



## Correlation of Modern Refrigeration and Air Conditioning, by Althouse, Turnquist, Bracciano (Goodheart-Willcox Publisher ©2021)

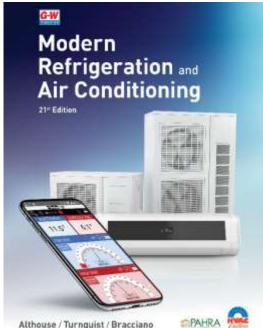
to

## **AHRI Curriculum Guide: XXII. Refrigerants and Lubricants**

The following chart correlates the *Modern Refrigeration* and Air Conditioning textbook (©2021) to a section of the Curriculum Guide developed by Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and used for PAHRA accreditation.

The chart lists the Curriculum Guide's knowledge and task competency objectives and the corresponding chapter numbers from Modern Refrigeration and Air Conditioning.

For more information on the Partnership for Air-Conditioning, Heating, Refrigeration Accreditation (PAHRA) and related accreditation, please visit: www.pahrahvacr.org



Althouse / Turnquist / Bracciano

XXII.A. Refrigerants					
Knowledge			Textbook Chapter(s)		
1.	Explain	the different classes of refrigerants:			
	a.	CFC refrigerants	Chapter 9		
	b.	HCFC refrigerants	Chapter 9		
	C.	HFC refrigerants	Chapter 9		
	d.	HC refrigerants	Chapter 9		
	e.	other refrigerants	Chapter 9		
	f.	azeotropic mixtures (ASHRAE 500 series)	Chapter 9		
	g.	zeotropic blends (ASHRAE 400 series)	Chapter 9		

	XXII.A. Refrigerants (continu	ed)
Knowl	edge	Textbook Chapter(s)
2.	Explain physical and chemical properties:	
	a. flammability and toxicity	Chapter 9
	b. materials compatibility	Chapter 9
	c. miscibility and oil return	Chapter 9
	d. pressure and temperature data	Chapter 9
	e. refrigerant temperature glide	Chapter 9
	f. environmental properties (ODP, GWP, and TEWI)	Chapter 9
	g. bubble point	Chapters 9, 31
	h. dew point	Chapters 9, 31
3.	Define pure refrigerants and azeotropic mixtures.	Chapter 9
4.	Define zeotropic mixtures.	Chapter 9
5.	Define zeotropic blends.	Chapter 9
6. Mato	Identify the color and classification of refrigerants by Pantone ching System (PMS) color number.	Chapter 9
7.	Explain fractionalization of blends.	Chapter 9
Tasks		Textbook Chapter(s)
1.	Look up saturation pressure and temperature:	
	a. single element refrigerant	Chapter 9, Appendix
	b. azeotropic	Chapter 9, Appendix
	c. zeotropic	Chapter 9, Appendix
	d. blends	Chapter 9, Appendix
2. mato	Identify when saturation pressure and temperature do not th the refrigerant.	Chapters 7, 9, 10, 11, Appendix
3.	Calculate superheat and subcooling.	Chapters 7, 9, 10, 11, Appendix
4.	Calculate superheat and subcooling glide.	Chapters 7, 9, 10, 11, Appendix

## Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide: XXII. Refrigerants and Lubricants—page 3

XXII.B. Lubricants				
Knowl	edge	Textbook Chapter(s)		
1.	Explain the function of lubricants in systems.	Chapters 9, 19, 20		
2.	Explain the different types and applications of lubricants:			
	a. alkylbenzenes (AB)	Chapter 9, Appendix		
	b. mineral oils	Chapter 9, Appendix		
	c. polyolesters (POE)	Chapter 9, Appendix		
	d. polyglocols (PAG)	Chapter 9, Appendix		
3.	Explain properties of lubricants:			
	a. materials compatibility	Chapter 9, Appendix		
	b. miscibility and oil return	Chapter 9, Appendix		
	c. pour point and flash point	Chapter 9, Appendix		
	d. viscosity	Chapters 9, 19, Appendix		
	e. water absorption	Chapter 9, Appendix		
	f. rust and oxidation inhibitors	Chapter 9, Appendix		
4.	Describe proper oil disposal.			
Tasks		Textbook Chapter(s)		
1.	Draw oil sample from system.	Chapters 9, 26, 55		
2.	Demonstrate proper handling of POEs.	Chapter 55		
3.	Use acid test kit for mineral oil and AB.	Chapter 26, 55		
4.	Demonstrate proper use of a refractometer or oil sample test.			