nature of the refrigerant the precautions adopted need to be far more stringent than for the use of an inert refrigeration gas such as Freon. Additional precautions to be considered include:
 - installation in accordance with AS/NZS1677.2: 1998 Refrigerating Systems;
 - locating the plant room in a ventilated fire rated building or in the open, in either case remote from any other building;
 - the inclusion of explosion relief within the building;
 - use of flameproof motors, lighting and electrical equipment;
 - training of plant personnel in maintenance precautions;
 - provision of gas detection systems and alarms with automatic plant shut down;
 - notification to and consultation with the territorial authority, Department of Labour and the Fire Service of the intended change.

In summary while the conversion of an existing refrigeration system to hydrocarbon is a relatively 'simple' mechanical project, the resulting safety ramifications are far from straightforward. For new construction of cool room/store facilities using hydrocarbons as refrigerants, these should be done in full consultation with the relevant authorities and insurers.

For further information please contact your Willis Client Advocate® or our Willis Risk Consulting specialists:

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