



# the AirCheck✓Kit™

## Model K8573

Thank you for selecting the Team of Experts at Trace Analytics, Inc. for your compressed air and pure gas analyses. We appreciate your business and look forward to a long lasting relationship with you. Please do not hesitate to contact us with your air related questions.

Phone:	512-263-0000
Toll-Free US & Canada:	800-247-1024
Fax:	512-263-0002
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After Hours Emergency:	Ruby@AirCheckLab.com
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Mailing Address:	Trace Analytics, Inc. 15768 Hamilton Pool Rd. Austin, TX 78738
Laboratory Hours:	8-5, CST, Mon - Thurs 8-3, CST, Friday

**The AirCheck✓Kit™** hardware has a lifetime warranty. If you should experience a problem, return non-working part for a free replacement. We also have a money-back guarantee, for details, see FAQs.



## TABLE OF CONTENTS

How to Contact Us .....	i
<b>The AirCheck✓Kit™ Contents</b> .....	1-1
Sampling Instructions .....	1-2
Frequently Asked Questions	
Equipment .....	2-1
Sampling .....	2-2
Analysis .....	2-5
Routine Policies .....	2-6
AirCheck Notes	
ISO 8573 Purity Classes .....	3-1
See our website for all AirCheck Notes	
Blank Personalized Datasheet .....	(last page)

[AirCheck✓Notes](#), issued periodically, are available for viewing and download from our Helpful Technical Info section on our website: [www.AirCheckLab.com](http://www.AirCheckLab.com)

### About Trace Analytics, Inc.

[Accreditation Documentation](#) – current Scope of Accreditation and Certification documents

[Example Report](#) – sample AirCheck✓Report and certificate

[Validation Report](#) – available by request

[Laboratory SOPs](#) – available by request

[Trace Analytics Overview](#) – company info, lab facilities, analytical techniques and QC procedures

### About the AirCheck✓Kit

[Kit Sampling Instructions](#) – included with every AirCheck✓Kit sold

[Blank Data Sheet](#) – form that must accompany every sample submitted for analysis

**Bookmark our website for easy reference!**



the **AirCheck Kit™**

Your Kit Model K8573 Should Include the Following

2 Adaptors per Kit

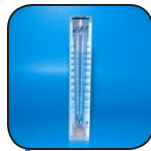


**1/4" NPT**  
(20-50 psi)  
PN F4000

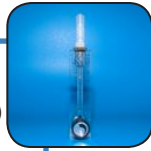


**1/4" NPT**  
(51-125 psi)  
PN F4041

2 Flowmeters



**Filter Flowmeter**  
(20-140 LPM)  
PN C633



**Tube Flowmeter**  
(1-5 LPM)  
PN C635



**3 ft. Tubing**  
with Barbed Luer  
PN C634



**1 Bottle Holder**  
2 piece  
PN F400



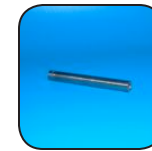
**Needle Cleaner**  
PN C613



**Needle Replacement Tool**  
PN C607



**1 Brass T**  
PN C632



**Tip Breaker**  
PN C636



**Spare Parts**  
PN C637



**Carrying Case**  
(or bag)  
PN C606

The above hardware items are covered by the AirCheck Kit Lifetime Warranty. Contact Customer Service for a Return Authorization Number. Trace will provide a free replacement for any non-working hardware item. The non-working item must be returned to receive free replacement. Warranty does not cover lost items.

The items below are consumable items. Please call or email us to place your order.

Sampling Media



**PN 85-P**  
47 mm Filter  
for Solid Particle  
Analysis



**PN 85-W5**  
Detector Tube for Water  
Analysis (-40° to -4°F)  
**PN 85-W20**  
Detector Tube for Water  
Analysis (-20° to +50°F)



**PN 85-O**  
47 mm Filter &  
Charcoal Tube  
for Oil Analysis



**PN 85-G**  
Source Bottle  
for Other Gas  
Analysis

To determine the part number for your restock, identify the analysis you require and list the prefix 85-, then the letters, e.g. if you require oil and water only, the Part Number is 85-WO, for particles, water, and oil, the Part Number is 85-PWO. If you have questions, contact Customer Service at 800-247-1024.



**2 Replacement Needles**  
PN C612

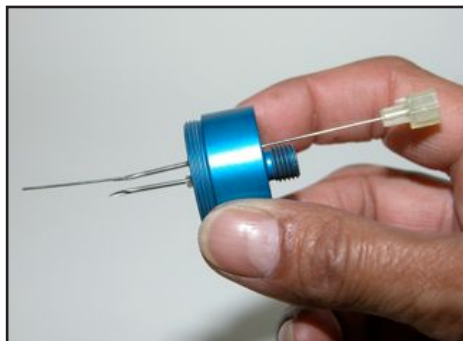
**When placing an order by phone, e-mail, or online please reference your customer number (see Notebook cover)**



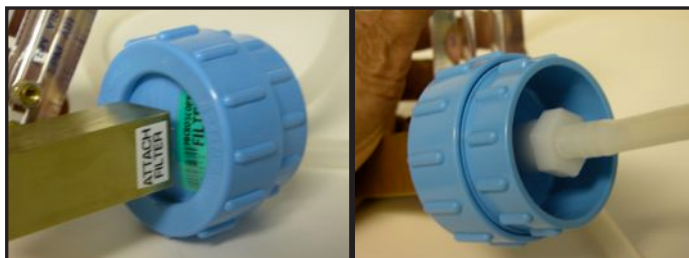
READ COMPLETE INSTRUCTIONS ON FOLLOWING PAGES

## Step 1: Preparation

INSPECT • SELECT SAMPLING MEDIA • DATA SHEET



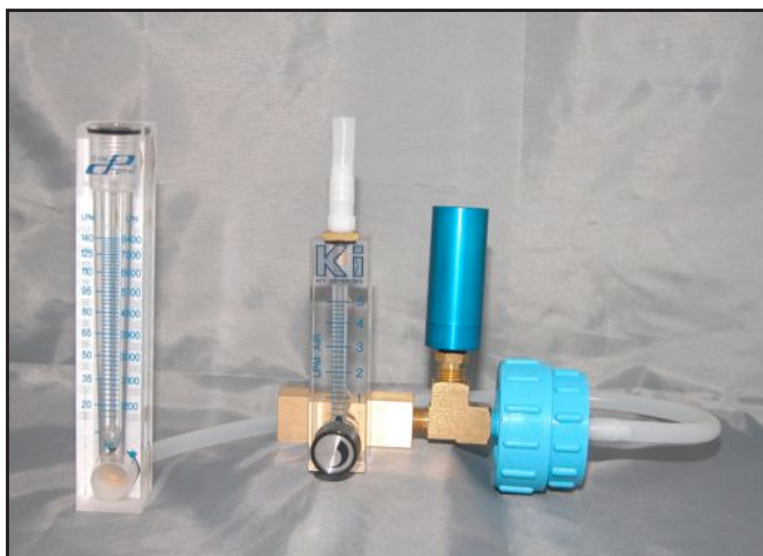
## Step 2: Assemble Equipment



## Step 4: Begin Other Gas Contaminants Test

INSERT SOURCE BOTTLE • START TIMING TEST

## Step 3: Begin Oil Aerosol & Particles Test



## Step 5: Begin Water Vapor Test

INSERT DETECTOR TUBE • START TIMING TEST



## Step 6: Begin Oil Vapor Test


INSERT CHARCOAL TUBE • START TIMING TEST



## Step 7: Stop Test

INSPECT • REVIEW PAPERWORK • RETURN SAMPLE



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## Introduction to Sampling

The AirCheck Kit, Model K8573, is designed to follow the ISO 8573 sampling protocols with a few modifications made to the sampling and analytical techniques that provide equivalent results at a fraction of the cost. For details, see AirCheck Notes, 3-2.

Model K8573 allows collection of air samples for solid particles, water vapor, oil aerosol and vapor, and other gas contaminants. Most can be performed simultaneously. If a particular analyte is not required; [TEXT IN BLUE PROVIDES INFORMATION ON HOW TO CORRECTLY ELIMINATE THE TEST.](#)

It is important to note that the sampling equipment design should not be altered in any way that will disrupt the straight flow of gas stream from the sampling outlet to the filter cassette. If a device is installed upstream of the filter cassette; the restrictive orifice should be at least 100 times the size of the largest particle expected.

Prior to sampling, it is important to identify the type of dryer installed and the pressure at the sampling outlet. The type of dryer installed will determine the anticipated dew point. This information is necessary to select the appropriate water vapor detector tube, flowrate and sampling time, see Table 2: Anticipated Water Level.

Other gases that can be analyzed include:

Routine:	Oxygen (O <sub>2</sub> ), Nitrogen (N <sub>2</sub> ), Argon (Ar), Carbon Monoxide (CO), Carbon Dioxide (CO <sub>2</sub> ), Methane (CH <sub>4</sub> ), Total Volatile Hydrocarbons	(sample captured in Source Bottle)
ISO 8573-6:	Carbon Monoxide (CO), Carbon Dioxide (CO <sub>2</sub> ), Sulphur Dioxide (SO <sub>2</sub> ), Hydrocarbons (C <sub>1</sub> to C <sub>5</sub> ), Nitrogen Oxides (NO <sub>x</sub> )	(sample captured in Source Bottle and detector tubes)
Other:	Total Halogenated Hydrocarbons, pure gases, or contact us with your specific requirements	

The AirCheck Kit, Model 8573 can be used for a variety of specifications other than ISO 8573. It can also be used to obtain compressed breathing air samples. Contact Trace Analytics, Inc. to discuss your specific requirements. Sampling media is customized per your air quality testing needs.

## STEP 1 – Preparation

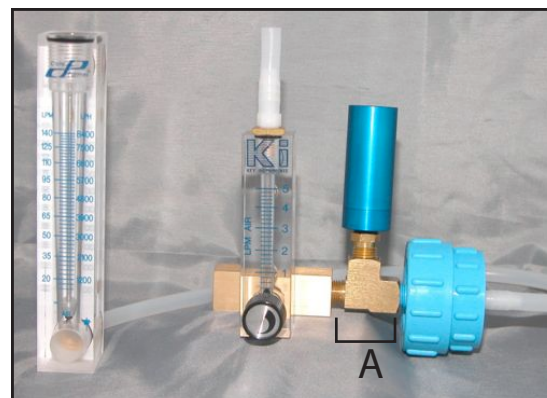
INSPECT and CLEAN all parts to avoid sampling problems or invalid tests. Disassemble two-part Bottle Holder. Remove o-ring and run Needle Cleaner through both needles from the bottom of the Bottle Holder prior to every sample. Check needles for damage. **CAUTION** Needles are sharp. Replace needles that are crooked, overly bent, or jagged by sliding Needle Tool over needle into slots at base of the needle. Make sure needle is tightly seated. Replace dry or damaged o-rings. Inspect and clean threaded parts. Reassemble Bottle Holder. Remove any glass shards from previous test in white tubing of Tube Flowmeter.

Select sampling media (source bottle, filter cassette, detector tube, charcoal tube) and data sheet to be used based on your specific testing requirements. Enter all required information on data sheet except for flow rates and sampling times.

Select NPT adaptor to be used. For outlet pressures of 20-50 psig; use the unmarked/unrestricted NPT adaptor with the 20-100 LPM Filter Flowmeter. For outlet pressures of 51-125 psig; use the NPT adaptor marked 41. Allow gas to flow for at least two minutes before attaching equipment to sampling outlet.

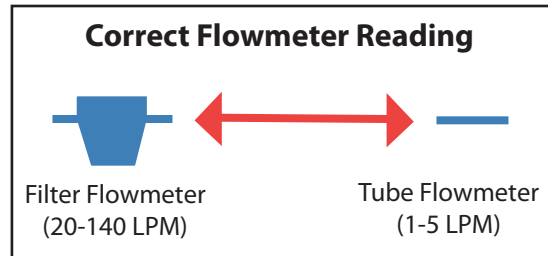
## STEP 2 – Assemble Equipment

Hand tighten ¼" NPT Adaptor to sampling outlet. One end of the NPT Adaptor is labeled "Attach Filter." Thread non-labeled end of NPT Adaptor to sampling outlet. The base of the Tube Flowmeter (1-5 LPM) should be attached to center hole on the NPT Adaptor, upper back hole of flowmeter must remain unplugged to vent air, and needle valve closed (turn clockwise, do not overtighten). [IF YOU ARE NOT SAMPLING FOR OTHER GAS CONTAMINANTS; THE BOTTLE HOLDER AND BRASS T CAN BE ELIMINATED FROM ASSEMBLY, SEE A.](#)



Thread aluminum Bottle Holder to top threaded hole on the Brass T taking care not to cross-thread fittings. Attach Brass T to Adaptor end marked "Attach Filter".

Thread Filter Cassette onto labeled side of NPT adaptor or Brass T female threads. Slip open end of Tubing onto barbed fitting at base of flowmeter then thread plastic fitting on tubing to downstream side of Cassette. The upper back hole of Flowmeter (20-140 LPM) must remain unplugged to vent air. Flowmeter must be level for proper reading. Filter flowmeter is read where the float changes from straight sides to angled; Tube flowmeter is read at the middle of the float (see diagram).



### STEP 3 – Begin Oil Aerosol & Particles Test

This test will take a minimum of 10 minutes for Classes 2-4; 23 minutes for Class 1. Filter cassette should remain in place until you have completed all other tests. Aerosols and Particles are collected simultaneously. Ensure that the TUBE Flowmeter needle valve is turned fully clockwise (do not overtighten). Then open your system valve slowly to obtain a reading from the FILTER Flowmeter. See diagram on previous page for correct reading. Refer to Oil Aerosol Flowrate Table minimum sampling times. The Flowmeter reading should be steady. If flowrate drops or varies, determine average flowrate and note on data sheet that steady flowrate not achieved. The Adaptor Assembly may become cold and ice up. This is normal. **CAUTION** Do not obstruct exit air from flowmeters as this will cause inaccurate flow readings.

SPECIFICATION	Conc. Limit, mg/m <sup>3</sup>	Min. Air Vol., Liters	Recommended Flowrate, LPM	Sample Time, Min.
ISO 8573 Class1	0.01	3200	140	23
ISO 8573 Class2	0.1	320	32	10
ISO 8573 Class3	1.0	200	50	10
ISO 8573 Class4	3.0	200	50	10
NFPA 99	1.0	1000	100	10

### Formula To Determine Sample Time

$$\frac{\text{AIR VOLUME}}{\text{FLOWRATE, LPM}} = \text{Sample Time, min.}$$

If you are unable to achieve above flowrates, adjust the number of minutes to sample based on the minimum air volume listed above by using the formula. Record filter number (if not already done), flowrate and total sampling time on data sheet.

### STEP 4 – Begin Other Contaminants Test

Source Bottle should remain in place until all other tests are complete.

*If YOU ARE NOT SAMPLING FOR OTHER GAS CONTAMINANTS; SKIP TO STEP 5.*

To avoid puncturing the blue cap, hold bottle holder at an angle with outer needle on lower side. Insert Source Bottle into Bottle Holder and gently press onto needles. **CAUTION DO NOT** twist Source Bottle when inserting or removing. Minimum amount of time is 5 minutes; however the Source Bottle should remain in place until all other tests are complete. **CAUTION** Do not puncture Source Bottle more than once.

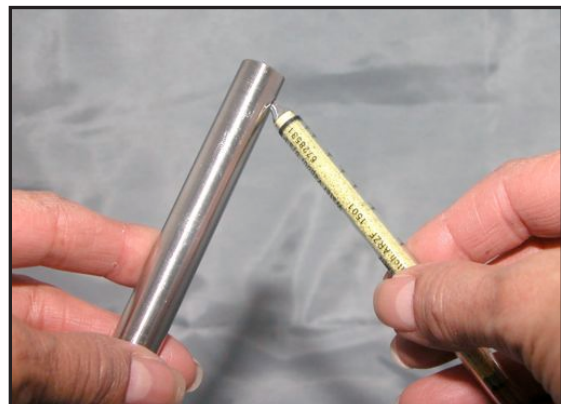


### STEP 5 – Begin Water Vapor Test

This portion of the test will take 10 minutes. *If YOU ARE NOT SAMPLING FOR WATER VAPOR; CLOSE NEEDLE VALVE CLOCKWISE AND SKIP TO STEP 6.*

Determine that the detector tube included in your kit is the correct tube for your anticipated water level based on type of compressor, pressure at sampling point, and filtration. There are two types: 5a/P for dry levels (-40°F through -4°F) and 20a/P for wet levels (-20°F through +50°F). Select the detector tube based on the Table for Water Levels below.

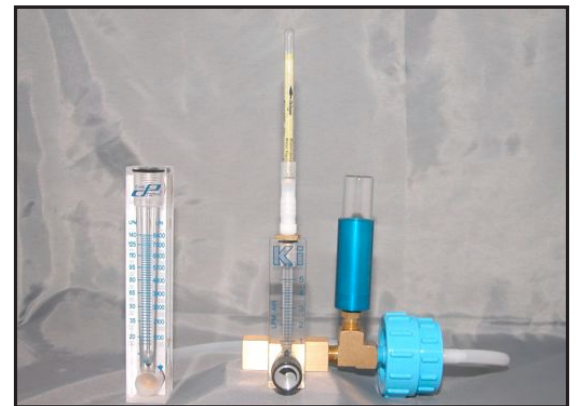
Turn Tube Flowmeter needle valve counterclockwise to obtain a flowrate of 4-5 L/min and allow to flow for 2 minutes to expel any absorbed water. Remove both tips of Detector Tube by placing each tip in small hole of Tip Breaker and applying sideways pressure until tip breaks.





Dew Point, °C / °F		0 (0)	12.5 (0.9)	25 (1.7)	50 (3.4)	75 (5.2)	100 (6.9)	125 (8.6)	150 (10.3)
-70 / -94									
-40 / -40									
-20 / -4									
+3 / +37									
+7 / +45									
+10 / +50									

**CAUTION** when opening or inserting tube, glass splinter may come off. Danger of injury due to sharp edges. Immediately place detector tube into white tubing atop Tube Flowmeter with arrow pointing away from Tube Flowmeter. Slowly rotate until tube end reaches fitting inside tubing. Adjust flowrate per Water Level Table and **BEGIN TIMING TEST**. At the end of Sampling Time per Water Level Table, close needle valve clockwise, remove tube, and immediately record number associated with color change from the tube, flowrate, sampling time, and sampling point pressure on data sheet. At any time during the test if the color changes on the detector tube to a grayish / reddish brown AND reaches the last line/reading on the tube, remove the tube and note elapsed time on data sheet. Immediately, and in no more than 1 minute, record the **NUMBER FROM THE TUBE** associated with the color change on the Detector Tube.



Refer to Table 4: Dew Point at Pressure for conversion of detector tube reading to Pressure Dew Point. This is for your information only. Please make sure that you write the reading from the detector tube on the data sheet; NOT the dew point from the table below. If water vapor test fails, you may wish to correct issues then resample.

Cap both ends of tube and apply netting. Place tube in return mailer.

### STEP 6 – Begin Oil Vapor Test

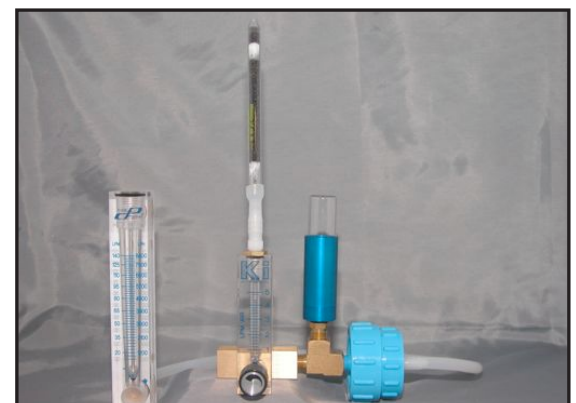
This portion of the test will take a minimum of 10 minutes or more depending on the ISO Class you select. **IF YOU ARE NOT SAMPLING FOR OIL VAPOR; CLOSE NEEDLE VALVE CLOCKWISE AND SKIP TO STEP 7.**

Remove tips of Oil Vapor Tube by placing tip in large hole of Tip Breaker and applying sideways pressure until tip breaks. Insert charcoal tube into tubing atop Tube Flowmeter with arrow pointing away from Tube Flowmeter. Adjust flowrate with needle valve to 4.0 L/min and sample for time as indicated in Oil Vapor Flowrate Table.

At end of sampling time, remove tube, close needle valve clockwise. Record tube number (if not already done,) flowrate and sampling time on data sheet. Cap both ends of charcoal tube and apply netting. Place charcoal tube in return mailer.

For each batch of samples that will be submitted at one time, prepare one field blank; select a charcoal tube, break tips and immediately cap. Enter the blank charcoal tube number on data sheet.

SPECIFICATION	Conc. Limit, mg/m <sup>3</sup>	Min. Air Vol., Liters	Recommended Flowrate, LPM	Sample Time, Min.
ISO 8573 Class1	0.01	1200	4.0	300
ISO 8573 Class2	0.1	120	4.0	30
ISO 8573 Class3	1.0	40	4.0	10
ISO 8573 Class4	3.0	40	4.0	10



### STEP 7– Stop Test • Review Paperwork • Return Sample

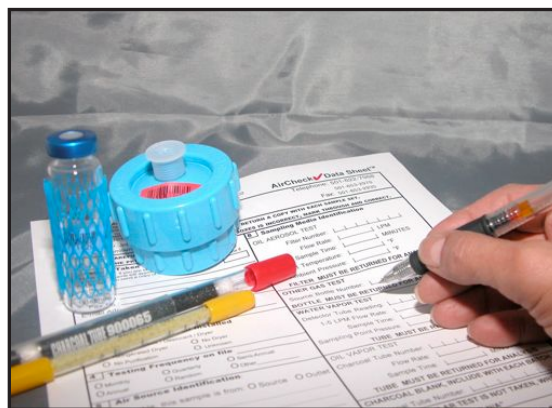
Remove Source Bottle, then turn open system valve. Replace caps onto filter cassette. Record bottle and Filter number (if not already done), flowrate, sample time, ambient temperature, and ambient pressure on data sheet.

Complete and review all Data Sheet information.

**RETURN five items to lab 1) FILTER CASSETTE 2) SOURCE BOTTLE 3) DETECTOR TUBE 4) CHARCOAL TUBE, and 5) Data Sheet** using the preaddressed return box.

**DON'T FORGET BATCH CHARCOAL TUBE BLANK.** Batch is to be determined by end user. Common practice is 1 charcoal tube per day of samples.

**SAMPLING MEDIA can only be used once. If you stop test in progress, restart with new set of sampling media.**



Provide all requested information on Data Sheet to avoid delays upon receipt at lab. **INSPECT BEFORE RETURNING** source bottle stopper, bottle holder needles, and filter for damage that may affect test results or future samples. If you observe bent needles, gouges in the stopper, or punctured blue cap; replace damaged needle(s) in Bottle Holder, and resample Other Gas Test using a new Source Bottle. It is acceptable to attach the same Filter Cassette used originally. Run test for 5 minutes. Make sure you add the additional 5 minutes to the Oil Aerosol Test Sample Time on the data sheet. Take time to perform this quick inspection prior to leaving sampling location to avoid incomplete samples and reporting delays. Ship samples immediately to lab via best method. Charcoal tube samples over 15 days are not valid and will not be analyzed .

Blue filter cassettes are reusable; if cassettes are lost or not returned, a replacement fee will be billed.

Samples requiring RUSH (same day) analyses should be shipped via reliable method such as UPS, DHL, or FedEx to arrive no later than 10:30 a.m. U.S. Mail is the slowest and least predictable method of delivery. All RUSH SAMPLES (additional charge applies) should be pre-scheduled with the lab before scheduled delivery.



		Table 4: Dew Point °F at Pressure psig (barg)							
Detector Tube	DT Reading, mg/m3	0 (0)	12.5 (0.9)	25 (1.7)	50 (3.4)	75 (5.2)	100 (6.9)	125 (8.6)	150 (10.3)
5 a/P	5	-81	-74	-69	-62	-56	-53	-51	-47
	10	-72	-63	-60	-51	-45	-44	-40	-36
	30	-56	-47	-42	-35	-29	-26	-20	-18
	50	-49	-40	-35	-26	-20	-17	-13	-9
	70	-44	-35	-27	-20	-15	-9	-6	-2
	100	-38	-29	-22	-15	-8	-2	1	3
	150	-33	-22	-15	-6	0	5	9	12
	200	-27	-17	-9	0	5	10	14	18
20 a/P @ 4 L/min	150	-33	-22	-15	-6	0	5	9	12
	300	-20	-9	-2	7	14	19	23	27
	400	-15	-4	3	12	19	25	28	32
	650	-8	5	12	23	30	36	41	45
	880	0	10	19	28	37	43	48	54
	1500	10	21	30	43	52	57	63	68
20 a/P @ 2 L/min	150	-20	-9	-2	7	14	19	23	27
	300	-8	3	10	21	28	34	39	43
	400	-2	9	18	27	36	41	45	52
	650	7	19	27	39	46	54	57	64
	880	12	27	34	46	54	63	68	73
	1500	25	37	48	61	70	79	84	90
ISO 8573 Class	Limits °F								
0									
1	-94								
2	-40								
3	-4								
4	37								
5	45								
6	50								

