

REFRIGERANTS & DEVICES

COURSE DESCRIPTION

This seminar discusses the refrigerants and oils used in modern refrigeration and air conditioning systems. Today, new technologies and stringent environmental laws are driving changes in the HVAC industry. Older refrigerants that damage the environment are being phased out and replaced with more environmentally-friendly refrigerants. These new refrigerants often require new compressor lubricating oils. These modern refrigerants and oils also have new handling and service requirements with which technicians must be familiar. This seminar will be HANDS-ON.

WHAT YOU WILL LEARN

- **Identify the various applications that require specific refrigerant characteristics**
 - Identify the various applications that require specific refrigerant characteristics
- **Identify various refrigerant classifications**
 - Identify and describe compounded and blended refrigerants
 - Identify the safety classifications of refrigerants
- **Explain how to use pressure-temperature (P-T) charts to calculate superheat and subcooling**
 - Explain how to use P-T charts for compound, azeotropic, and near-azeotropic refrigerants to calculate superheat and subcooling
 - Explain how to use P-T charts for zeotropic refrigerants to calculate superheat and subcooling
- **Describe the important issues related to the function of lubricating oils in the refrigerant circuit**
 - Identify the important characteristics of refrigerant oils.
 - Identify mineral-based and synthetic oils.
 - Describe issues related to the movement of oil through the refrigerant circuit.
 - Describe the various types and sources of oil contamination.
 - Describe common practices associated with handling, charging, and removing oils
- **Explain the considerations related to various refrigerant conversion processes**
 - Identify issues of concern for all refrigerant conversions
 - Describe common practices related to popular refrigerant conversions

8 HOUR PROGRAM



SATURDAY

8:00 AM - 4:00 PM

**Location: 65 Elm Street
Copiague, NY 11726**



Saturation Pressure-Temperature Data for R-410A (psig)											
Temp (°F)	Pressure (psig)	Temp (°F)	Pressure (psig)	Temp (°F)	Pressure (psig)	Temp (°F)	Pressure (psig)	Temp (°F)	Pressure (psig)	Temp (°F)	Pressure (psig)
10	100.0	10	100.0	10	100.0	10	100.0	10	100.0	10	100.0
15	110.0	15	110.0	15	110.0	15	110.0	15	110.0	15	110.0
20	120.0	20	120.0	20	120.0	20	120.0	20	120.0	20	120.0
25	130.0	25	130.0	25	130.0	25	130.0	25	130.0	25	130.0
30	140.0	30	140.0	30	140.0	30	140.0	30	140.0	30	140.0
35	150.0	35	150.0	35	150.0	35	150.0	35	150.0	35	150.0
40	160.0	40	160.0	40	160.0	40	160.0	40	160.0	40	160.0
45	170.0	45	170.0	45	170.0	45	170.0	45	170.0	45	170.0
50	180.0	50	180.0	50	180.0	50	180.0	50	180.0	50	180.0
55	190.0	55	190.0	55	190.0	55	190.0	55	190.0	55	190.0
60	200.0	60	200.0	60	200.0	60	200.0	60	200.0	60	200.0
65	210.0	65	210.0	65	210.0	65	210.0	65	210.0	65	210.0
70	220.0	70	220.0	70	220.0	70	220.0	70	220.0	70	220.0
75	230.0	75	230.0	75	230.0	75	230.0	75	230.0	75	230.0
80	240.0	80	240.0	80	240.0	80	240.0	80	240.0	80	240.0
85	250.0	85	250.0	85	250.0	85	250.0	85	250.0	85	250.0
90	260.0	90	260.0	90	260.0	90	260.0	90	260.0	90	260.0
95	270.0	95	270.0	95	270.0	95	270.0	95	270.0	95	270.0
100	280.0	100	280.0	100	280.0	100	280.0	100	280.0	100	280.0
105	290.0	105	290.0	105	290.0	105	290.0	105	290.0	105	290.0
110	300.0	110	300.0	110	300.0	110	300.0	110	300.0	110	300.0
115	310.0	115	310.0	115	310.0	115	310.0	115	310.0	115	310.0
120	320.0	120	320.0	120	320.0	120	320.0	120	320.0	120	320.0
125	330.0	125	330.0	125	330.0	125	330.0	125	330.0	125	330.0
130	340.0	130	340.0	130	340.0	130	340.0	130	340.0	130	340.0
135	350.0	135	350.0	135	350.0	135	350.0	135	350.0	135	350.0
140	360.0	140	360.0	140	360.0	140	360.0	140	360.0	140	360.0
145	370.0	145	370.0	145	370.0	145	370.0	145	370.0	145	370.0
150	380.0	150	380.0	150	380.0	150	380.0	150	380.0	150	380.0
155	390.0	155	390.0	155	390.0	155	390.0	155	390.0	155	390.0
160	400.0	160	400.0	160	400.0	160	400.0	160	400.0	160	400.0
165	410.0	165	410.0	165	410.0	165	410.0	165	410.0	165	410.0
170	420.0	170	420.0	170	420.0	170	420.0	170	420.0	170	420.0
175	430.0	175	430.0	175	430.0	175	430.0	175	430.0	175	430.0
180	440.0	180	440.0	180	440.0	180	440.0	180	440.0	180	440.0
185	450.0	185	450.0	185	450.0	185	450.0	185	450.0	185	450.0
190	460.0	190	460.0	190	460.0	190	460.0	190	460.0	190	460.0
195	470.0	195	470.0	195	470.0	195	470.0	195	470.0	195	470.0
200	480.0	200	480.0	200	480.0	200	480.0	200	480.0	200	480.0
205	490.0	205	490.0	205	490.0	205	490.0	205	490.0	205	490.0
210	500.0	210	500.0	210	500.0	210	500.0	210	500.0	210	500.0
215	510.0	215	510.0	215	510.0	215	510.0	215	510.0	215	510.0
220	520.0	220	520.0	220	520.0	220	520.0	220	520.0	220	520.0
225	530.0	225	530.0	225	530.0	225	530.0	225	530.0	225	530.0
230	540.0	230	540.0	230	540.0	230	540.0	230	540.0	230	540.0
235	550.0	235	550.0	235	550.0	235	550.0	235	550.0	235	550.0
240	560.0	240	560.0	240	560.0	240	560.0	240	560.0	240	560.0
245	570.0	245	570.0	245	570.0	245	570.0	245	570.0	245	570.0
250	580.0	250	580.0	250	580.0	250	580.0	250	580.0	250	580.0
255	590.0	255	590.0	255	590.0	255	590.0	255	590.0	255	590.0
260	600.0	260	600.0	260	600.0	260	600.0	260	600.0	260	600.0
265	610.0	265	610.0	265	610.0	265	610.0	265	610.0	265	610.0
270	620.0	270	620.0	270	620.0	270	620.0	270	620.0	270	620.0
275	630.0	275	630.0	275	630.0	275	630.0	275	630.0	275	630.0
280	640.0	280	640.0	280	640.0	280	640.0	280	640.0	280	640.0
285	650.0	285	650.0	285	650.0	285	650.0	285	650.0	285	650.0
290	660.0	290	660.0	290	660.0	290	660.0	290	660.0	290	660.0
295	670.0	295	670.0	295	670.0	295	670.0	295	670.0	295	670.0
300	680.0	300	680.0	300	680.0	300	680.0	300	680.0	300	680.0
305	690.0	305	690.0	305	690.0	305	690.0	305	690.0	305	690.0
310	700.0	310	700.0	310	700.0	310	700.0	310	700.0	310	700.0
315	710.0	315	710.0	315	710.0	315	710.0	315	710.0	315	710.0
320	720.0	320	720.0	320	720.0	320	720.0	320	720.0	320	720.0
325	730.0	325	730.0	325	730.0	325	730.0	325	730.0	325	730.0
330	740.0	330	740.0	330	740.0	330	740.0	330	740.0	330	740.0
335	750.0	335	750.0	335	750.0	335	750.0	335	750.0	335	750.0
340	760.0	340	760.0	340	760.0	340	760.0	340	760.0	340	760.0
345	770.0	345	770.0	345	770.0	345	770.0	345	770.0	345	770.0
350	780.0	350	780.0	350	780.0	350	780.0	350	780.0	350	780.0
355	790.0	355	790.0	355	790.0	355	790.0	355	790.0	355	790.0
360	800.0	360	800.0	360	800.0	360	800.0	360	800.0	360	800.0
365	810.0	365	810.0	365	810.0	365	810.0	365	810.0	365	810.0
370	820.0	370	820.0	370	820.0	370	820.0	370	820.0	370	820.0
375	830.0	375	830.0	375	830.0	375	830.0	375	830.0	375	830.0
380	840.0	380	840.0	380	840.0	380	840.0	380	840.0	380	840.0
385	850.0	385	850.0	385	850.0	385	850.0	385	850.0	385	850.0
390	860.0	390	860.0	390	860.0	390	860.0	390	860.0	390	860.0
395	870.0	395	870.0	395	870.0	395	870.0	395	870.0	395	870.0
400	880.0	400	880.0	400	880.0	400	880.0	400	880.0	400	880.0
405	890.0	405	890.0	405	890.0	405	890.0	405	890.0	405	890.0
410	900.0	410	900.0	410	900.0	410	900.0	410	900.0	410	900.0
415	910.0	415	910.0	415	910.0	415	910.0	415	910.0	415	910.0
420	920.0	420	920.0	420	920.0	420	920.0	420	920.0	420	920.0
425	930.0	425	930.0	425	930.0	425	930.0	425	930.0	425	930.0
430	940.0	430	940.0	430	940.0	430	940.0	430	940.0	430	940.0
435	950.0	435	950.0	435	950.0	435	950.0	435	950.0	435	950.0
440	960.0	440	960.0	440	960.0	440	960.0	440	960.0	440	960.0
445	970.0	445	970.0	445	970.0	445	970.0	445	970.0	445	970.0
450	980.0	450	980.0	450	980.0	450	980.0	450	980.0	450	980.0
455	990.0	455	990.0	455	990.0	455	990.0	455	990.0	455	990.0
460	1000.0	460	1000.0	460	1000.0	460	1000.0	460	1000.0	460	1000.0