



DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

Bill Ritter, Jr.
Governor

Harris D. Sherman
Executive Director

Dick Wolfe, P.E.
Director

POLICY MEMORANDUM 2008-02

SUBJECT: Geothermal Rules - Rule 8.3.3 regarding types of fluids approved for use as circulating medium in Type A-CLH or Type A-CLV wells.

Purpose:

The purpose of this policy is to approve R-407C (1,1,1,2-tetrafluoroethane-Pentafluoroethane-Difluoromethane mixture) as a substitute/alternative refrigerant for R-22 to be used as a circulating medium in loop fields of Type A-CLH or Type A-CLV geexchange systems.

Background:

Rule 8.3.3 specifies the types of fluids approved for use in loop fields of Type A-CLH or Type A-CLV geexchange systems. The refrigerant R-22 is approved by Rule 8.3.3.g. R-22 is a cost effective and efficient circulating medium and has been a widely used refrigerant in direct exchange (DX) heat pumps and air conditioning systems for more than four decades. R-22 is included in the list of the ozone depleting compounds addressed by the 1987 Montreal Protocol and subsequent amendments. The protocol prohibits the use of R-22 in new equipment after the date of January 1, 2010.

The Environmental Protection Agency (EPA) has identified a number of acceptable substitutes for R-22 in household and light commercial air-conditioning uses. R-407C (1,1,1,2-tetrafluoroethane/Pentafluoroethane/Difluoromethane mixture), with trade names which include but are not necessarily limited to Suva 407C, Klea 407C, Forane (R) 407C, is one of the EPA identified substitutes for R-22. According to the Material Safety Data Sheet for R-407C, the compound is non-flammable and "Practically Non-toxic." R-407C has been suggested as a substitute or alternative to the use of R-22 in geexchange systems as approved in Rule 8.3.3.

Office of the State Engineer

1313 Sherman Street, Suite 818 • Denver, CO 80203 • Phone: 303-866-3581 • Fax: 303-866-3589

www.water.state.co.us

POLICY:

(R) 407C (1,1,1,2-tetrafluoroethane-Pentafluoroethane-Difluoromethane mixture) is approved as a substitute or alternative to the use of R-22 as a circulating fluid in Type A-CLH or Type A-CLV geexchange systems as specified in Rule 8.3.3.g of the Geothermal Rules.

This policy is effective immediately and shall be revoked only in writing.

 11/28/08
Date

Dick Wolfe,
State Engineer
Division of Water Resources