

1. Title	Apply the knowledge of refrigerants, secondary refrigerants and refrigerant oil
2. Code	EMACDE303A
3. Range	Apply the knowledge of refrigerants, secondary refrigerants and refrigerant oil to perform tasks of design, installation, commissioning, testing, operation, maintenance, repair and project management of air-conditioning and refrigeration systems at design studios or work sites with such systems.
4. Level	3
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1 Knowledge of refrigerants, secondary refrigerants and refrigerant oil</p> <ul style="list-style-type: none"> <li>◆ Understand the functions, types, naming and coding of refrigerants, including: <ul style="list-style-type: none"> <li>• Functions of refrigerants</li> <li>• Types of refrigerants</li> <li>• Naming and coding of refrigerants</li> </ul> </li> <li>◆ Understand the criteria for selection of refrigerants, including: <ul style="list-style-type: none"> <li>• Thermal properties of refrigerants</li> <li>• Physical and chemical properties of refrigerants</li> <li>• Safety and environment protection requirements of refrigerants</li> </ul> </li> <li>◆ Understand the limitations of refrigerants, and their substitutes, including: <ul style="list-style-type: none"> <li>• Describing the depletion of the ozone layer and the details of the Montreal Protocol and its amendments</li> <li>• Describing the greenhouse effect and the details of the Kyoto Protocol</li> <li>• Listing the substitute refrigerants for CFCs and HCFCs</li> </ul> </li> <li>◆ Understand the characteristics and applications of typical refrigerants, including: <ul style="list-style-type: none"> <li>• Describing the characteristics and applications of halogenated hydrocarbon and the refrigerants made from such mixtures</li> <li>• Describing the characteristics and applications of hydrocarbon refrigerants</li> <li>• Describing the characteristics and applications of inorganic refrigerants</li> </ul> </li> <li>◆ Understand the functions and selection criteria of secondary refrigerants</li> <li>◆ Understand the characteristics and applications of typical secondary refrigerants, including: <ul style="list-style-type: none"> <li>• Characteristics and applications of saline solution</li> <li>• Characteristics and applications of organic solution</li> </ul> </li> </ul>

	<p>6.2 Application of refrigerants, secondary refrigerants and refrigerant oil</p> <ul style="list-style-type: none"> <li>◆ Understand the functions and characteristics of refrigerant oil and its selection criteria, including: <ul style="list-style-type: none"> <li>• Functions of refrigerant oil</li> <li>• Characteristics of refrigerant oil in contact with a refrigerant</li> <li>• Criteria for selection of refrigerant oil</li> </ul> </li> <li>◆ Apply the knowledge of refrigerants, secondary refrigerants and refrigerant oil to solve the problems involved in the design, installation, commissioning, testing, operation, maintenance, repair and project management of air-conditioning and refrigeration works</li> </ul>
<p>7. Assessment Criteria</p>	<p>The integrated outcome requirement of this unit of competency is:</p> <p>(i) Capable to apply the knowledge of refrigerants, secondary refrigerants and refrigerant oil to solve the problems involved in the design, installation, commissioning, testing, operation, maintenance, repair and project management of air-conditioning and refrigeration works.</p>
<p>8. Remarks</p>	<p>The credit value of this unit of competency is set on the presumption that the person already possesses basic knowledge of air-conditioning and refrigeration systems.</p>