



الهيئة السعودية للمواصفات والمقاييس والجودة
Saudi Standards, Metrology and Quality Org.

دراسة خصائص غازات التبريد البديلة ومدى ملائمتها للعمل والاستخدام بالمملكة Study of alternative refrigerant's characteristics and their validity for the employment and use in Kingdom of Saudi Arabia.

Abstract

Conventionally CFC type refrigerants were used until the Montreal Protocol was passed which stated that CFC refrigerants causes ozone depletion and is needed to be replaced with alternative refrigerants. The alternative refrigerants, although safe for ozone, yet have comparatively high flammability, toxicity and global warming potential thus needed careful handling. Presently, within the Kingdom, the refrigerants for refrigeration/ice-making and air-conditioning/dehumidification requirements are handled according to safety codes and standards SASO-GSO-IEC-60335-2-24 & SASO-GSO-IEC-60335-2-40 respectively; however it is needed to revisit these codes based on latest researches to ensure safe handling. Hence, the main objective of the current investigation is to study the refrigerant properties of alternative refrigerants in order to evaluate the validity of their employment and use within the Kingdom.

In order to achieve the main objective, a critical and extensive review is performed focusing on the latest experimental researches over the alternative refrigerants. The thermo-physical property data of the alternative refrigerants are analyzed as per the developed national & international Standards and classified based upon the acceptable level of toxicity and flammability. Finally, recommendations are made regarding the inclusion of alternative refrigerants, their handling, maintenance, transportation and disposal procedures in regards with the international safety standards.