Kit Number 486911-2
STARTUP KIT

PROFESSIONAL Screening Tool for Lead Levels in Paint

LeadPaintCheck-II

For use with eXact® LEADQuick™ Photometer

Instruction Manual

Please read this entire manual before using the test kit. LeadPaintCheck will accurately quantify the lead in your paint. Carefully follow the testing procedure as outlined in this manual. It is important to correctly perform the paint sample collection, homogenization, and testing steps. Review all procedures if you have not performed the test for over two weeks. The test procedure requires the handling of Nitric Acid, and sampling may generate lead dust. It is highly recommended that safety precautions are used including, but not limited to, a dust mask, appropriate gloves, safety glasses and protective clothing.

U.S. Patent #7333194

Sufficient for 50 Tests

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Industrial Test Systems, Inc.
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www.SENSAFE.com

Rev. 08/24/10

Paint Sampling* Instructions:

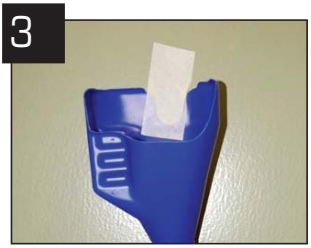
1

Label 15 ml Conical Tube to identify sample.

2

Attach 15 ml Conical Tube to Funnel System.

3



Tape Tube/Funnel System to painted wall.

4

Sharpen Cork Bore using Cork Bore Sharpener.

* Sampling procedure as modified from Gutknecht, et. al, J. Environ. Monit., 2009, **11**, 166-173.

5

With ½" Cork Bore, bore into paint surface just enough to cut through the masking tape.

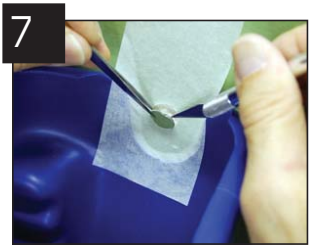
6

With forceps, remove ½" masking tape circle. Continue ½" Cork Bore cut through the layers of paint to the substrate. Use a back and forth rotating motion (see 5 above).

NOTE: For wood, especially uneven wood surfaces, including decorative molding, it is recommneded that the ¼" Cork Bore is used. Collect four (4) ¼" bore (circle) samples, which equal a ½" bore sample. Collect the four ¼" paint samples, similarly to the ½" cork bore. After boring through the paint to the substrate, use ½" chisel blade in scalpel handle to cut paint/substrate sample free from the wood. Then, dispense into the funnel system/15 ml Conical Tube. For metal surfaces, measure a ½" square sample area with pencil and ruler. Then, use the ½" chisel blade to scrape paint from the metal to collect the ½" square sample. All possible painted surfaces cannot be anticipated here. Use an appropriate system to accomplish the collection of the paint sample from ceilings. It is important to collect the required paint sample size (½" circle, four ¼" circles, or ½" square) for accurate Lead measurement.

Paint Sampling (Continued):

7

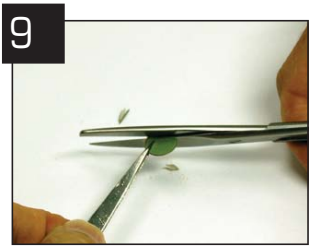


Once paint has been cut through, use forceps and sharp tip of scalpel to dislodge paint chip that remains attached to the wall.

8

If the paint chip is lodged in the Cork Bore, cut away excess substrate and then use the core remover to press the sample out of the cork bore and into the funnel. Brush all dust, drywall, or plaster material into the 15 ml Conical Tube.

9



Remove 15 ml Conical Tube from funnel. Now, carefully pour the sample onto a clean, flat sheet of paper. Removing excess substrate from the paint chip(s) is desirable, but not required. Cut the larger paint chips into small pieces using forceps and scissors. Cut slowly and carefully so the paint chip pieces stay on the paper.

10

Reattach 15 ml Conical Tube to funnel and pour the cut-up paint chips and sample back through the funnel. Brush all dust, drywall, or plaster material down into the 15 ml Conical Tube. Tap side of funnel as needed to dislodge all material into the 15 ml Conical Tube. Visually confirm that all paint chips have fallen into the 15 ml Conical Tube.

11

Cap 15 ml Conical Tube securely. Verify that the identification for the sample location matches the label on the 15 ml Conical Tube. This sample is ready for the Paint Homogenization Procedure.

NOTE: Sometimes static electricity can cause paint chips to "stick" in the funnel. There are two ways to resolve this problem:

Before you begin paint sampling, thoroughly spray the funnel and the brush with Static Guard (available in grocery stores). Allow the spray to dry, or wipe the excess from the funnel with a clean paper towel. This should reduce the static electricity to a manageable level.

If the static electricity problems continue: After the paint has been cut up into small pieces, placed into the funnel with the 15 ml conical tube attached, and most paint has been brushed downward, slowly add Acid-1 reagent to the funnel walls drop by drop. This will help the clinging paint material flow down into the conical tube. You may add Acid-1 reagent up to, but not over, the 2.5 ml line of the 15 ml conical tube. Rinse the funnel with clean water and dry before reuse.

Paint Homogenization* Procedure:

Assemble the Homogenizer:
Attach the stainless steel Homogenizer tip holder by pushing up and twisting clockwise; securely tighten lock screw. Snap plastic clamp holder into place and secure homogenizer to ring stand with clamp. Push up Omni tip (clean and assembled) and lock in place by twisting clockwise. Homogenizer system is ready for use. Caution: Do not turn on without Omni tip in sample.

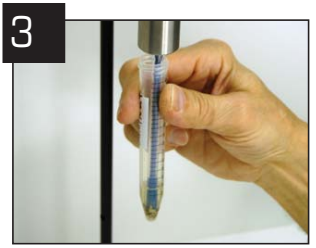
1

Uncap the 15 ml Conical Tube and add Acid-1, Part No. 486999 (25% Nitric Acid) solution to the 2 ml line (do not fill over 2.5 ml). If foaming occurs the acid addition may need to be stopped until the foaming subsides. Foaming may occur when carbonate materials, in the sample, react with the acid. Add Acid-1 slowly to prevent foam from reaching the top of the tube (which can result in loss of sample).

2

After the 2 ml Acid-1 addition, the sample will typically appear this way.

3

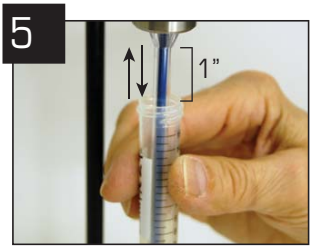


Holding Conical Tube firmly and securely, position the Omni Tip all the way to the bottom of the 15 ml Conical Tube.

4

Confirm Homogenizer is set for MAX Speed (speed positioned all the way to the right). Hold the tube firmly and turn on Homogenizer for two minutes.

5



During the two minutes, slowly move the Conical Tube up and down about 1 inch at 5-10 second intervals. After the two minute Homogenization, examine sample by lowering tube by 1 inch (do not withdraw more then 2 inches to avoid acid drips). Examine the paint sample at the bottom of the Conical Tube. If it appears to have visible paint particles then continue homogenization for another minute. Homogenization beyond three minutes is not necessary.

* Homogenization procedure as modified from Gutknecht, et. al, J. Environ. Monit., 2009, **11**, 166-173.

Paint Homogenization Procedure (Continued):

6

When the homogenizing step is completed, move 15 ml Conical Tube down about 2 inches and twist Omni tip to the left to release. Allow Omni tip to slowly drop to the bottom of the 15 ml Conical Tube and place tube and tip in rack or tube holder. Withdraw blue rod from Omni tip and use the wash bottle, with lead free water, to rinse the blue rod and to dislodge loose homogenate into the 15 ml Conical Tube. Similarly, while withdrawing the Omni tip, rinse inside and outside.

7

Finally, add water to the 15 ml line on the 15 ml conical tube. Cap and mix sample thoroughly (back and forth 4 or more times); this is called the Homogenized Paint (HP) sample. The HP sample is stable. You can let the sample sit for 15 minutes or longer to allow the solids to settle or you can do the 1:500 dilution immediately.

8

Prepare a 1:500 dilution of the Homogenized Paint (HP) sample. First, add lead-free water to a clean 50 ml Conical Tube to exactly the 50 ml line.

9

Securely attach a clean, dry 100 µl pipette tip to the Accumax pipetter. Use proper pipetting procedure to dispense 100 µl of HP sample into the 50 mls of lead-free water (for pipetting details, see page 6).

10

Cap the 50 ml Conical Tube securely and mix the sample. Label the diluted HP sample properly. Sample is now ready for LEADQuick™ testing (test diluted HP sample within 24 hours).

NOTE: After completing step 10, clean the Omni tip immediately. Ideally, rinse (both blue rod and clear plastic Omni tip) with clean water in a sink. Another rinse option is to drop the blue rod and clear plastic Omni tip into a container with clean water, swirl to rinse, and remove. After rinse, shake off excess water and dry with paper towel (both procedures). Each blue rod and Omni tip can perform about 20 homogenizations. Examine blue rod and clear plastic Omni tip for wear and breakage before reuse. Physical removal of paint from the blue rod "teeth" may be necessary.

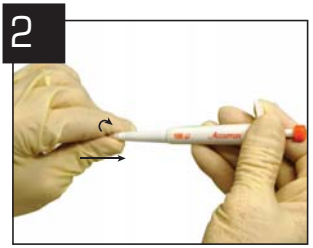
Proper Pipetting and Use of LeadPaintCheck HP Standard:

This kit includes a standard to use as a quality control check. A correctly diluted HP sample is important for best results; use the LeadPaintCheck HP Standard weekly to check pipette performance and your pipetting technique and accuracy. Perform the LeadPaintCheck HP Standard testing if the pipette has been dropped, immersed in water, or subjected to rough handling that may affect its performance. Also, run the LeadPaintCheck HP Standard if you have reason to suspect a test error, if the meter is dropped, or if there are any other unusual circumstances. If your result is within the standard specification, then the pipetting and testing are being performed properly.

1 (NO PICTURE)

Add lead-free water to a clean 50 ml Conical Tube to exactly the 50 ml line.

2

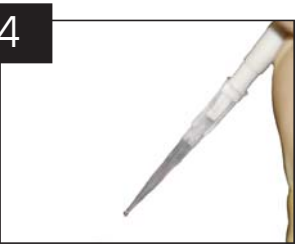


Get a clean pipette tip and firmly attach the tip to the end of the pipette.

3

Hold the pipette in your hand with your thumb on the orange button. Slowly press the button until the pipette plunger reaches the first stop. While holding the button down, immerse about a quarter of the tip into the LeadPaintCheck HP Standard. Slowly release the button. The plunger will rise and the pipette tip will fill with sample.

4



When correctly filled, the sample will fill to the top line inscribed in the pipette tip (about ¾ full). There must not be any air bubbles or voids in the sample contained in the pipette tip.

5

Dispense the 100 µl of LeadPaintCheck HP Standard into the 50 ml of lead-free water. Press the orange button down to the first stop and continue pressing to the second stop to empty the tip. This motion can be repeated to completely empty the pipette tip.

6 (NO PICTURE)

Securely cap the 50 ml conical tube and mix well. Test the sample using the Lead in Paint Test Procedure on page 8 of the manual. A result in the certified abs range for the lot of LeadPaintCheck HP Standard (typically .320–.370 abs) verifies that the equipment and technique used are within expected limits. Dispose of pipette tip.

Startup Kit Part Number 486911

1. eXact® LEADQuick™ colorimeter (476nm) **(486900)**
2. (2) LeadPaintCheck Reagents for 100 tests **(486905)**
3. Homogenizer Kit by Omni **(486950)**
4. 500 ml Wash bottle (lead free, low TDS water not supplied)
5. (50) 15 ml Plastic conical tubes with rack **(486952)**
6. (50) 50 ml plastic conical tubes **(486953)**
7. ½" cork bore
8. Cork bore sharpener **(486954)**
9. Accumax Jr. 100 µl pipette **(486955)**
10. (96) Pipette tips for 100 µl pipette **(486956)**
11. ¼" cork bore **(NOT PICTURED)**
12. Sharp scissors (small) **(NOT PICTURED)**
13. Forceps (small)
14. Rod and base to hold Homogenizer **(S1000)**
15. Small brush
16. Funnel System (blue) for paint chip collection
17. Scalpel with blades (2 types)
18. Masking tape 2 inches wide
19. Cork bore remover
20. Video (CD) **(NOT PICTURED)**
21. LeadPaintCheck HP Standard (15 ml) **(486990) (NOT PICTURED)**

Lead in Paint Test Procedure

Paint Sample Size	Equivalent Square Centimeter (sample area)	Negative for Lead (abs value)	Borderline (abs value)	Positive for Lead (abs value)	Definite Positive for Lead (abs value)	High Positive for Lead (abs value)
1.0 cm2	1.000					
½" circle	1.266	<.220	>.220 - <.260	>.260	<.350	>.600
4 x ¾ circle	1.266	<.220	>.220 - <.260	>.260	<.350	>.600
½" square	1.613	<.290	>.290 - <.340	>.340	<.500	>.700

1 **Diluted HP SAMPLE**
Confirm diluted HP sample is ready for testing.

2 **TURN METER ON**
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last result.

3 **SELECT TEST: PA1**
Press and re-press the **MENU** button until the display shows the parameter PA1.

4 **ADD SAMPLE TO CELL**
Rinse the **CELL** at least 3 times with the diluted HP sample. Finally, fill cell to capacity (4 ml) with the diluted HP sample.

5 **ZERO METER**
Press the **ZERO/ON** button. The cursor will move across the display followed by **.000 abs**. Sample is ready for testing.

6 **ADD REAGENT Pb-2**
Add two (2) drops of ***eXact® Reagent Pb-2, Part No. 486998*** into cell. Do not add more than two drops or test is invalid.

7 **DIP STRIP AND PRESS "READ"**
Dip the ***eXact® Strip Pb-3, Part No. 486997*** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears**. The display will flash and begin immediately counting up from **1 to 60**. After the 60 seconds, the cursor will move across the display, and then display the result. Record your **abs** result (this result is automatically stored in PA1). After testing is complete discard sample and rinse cell immediately.

8 **INTERPRET RESULT**
Using the **abs** value, determine the paint Lead level using the chart on page 9.

NOTE: The "abs" value you get will be dependent on the amount of Lead that is present; the higher the reading, the higher the lead concentration in the sample.

eXact® LEADQuick™ Photometer Operation

The eXact® LEADQuick™ Photometer is controlled by three buttons:

1. **ZERO/ON** When first pressed, this button turns the meter on, displays all annunciators, displays the current MENU selection, and then displays the last result. When the meter is on and this button is pressed, it zeroes the sample in the cell. Once the meter is zeroed, this zero value applies to all menu parameters and is stored and retained even when meter turns off. It is recommended that each new sample analyzed is zeroed before testing, to maximize sensitivity and accuracy. Should the meter turn off in the middle of a test, the last stored zero in the meter will remain valid when the meter is turned on again.

2. **MENU** With each press, when the meter is on, the MENU button advances through the tests in the following sequence: PA1, PB2, HG3, CD4, PB5, and PB6. Each test menu can store up to 20 results. To retrieve the stored results, go to the desired test using the MENU key. When the desired test is displayed, release the button and allow meter to display the last test result in that MENU. Then, press and hold down the MENU key. Continue holding down the MENU key to scroll the stored results for that test, starting with the most recent result. The meter will retrieve from stored memory and display the last 20 readings in sequence beginning with -20, which is the latest result, followed by -19, which is the 2nd latest result … finally -01, which is the oldest result retained. Only the last 20 readings are stored in each menu. This meter is able to store 60 results in memory (20 in each menu).

3. **READ** When pressed once, this button starts a **20 SECOND** countdown timer for the parameter being tested. If READ is pressed a second time during the countdown, the meter exits the current timing and performs the next function, which is the 60 second count-up timing. During the count-up timing, if READ is pressed, the meter exits the timing to read the sample, followed by storage of the measurement in memory.

If the parameter being measured is below or above the detection range, the display will show "LO" (Under Range) or "HI" (Over Range), respectively. This feature is menu specific.

To save power, the meter is designed to turn off after 3 minutes (timed from the last button pressed).

Interpreting Your abs Result For Lead

According to the EPA Lead above 1.0 mg/cm^2 (1.0 mg Lead/cm^2) in a paint surface should be considered positive for Lead. LeadQuickCheck offers two paint sampling methods. The first method uses cork bores of either one ½" circle or four ¼" circles, and each gives a paint sample area of 1.266 cm^2. The second method uses a ½" by ½" square sample area (1.613 cm^2) that is "chiseled or scraped off" using a ½" scalpel device, and is recommended for sampling paint on metal, concrete or wood molding (substrates where sampling a circle would be difficult). The abs cutoff values given below relate to the EPA regulation value of 1.0 mg Lead/cm^2.

Paint Sample Size	Equivalent Square Centimeter (sample area)	Negative for Lead (abs value)	Borderline (abs value)	Positive for Lead (1) (abs value)	Positive for Lead (1.5) (abs value)	High Positive for Lead (2) (abs value)	High Positive for Lead (3) (abs value)
1.0 cm^2	1.000	———	———	———	———	———	———
½" circle	1.266	<.230	.231 to .281	.282 or higher	.430 or higher	.550 or higher	.740 or higher
4 x ¼" circle	1.266	<.230	.231 to .281	.282 or higher	.430 or higher	.550 or higher	.740 or higher
½" square	1.613	<.290	.291 to .349	.350 or higher	.570 or higher	.730 or higher	.800 or higher

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Recommendations:

Negative: This sample is negative with Lead below 1 mg/cm^2.

Borderline: This sample is borderline for Lead. To make a final determination whether this sample is negative for Lead, it is highly recommended that you collect another sample of the paint, followed by homogenization and testing of the diluted HP sample. If this is not possible, retest the HP sample. The average of the **abs** values for this sample should be used as your final value. If your average **abs** value continues to be borderline, then you should consider this sample negative (Lead below 1.0 mg/cm^2).

Positive: This sample is positive with Lead at 1 mg/cm^2.

Positive: This sample is positive with Lead about 1.5 mg/cm^2.

High Positives: This sample is positive with Lead about 2 mg/cm^2.

High Positives: This sample is positive with Lead about 3 mg/cm^2.

NOTES

Paint Sample	Test Date	Location Description	abs Value	Lead Level

NOTES

Paint Sample	Test Date	Location Description	abs Value	Lead Level

Summary of LEADQuick™ Chemistry:

Lead in the diluted Homogenized Paint (HP) sample is solubilized as Pb^{2+}. After zeroing the sample, Pb-2 Buffer is added to make the solution mildly alkali (pH 9-10). The eXact® Strip Pb-3 is dipped for 20 seconds with gentle motion, which adds the porphyrin indicator and mixes the solution. After a one minute wait, which allows for the porphyrin and Pb^{2+} to form a colorimetric complex, the eXact® LEADQuick™ Photometer measures the optical density (color) as an absorbance number (abs). The "abs" value you get will be dependent on the amount of Lead that is present; the higher the reading, the higher the lead concentration in the sample.

A similar procedure using the porphyrin 5,10,15,20-tetrakis(1-methylpyridinium-4-yl) porphine as indicator is described in K. Kawamura, et al, Mirochim Acta **157**, page 87-91 published in 2007. For convenience the indicator is referred to as TMPYP. Our modified test procedure uses TMPYP and is covered by a US Patent. In combination with the eXact® Strip reagent delivery device, and by not removing the cell in the meter between the zeroing and reading steps; LEADQuick™ delivers optimum accuracy and sensitivity. Please refer to the Lead Test Interference chart (Table 1) for details as to what concentration of ions the test will not tolerate. From our lab studies with LEADQuick™ we find no interference with any of the listed ions at the concentrations typically found in paint.

For best results, we recommend this test be done on freshly Diluted Homogenized Paint samples. For accurate results, after the Pb-2 addition and Pb-3 dip steps, the pH at the end of the test should be between 9.0 to 10.0 pH.

A test kit is also available for detection of Lead in Water, Lead in Soil, and Cadmium and Mercury in Water. Contact our Sales Department for details or visit our website www.sensafe.com.

Lead Test Interferences

Ion	Interference Level	Ion	Interference Level
Aluminum, Al^{3+}	2 mg/L	Magnesium, Mg^{2+}	200 mg/L
Barium, Ba^{2+}	3 mg/L	Manganese, Mn^{2+}	0.5 mg/L
Bromide, Br^-	20 mg/L	Mercury, Hg^{2+}	0.01 mg/L
Cadmium, Cd^{2+}	0.07 mg/L	Nickel, Ni^{2+}	1 mg/L
Calcium, Ca^{2+}	500 mg/L	Nitrogen, Ammonium, NH_4^+	40 mg/L
Chloride, Cl^-	150 mg/L	Nitrogen, Nitrate, NO_3^-	20 mg/L
Chromium, Cr^{3+}	0.1 mg/L	Nitrogen, Nitrite, NO_2^-	300mg/L
Cobalt, Co^{2+}	1 mg/L	Phosphate, PO_4^{3-}	100 mg/L
Copper, Cu^{2+}	5 mg/L	Sulfate, SO_4^{2-}	200 mg/L
Fluoride, F^-	40 mg/L	Tin, Sn^{2+}	0.2 mg/L
Iron, Fe^{2+}	0.2 mg/L	Zinc, Zn^{2+}	2 mg/L
Iron, Fe^{3+}	0.1 mg/L		**Rev. 07/03/07**

Spiked Recovery Test Method for Interferences:

The Spiked Recovery Test Method (also referred to as Standard Additions Method) is used to verify that LEADQuick™ gives accurate results for your sample. If you find an unexplained difference in results when compared to another test method it is reasonable that you should resolve the issue. A good way to resolve the issue is by a technique commonly used by analytical chemists every day. This technique is often referred to as Spiked Recovery Test Method for Interferences. The following information explains how to perform the test method. You will need a Lead standard solution. The idea behind this method is as follows:

1. Add a known amount or concentration of Lead standard solution to the questionable sample. This is now the "spiked sample." It is recommended to add a Standard Solution amount that is at least 100ppb (which is about .200 ABS)

2. Test the spiked and un-spiked (original) samples using the same reagents, instrument and technique or test method. The spiked sample should show an increase equal to the amount of standard added. The value obtained is called the **Recovery**. Ideally the % recovery is 100%. Results are acceptable if the % recovery is +/- 10%. The formula for calculating percent Recovery is below.

3. If the percent recovery is not in the acceptable range there may be interferences. You can consider diluting the sample with lead free water past the point of interference, within the detection limit of the test kit. You can also consider calculating the actual lead in the sample (see below) as long as the % Recovery is above a reasonable level such as 40%.

The percent recovery formula is as follows:

$$\% \text{ Recovery} = \frac{100(Cs-Cu)}{K}$$

Where:
Cs = concentration found through testing of the spiked sample
Cu = concentration found through testing of the un-spiked sample
(NOTE: result should be adjusted for the dilution of the spike volume if volume change is more then 5%)
K = concentration of the spike added to the sample

Example 1: An un-spiked questionable sample reads .400 ABS as Lead. A separate 4 ml portion of the questionable sample was spiked by adding 40 µL of a 10 ppm Lead standard solution. This is the equivalent of adding 100 (or .200 ABS) ppb Lead to the sample. The spiked solution was measured by the same method as the original sample. The Spiked result was .590 ABS (Cs)

Cs = .590
Cu = .400
K = .200

$$\% \text{ Recovery} = \frac{100(.590-.400)}{.200} = 95\%$$ (Recovery result acceptable)

Example 2: In another water sample using a similar spiked method as in Example 1 the results were

Cs = .590
Cu = .450
K = .200

$$\% \text{ Recovery} = \frac{100(.590-.450)}{.200} = 70\%$$ (Recovery result unacceptable)

Calculating the Lead: In this example the percent recovery value is low and suggests that, with this test, the water sample gives lead results that are 30% lower than the actual concentration. To calculate the concentration of lead in this sample divide the expected recovery (100%) by the observed recovery (70%) to get the interference correction factor (100% / 70% = 1.43). Multiply the interference correction factor by the un-spiked sample result (Cu) for the actual concentration of lead in the sample (1.43 x .450 = 0.643 ppb).

eXact® LEADQuick™ Photometer Messages

The following are some common messages that may be displayed, including error messages. If an error message other than those listed below is displayed, please contact technical support in the USA at (803) 329-0162 (ext. 0).

LCD Message	Description	Corrective Action
HI	In READ mode: test sample concentration is above the measurement range (test specific).	Dilute and retest. Dilution Kit available (Part Number 487200).
LO	In READ mode: test sample concentration is below the measurement range (test specific).	Sample value is below measurement range.
LO	In ZERO mode: sample absorbance (due to a cloudy or colored sample or a dirty cell) is too high to zero, the meter will read "LO".	Dilute sample, filter sample, or clean cell. One of these options should remedy the problem.
+ –	Low battery indication.	Replace the batteries.

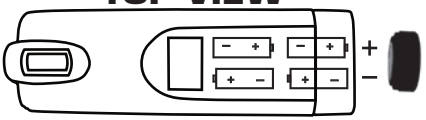
About The Built-In Cell/Cleaning Cell

The built-in **CELL** is transparent plastic and, when filled to the top, contains 4 ml. The sturdy **CELL** design will last for over 20,000 readings. Scratches on the **CELL** will not interfere or compromise the accuracy of the readings because of its fixed position. For best accuracy, rinse cell with clean water immediately after a test is completed. Do not use solvents, such as acetone, to clean the cell. After approximately 500 tests, it may be necessary to clean the **CELL**. Clean as follows: Fill cell with clean water and move the **Cell cleaning brush** up-and-down and back-and-forth along the walls of the cell. Afterwards, rinse the cell and the meter is ready for use again. If staining has occurred from TMPYP indicator, fill cell with a 1% acid solution. After 20 seconds, discard solution and rinse cell several times with clean water. Meter is ready for testing.

To Replace/Install "AAA" Batteries:

1. Unscrew the O-ring sealed battery cover counter-clockwise. Do not disturb the sealing O-ring.
2. Remove the used batteries.
3. Install 4 new Alkaline AAA batteries following the diagram for correct polarity (see below).
4. Replace the battery cover. Be sure to tighten the battery cover very securely to maintain waterproof feature.
5. Dispose of the used batteries in accordance with your local regulations.
6. Press **ZERO/ON** button to confirm the meter turns on. The meter is now ready for operation.
7. Meter will not work if battery orientation is incorrect.

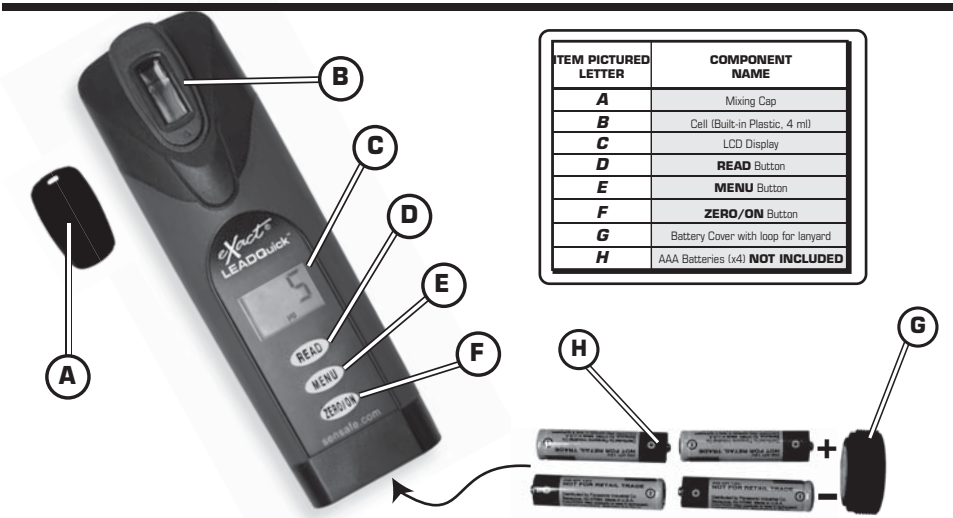
TOP VIEW



eXact® LEADQuick™ Photometer 2-Year Limited Warranty

Registration of your eXact® LEADQuick™ must be received within 30 days from date of purchase to activate the warranty. The eXact® LEADQuick™ is warranted to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase by the customer. ITS will repair or replace any part of the product which is deemed to be faulty or otherwise defective. The non-transferable warranty does not cover product damage caused by abuse (such as crushing a tablet in the cell) or improper use. If the meter is faulty or otherwise defective contact ITS by phone (+1-803-329-9712 Ext. 0) or email (its@sensafe.com) to describe the problem and obtain a return authorization form before returning the photometer to ITS. Damage caused by improper packing of the photometer for return shipment to ITS will not be covered by the warranty. Customer is responsible for shipping charges to ITS. ITS pays postage when photometer is returned to customer. A maximum processing fee of $150 will be charged for repair or replacement of non-registered photometers and damages not covered by this warranty. Registration is available over the phone (+1-803-329-9712 Ext. 0) or online at http://www.sensafe.com/micro/warranty/ (Personal data is kept confidential)

eXact® LEADQuick™ Photometer



ITEM PICTURED LETTER	COMPONENT NAME
A	Mixing Cap
B	Cell (Built-in Plastic, 4 ml)
C	LCD Display
D	**READ** Button
E	**MENU** Button
F	**ZERO/ON** Button
G	Battery Cover with loop for lanyard
H	AAA Batteries (x4) **NOT INCLUDED**

eXact® LEADQuick™ Meter Specifications

Measurement Method:	Photometric
Light Source:	Light Emitting Diode (LED)
Wavelength:	476 nm
ABS Range:	.001 - 2.00
Photometric Precision:	.001
Automatic Range Selection:	See Specifications below
Display:	3-digit customized liquid crystal display with annunciators
CELL Pathlength:	20mm

Cell Chamber:	Custom-molded, proprietary, PET plastic fused into chamber, non-removable
Sample Required:	4 ml (0.13 oz)
Operating Temperature Range:	0 - 50°C (32° - 122°F)
Power Supply:	(4) AAA alkaline batteries **NOT INCLUDED**
Battery Life:	2000 tests with alkaline batteries
Electromagnetic Compliance: (EMC)	Emitted Interference - EN 61326 Immunity to Interference - EN 61326
Waterproof Rating:	Exceeds IP67
Weight:	Instrument: 140 g (5 oz)
Dimensions:	Instrument: 5 (W) x 3.5 (D) x 16.5 (H) cm; (2 x 1.4 x 6.375 in)

We offer a "Green" Alternative

eXact® Strip LEADQuick™ has been designed to offer the user a more "Green" and cost-effective alternative to testing. Instead of using a 10 ml water sample, *eXact® Strip LEADQuick™* uses a 4 ml water sample, which uses up to 60% less chemical per test. The accuracy of the meter is maintained by designing the photo cell with a 20mm pathlength.

eXact® LEADQuick™ Specifications

Menu	Tests for	Range	Resolution	+/- Accuracy
PA1	Diluted Homogenized Paint Lead	.000 to 1.99 abs	.001 abs	.003 or 4% abs
PB2	Lead in Water (auto-zero)	3 - 800 µg/L	1 µg/L	3 µg/L
HG3	Mercury in Water (auto-zero)	10 - 600 µg/L	1 µg/L	6 µg/L
CD4	Cadmium in Water (auto-zero)	.01 - .80 mg/L	.01 mg/L	.06 mg/L or 4%
AB5	Future Tests or Custom Tests	.000 - 1.99 abs	.001 abs	.003 or 4% abs
PB6	Lead in Water	3 - 800 µg/L	1 µg/L	3 µg/L

Kit Specifications:

The test, meter, and reagents detect such low levels of Lead that a 1/500 dilution (0.10 ml/50 ml) must be performed of the Homogenized Paint. Minimum detection is 0.03 µg of Lead, and accuracy is +/-0.03 µg or +/-12% (whichever is higher), when used with an eXact® LEADQuick™ Photometer. The MCL (**M**aximum **C**ontaminant **L**evels allowed) for Lead in Paint as set by the USEPA for Pb^{2+} is 1.0 mg/cm^2.

Important Comments about LeadPaintCheck

1. Collected paint chip samples are stable indefinitely in the 15ml Conical Tube if securely capped.
2. The Homogenized Paint (HP) samples can be stored indefinitely in the 15 ml Conical Tube as long as tubes are securely capped. HP samples do not need to be remixed before sampling for preparing Diluted HP samples. Sediment is not critical in the Lead Paint determination. Only the supernatant (liquid) is critical for analysis.
3. Water for Wash bottle is not supplied in the kit and can be purchased from grocery and drug stores. Use either RO water, Distilled water, or Deionized water. Lead free tap water can be used but must be verified to be low in TDS (below 150 µS/cm or 150 PPM), low in Calcium and Magnesium (soft water below 100PPM), and low in Sulfate and Chloride (below 20 PPM) levels.
4. Please use proper precautions when working with paint. Lead Dust is a serious health risk.
5. Acid-1 Reagent contains 25% Nitric Acid. Wear proper safety gear such as safety glasses, lab coat, and appropriate gloves.
6. The 15 and 50 ml conical tubes are reusable. To reuse, first dispose of the acidic samples according to local environmental laws. Then, rinse tubes and caps several times with clean tap water. When rinsing out the 15 ml conical tubes, be sure that all the sediment is removed. Shake off excess water.
7. When working with the Scalpel, use caution to avoid injury from the sharp blade.
8. Be sure that you sharpen the ½" and ¼" cork bores before each use to facilitate the collection of the paint core. For brittle paint, accurate core size collection may be difficult to judge. For brittle paint, you may choose to collect enough paint chip samples that would fit a ½" circle or ½" by ½" square area. Then homogenize and test accordingly. Be sure that you use the appropriate column from the "Interpreting Your abs Result For Lead" (page 9).
9. The Paint Sampling Instructions, step 6, recommend that you remove the masking tape circle. Leave masking tape on when collecting fragile or brittle paint samples. The masking tape does not influence the Lead result. If you leave the masking tape on the paint sample, homogenization for the full three minutes may be required to reduce the tape particle size. Blue masking tape can be used.
10. The LeadQuick test will yield quantitative Lead results for Yellow (Lead Chromate) or White Lead (Lead Carbonate) Standards. Laboratory results indicate that at lower Lead levels the differences in results (lower abs values for Lead Chromate paint) between these two types of Lead Paint samples are mostly influenced by the extraction efficiency of the 25% Nitric Acid and the Homogenization step. For Lead above 2 mg/cm^2, the extraction efficiencies are similar for white and yellow Lead paint.
11. Physical removal of paint particles adhering to the Blue Rod used in the Omni Tip can be accomplished with a light physical action using a mild abrasive cloth or very fine sandpaper. This is not required; However, accumulated paint on the Blue Rod may hamper removal of the Blue Rod from the Omni Tip.
12. Be sure Funnel is free of large particles before new paint sampling begins (wipe with damp cloth between samples).
13. The procedure in this booklet uses paint samples of ½" circle, four ¼" circles, or ½" square; but Lead levels are reported as mg Lead/cm^2.
14. This kit can be modified for determination of Lead in dust, soil and air. Contact our technical department for details.
15. It is recommended to cut Lead paint into smaller pieces over a letter size (81/2 X 11") paper (step 9 in Paint sampling procedure).
16. The Lead determination is given as mg Lead per cm2. A procedure for determining mg Lead per gm of paint is available and requires an Analytical Balance.
17. Items required but not supplied with this Kit include: letter size paper, timer, ruler with inch scale, safety equipment and supplies, water, permanent marking pen.
18. A trained operator of this kit can typically collect and analyze about 20 to 30 samples in an 8 hour day.
19. This booklet does not specify the paint areas to sample or the number of samples required to correctly assess the amount of Lead present in the painted surface.
20. Because the HP sample is diluted 1/500 (100ul/50 ml) before Lead analysis, carryover from previous positive paint to negative paint is minimized and therefore diligent cleaning of equipment between samples in not required. So reuse of the same gloves, cork bore, funnel, paper, is allowed. However, diligent observation is required to minimize carryover of visible paint chips.
21. Sample collection documentation requirements are not given in this booklet.

eXact® LEADQuick™ Tips For Best Accuracy

1. Become familiar with the meter and the test by reading the instructions carefully.
2. Paint sampling must be done with utmost care. The ½" sample core must be transferred to the 15 ml Conical Tube in chips small enough to allow the Homogenization step to effectively release Lead from the paint into the Acid Homogenate.
3. Observe the 20 second dip time for accurate results.
4. Test immediately after adding PB-2 to the **CELL**.
5. Be sure the **CELL** is filled to capacity (4 ml).
6. Sample water that may splash out of the **CELL** during movement of the eXact® Strip Pb-3 will not affect accuracy, as long as the cell is at least 50% full at completion of test.
7. Rinse the **CELL** with clean water immediately after completing the test. *(Test reagents will stain or coat the **CELL**)*
8. Store the meter and all test materials out of direct sunlight and away from chemical storage areas.
9. Minimize exposure of meter and test reagents to heat above 80°F (27°C).
10. Dry the outside of the meter when testing is complete and before storage of the meter.
11. Each eXact® Strip Pb-3 is valid for **ONLY** one test. Discard strip after single use in regular trash that is inaccessible to children and pets.
12. Each bottle of eXact® Strip Pb-3 contains the quantity of strips notated on the bottle. Due the manufacturing process, you may find one or two strips that are noticeably smaller or larger in width than the normal strips in the bottle. These should be discarded. Using these strips may give incorrect results.
13. When conversion tables are supplied, a unique revision number is located in the bottom right corner of the chart. It is recommended that you visit www.LeadPaintCheck.com every 6 months to check for any updated revisions.
14. The mixing cap, or cell cover, supplied with the meter is not used in the paint testing procedure.
15. Our lab testing with the LEADQuick™ photometer has shown that zeroing and measuring of the sample does not require use of a cell cover for accurate results, even in full sunlight.
16. Remove batteries when meter is not used for more than a month.
17. The 15 ml and 50 ml plastic Conical Tubes can be reused. Note that local government regulations may require that samples with Lead present be disposed as hazardous waste. To discard samples safely down the drain, this procedure is recommended: With cold water running at a moderate rate, uncap the conical tube and pour slowly into the sink, in running water, without splashing the acid contents. After content of Conical Tube is disposed of, rinse out the tube and cap several times with clean water. Allow excess water to drain from tubes and caps. Air-drying before reuse is unnecessary.
18. For wash bottle, use lead-free, low TDS water such as RO water, DI water, or Distilled water.
19. The Homogenizer tips (Omni plastic tips) include a blue rod and a clear plastic Omni tip. An adapter is necessary to mount Omni Tips to the Homogenizer motor drive. The stainless steel Adapter and Omni Tips use a quarter-turn bayonet mount. To attach the Adapter into the motor housing as far as possible, turn clockwise, release, and secure screw for adapter. Use same procedure to mount the Omni Tips to the adapter: with Blue Rod inserted in the Omni Tip push unit into Adapter as far as possible, turn clockwise and release. The Blue Rod and Omni Tip Should not be used for more then 20 Homogenizations without careful examination of the Blue Rod and Omni Tip.
20. Wear appropriate safety and Personal Protective Equipment (PPE) to safeguard against lead dust during Lead Paint Sampling.
21. Wear appropriate safety and protective clothes and gear (safety glasses and rubber gloves) when using the Acid-1 Reagent which is 25% Nitric Acid.
22. Removing excess substrate from the paint chip(s) is desirable, but not required, unless the substrate volume exceeds the paint chip volume.
23. Unexpected results usually trigger re-analysis. Before re-analysis is initiated investigators must rule out analytical errors such as mislabeling, testing error, improper sampling, or improper pipetting. A good place to start is to confirm your testing technique by running the Lead Standard.

MSDS 1

Material Safety Data Sheet

Section 1 **Chemical Identification**

Catalog # / Description: Part Number 486999
Name: eXact® Reagent Acid-1 (17 ml)

Section 2 **Composition / Information on Ingredients**

CAS #:7697-37-2 Nitric Acid 25-32%
CAS#: 7732-18-5 Demineralized Water 75-68%
Caution: CORROSIVE and Oxidizer ingredients

Section 3 **Hazards Identification**

Clear colorless liquid causes BURNS:
Eye contact: Causes eye burn
Skin Contact : Causes burn
Ingestion: Can cause acid burn including nausea, abdominal pain. Wear safety glasses with top and side shields and latex gloves when handling. Irritating to nose and throat. Avoid inhalation. Remove and wash contaminated clothing before reuse.

Section 4 **First-Aid Measures**

- If swallowed, give 1-2 glasses of water. Call a physician or the Poison Control Center as a precaution.
- In case of skin contact, flush with copious amounts of water for at least 2 minutes. Remove contaminated clothing and shoes.
- In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Call physician.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 5 **Fire Fighting Measures**

Not Flammable, but reacts with many metals forming hydrogen gas, which is flammable. Because of small volume in bottle, use media appropriate for surrounding fire conditions.

Section 6 **Exposure Controls / Personal Protection**

Have an eyewash station nearby. Do not expose to eyes, skin, or cloth ing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 **Physical and Chemical Properties**

Appearance and Odor:

- Clear, colorless liquid with no odor

Physical Properties:

- Melting Point: Not Applicable
- Vapor Pressure: Not Applicable
- Specific Gravity: about 1.2
- Vapor Density: Not Available
- pH: < 0.1
- Stable when stored at room temperature.

Hazardous Polymerization:

- Will not occur.

Section 8 **Toxicological Information**

- Ingredient toxicological data:
- Nitric acid oral Human LDLo=430 mg/kg
- Each bottle contains about 17 ml liquid
- HMIS and NFPA classification for Health: 3 and Reactivity: 1
  Wash hands after use and avoid skin, eye contact.
- This product may be shipped as part of a chemical test kit composed of various compatible components because of it's small volume.

Section 9 **Other Information**

The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets.

MSDS 2

Material Safety Data Sheet

Section 1 **Chemical Identification**

Catalog # / Description: Part Number 486998
Name: eXact® Reagent Pb-2 (7 ml)

Section 2 **Composition / Information on Ingredients**

CAS#: 115-69-5 2-Amino-2-Methyl-1,3-Propanediol (AMP) 7%
CAS# 77-86-1 Tris(hydroxymethyl)-aminomethane (TRIS) 15%
CAS# 7732-18-5 Demineralized water 78%

Section 3 **Hazards Identification**

- Physical Appearance: Clear, colorless liquid
- Immediate Concerns: DANGER. Alkali pH of around 10.8. Causes skin and eye burns. Wear safety glasses with top and side shields and latex gloves when handling. Irritating to nose and throat. Avoid inhalation. Remove and wash contaminated clothing before reuse.

Section 4 **First-Aid Measures**

EYES: If contact with eyes occurs: Immediately flush eyes with water for 15 minutes Call Physician.
SKIN: If contact with skin: Rinse off excess chemical and flush skin with soap and plenty of water. If skin irritation develops, seek medical attention.
INGESTION: If swallowed: Give 1-2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician immediately.

Section 5 **Fire Fighting Measures**

- This product is not flammable or combustible.
- Extinguishing Media: Use media appropriate for surrounding fire conditions

Section 6 **Exposure Controls / Personal Protection**

Do not expose to eyes, skin, or clothing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 **Physical and Chemical Properties**

Appearance and Odor:

- Clear liquid.
- Odorless

Physical Properties:

- Melting Point: Not Applicable
- Vapor Pressure: Not Volatile
- Specific Gravity: about 1.4
- Vapor Density: Not determined

Stability:

- Stable when stored under proper conditions.

Hazardous Polymerization:

- Will not occur.

Incompatibilities:

- Incompatible with strong acids.

Section 8 **Toxicological Information**

Acute Effects of ingredients:

- TRIS Oral LD50: 5,900 mg/kg (rat)
- AMP Oral LD50: 17,000 mg/kg (rats)

Section 9 **Other Information**

The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets.

MSDS 3

Material Safety Data Sheet

Section 1 **Chemical Identification**
Catalog # / Description: Part Number 486997
Name: eXact® Strip Pb-3 (50)

Section 2 **Composition / Information on Ingredients**
CAS #: 36951-72-1
Chemical: meso-Tetra(N-methyl-4-pyridyl)prophine tetratosylate salt
Trade name: TMPYP
- Purple powder, Brown appearance on strip pad

Section 3 **Hazards Identification**
Precautionary Statements:
May be harmful by inhalation, ingestion and skin absorption. Causes eye and skin irritation.

Section 4 **First-Aid Measures**
- Immediately flush eyes with plenty of water for 15 minutes. Call a physician.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.
- In case of contact, immediately wash skin with soap and water thoroughly.

Section 5 **Fire Fighting Measures**
Fire/Explosion Hazard:
- Fire may produce irritating or poisonous gases in small quantity

Extinguishing Media:
- Foam and water, Carbon Dioxide or dry chemical.

Section 6 **Exposure Controls / Personal Protection**
Do not get in eyes, on skin, on clothing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 **Physical and Chemical Properties**
Appearance and Odor:
- Solid bluish-gray powder

Physical Properties:
- Melting Point: >400°C
- Vapor Pressure: Not Applicable
- Specific Gravity: 1.98
- Vapor Density: Not Applicable

Stability:
- Stable when stored dried and at room temperature.

Hazardous Polymerization:
- Will not occur.

Section 8 **Toxicological Information**
- Skin and eye irritation.
- LD50: None reported

Section 9 **Other Information**
The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Dispose of empty bottle and used test strip as normal trash. Keep away from children and pets. Store in a dry, cool place. Keep container tightly closed.

MSDS 4

Material Safety Data Sheet

Section 1 **Chemical Identification**
Catalog # / Description: Part Number 486990
Name: LeadPaintCheck HP Standard (15 ml)

Section 2 **Composition / Information on Ingredients**

CAS #:7697-37-2	Nitric Acid	3.3%
CAS #:1319-46-6	Lead Carbonate	0.1%
CAS#: 7732-18-5	Demineralized Water	>96%

Caution: CORROSIVE and Oxidizer ingredients

Section 3 **Hazards Identification**
Clear colorless liquid causes BURNS:
Eye contact: Causes eye burn
Skin Contact : Causes burn
Ingestion: Can cause acid burn including nausea, abdominal pain.
Wear safety glasses with top and side shields and latex gloves when handling. Irritating to nose and throat. Avoid inhalation. Remove and wash contaminated clothing before reuse.

Section 4 **First-Aid Measures**
- If swallowed, give 1-2 glasses of water. Call a physician or the Poison Control Center as a precaution.
- In case of skin contact, flush with copious amounts of water for at least 2 minutes. Remove contaminated clothing and shoes.
- In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Call physician.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 5 **Fire Fighting Measures**
Not Flammable, but reacts with many metals forming hydrogen gas, which is flammable. Because of small volume in bottle, use media appropriate for surrounding fire conditions.

Section 6 **Exposure Controls / Personal Protection**
Have an eyewash station nearby. Do not expose to eyes, skin, or cloth ing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 **Physical and Chemical Properties**
Appearance and Odor:
- Clear, colorless liquid with no odor

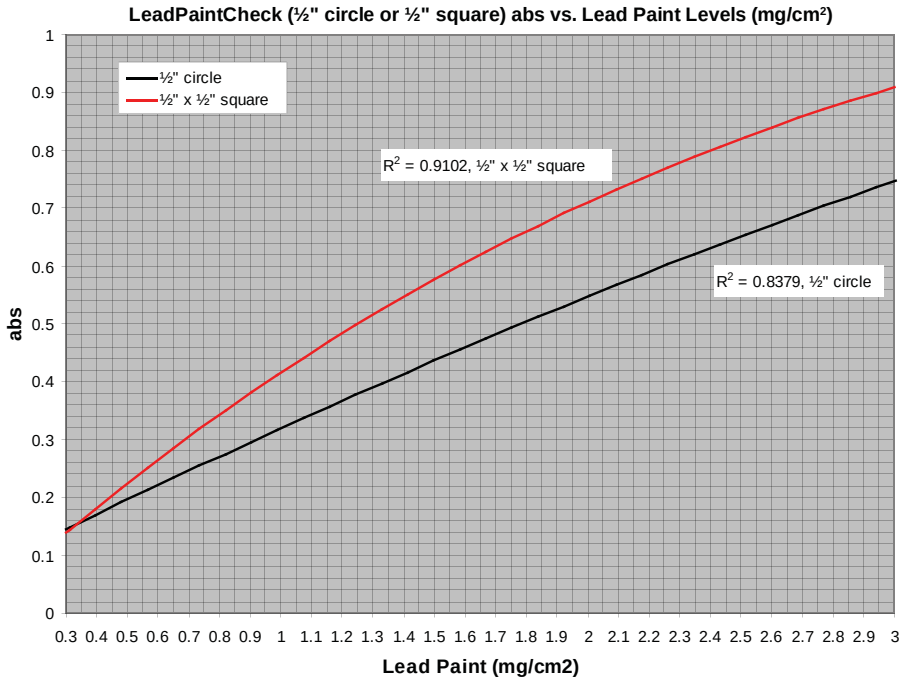
Physical Properties:
- Melting Point: Not Applicable
- Vapor Pressure: Not Applicable
- Specific Gravity: about 1.0
- Vapor Density: Not Available
- pH: < 1
- Stable when stored at room temperature.

Hazardous Polymerization:
- Will not occur.

Section 8 **Toxicological Information**
- Ingredient toxicological data:
- Nitric acid oral Human LDLo=430 mg/kg
- Each bottle contains about 17 ml liquid
- HMIS and NFPA classification for Health: 3 and Reactivity: 1 Wash hands after use and avoid skin, eye contact.
- This product may be shipped as part of a chemical test kit composed of various compatible components because of it's small volume.

Section 9 **Other Information**
The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets.

eXact® LEADQuick™ Detection Profile



NOTE: The **abs** values recovered from White Lead (Lead Carbonate) and Yellow Lead (Lead Chromate) have been determined to be similar by the extraction/homogenization efficiency.

Replacement Reagents
Part No. 486905
Include:

6 eXact® Reagent Acid-1 *(486999) (6 x 17 ml)*
1 eXact® Reagent Pb-2 *(486998) (1 x 7 ml)*
1 eXact® Strip Pb-3 *(486997) (1 x 50 tests)*

Contact Information

For US Inquiries and Re-Orders:
Industrial Test Systems, Inc.
1875 Langston Street,
Rock Hill, SC 29730 USA
Phone: 1-800-861-9712 - *INSIDE THE U.S.*
1-803-329-9712 - *OUTSIDE THE U.S.*
Fax: 1-803-329-9743
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WWW.SENSAFE.COM
www.poolcheckonline.com

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