NEW IMPROVED PROCEDURE Kit Number 487925-V2

Home Screening for Lead in Paint *using Red-Green color development*

LEADQuick™ Paint Home Test Kit

Instruction Manual

Visual Detection Method of Lead in Paint on surfaces including wood, plaster, drywall, and metal.

25 Tests

For Your Safety Read MSDS on pg. 10-11

For accurate testing, please read and understand the entire manual before using the test kit.

Manufactured by:
Industrial Test Systems, Inc.
1875 Langston Street, Rock Hill, SC 29730
Phone: (800) 861-9712, (803) 329-9712
Fax: (803) 329-9743, email: its@sensafe.com

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CAUTION:

Keep this test kit away from children and pets.

Kit contains a Lead Paint Standard and acid reagent. Do not ingest. Safety precautions including a dust mask, rubber gloves, safety glasses and protective clothing are recommended. Wash hands thoroughly after kit use.

WARNING: This product contains a chemical known to the State of California to cause cancer (Lead).

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm (Lead).

Revision 05/19/10

www.SENSAFE.com

Paint Sampling Operation:

Pictured below is a collection of tools that we found useful in the Paint Sampling Operation. These tools are available from commercial stores such as Sears, Hobby Lobby, Lowe's, Home Depot, Grainger, and the internet. It is very important that tools you are comfortable with, for the paint sampling, be used. Accurate results are achieved with proper paint sampling. A suggested Paint Sampling Operation is described on page 3. You should become familiar with the use of this test kit by testing the Lead Paint Drywall Standard (486989), which is included FREE in this test kit, before using this test kit on unknown paint.

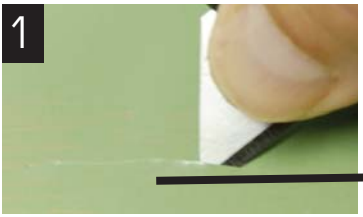
To sample the paint from plaster or drywall, use a sharp box cutter or scalpel and cut two 1" long slivers that are about 1/16" wide. Be sure the paint samples contain all layers of paint. The paint slivers must have minimal plaster or drywall substrate. If significant substrate is attached to the paint sliver(s), you can rinse the paint sliver(s) with clean water to remove the excess substrate but only as long as the paint sliver(s) are not brittle. Another option is to mechanically remove the substrate.

Wood substrate is not a problem when kept at a minimum. For paint sampling of wood and metal surfaces, a 1/8" or 1/4" chisel is recommended and you should collect about a 1/2"x1/4" rectangular sample. The paint sample (chips) need to be of sufficient amount to cover the bottom of the small test tube.

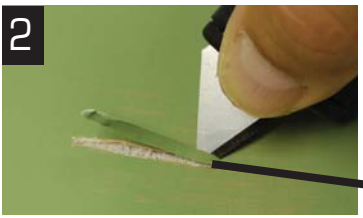
Another technique is to use a cork bore sampling method. The technique of cork bore paint sampling is described in detail in our LeadPaintCheck (486911) test kit and online at www.LeadPaintCheck.com. Whichever method is chosen, you need to cut the paint sample into smaller pieces that will lay flat at the bottom of the test tube. For this test kit, either use the paint from two ¼" cork bore samples or half of a ½" cork bore sample.

The following items are required, but not supplied, and may be purchased separately.

Paint Sampling Operation:



With box cutter, make a 1" cut into the paint using technique shown in diagram. Box cutter should be angled at 45 degrees for this cut, and the cut must penetrate all layers of paint.

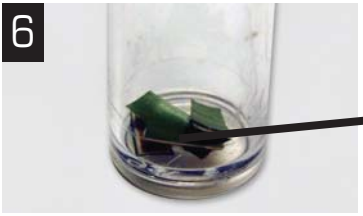


Now, do two parallel counter-cuts at 45 degrees of about 1/16" apart. Lift slivers out of channel.

Mechanically remove excess drywall and plaster substrate as pictured, to have a proper paint sample for testing. If excess drywall or plaster is present, another option is to rinse the paint sliver(s) with clean water, but only if paint sliver(s) is not brittle. Allow paint slivers to dry before testing.

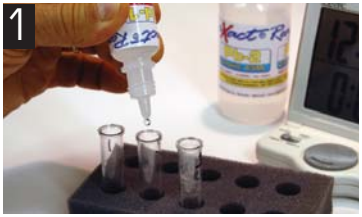
Cut each paint sliver into 4 or more pieces. Please note that if the paint sliver is brittle and when the sample is cut, either the sample may crumble or shoot away. One way to overcome this is to cut paint sliver over a piece of paper from which all the sample paint chips can be collected.

When paint slivers are cut into smaller paint chips, transfer them into the small polystyrene test tube. Use a folded, clean sheet of paper to act as a chute for pouring the chips into the tube. The aid of a small square funnel is helpful. NOTE: Colored paper is used for photographic contrast; but any paper will work.

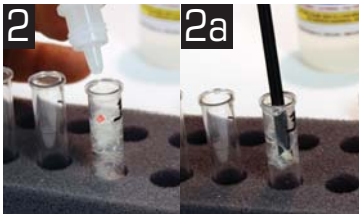


When paint chips are at the bottom of the small polystyrene test tube, your sample is ready for testing.

LEADQuick™ Paint Testing Instructions:

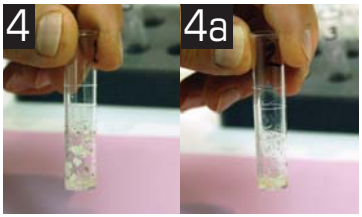


Add 5 drops of Acid-1 reagent. Use the foam test tube holder to aid in running up to five tests at one time.

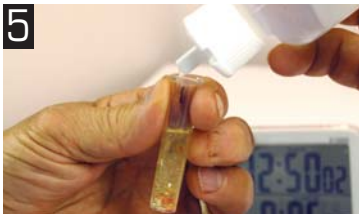


When significant foaming occurs (see Picture 2), a plastic stick (e.g. a coffee stirrer) may be required to "break" the foam (see Picture 2a). For foaming samples only, add an additional 5 drops of Acid-1 reagent after foaming has subsided. Usually the foaming subsides in approximately 1 to 2 minutes.

Securely hold test tube with one hand at top and tap tube gently at bottom with a finger of the other hand to mix reagent and the paint chips (see Picture 3).



If paint chips migrate up the wall of the tube, because of foaming or mixing, tap bottom of tube against a solid surface with minimal force to move chips back to the bottom (Picture 4 is NOT OK, Picture 4a is OK).

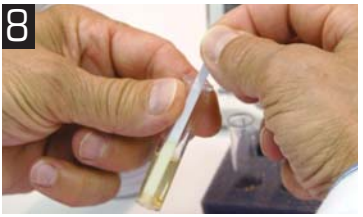


Use a timer and leave undisturbed for 5 minutes, but no longer than 10 minutes. At the end of this time, add **PB-2** solution to the top line of this tube (about three-quarters full). This will be referred to as the first tube.

Pour the solution from the first tube into a clean and empty second tube. Re-pour the solution back into the first tube. This mixes the sample.

LEADQuick™ Paint Testing Instructions Continued:

Pour half of the solution into the second tube so approximately equal amounts of solution will be in the first and second tubes. The distribution of the paint chips in the 2 tubes does not matter at this point.



Dip one eXact Strip **PB-4** into the first tube only, for 10 seconds, with gentle and constant back and forth motion. Remove strip and discard into trash. **NOTE:** this tube will develop a true zero or **RED** color for this paint sample, which is required in the next step.

Remove two **PB-3P** strips from the **PB-3P** bottle and recap bottle immediately. Dip one of the eXact Strip **PB-3P** into the first tube for 10 seconds with gentle and constant back and forth motion, remove strip, shake once to remove excess sample, place on a clean, white surface, and observe color. Immediately dip the other **PB-3P** strip into the second tube for 10 seconds with gentle and constant back and forth motion. Remove strip, shake once to remove excess sample, place on a clean, white surface, and observe color against the first strip color. If you have the dexterity, you can dip both strips into the first and second tubes simultaneously for 10 seconds, as shown in Picture 9. After ten seconds, remove strips, shake once to remove excess sample, place on a clean, white surface, and observe color for 1 minute (color development beyond 2 minutes is invalid). You can retest the first and second tubes, with fresh **PB-3P** strips, up to 5 times to increase confidence of your analysis. Color contrast between the 2 strips may require natural or proper lighting. People with red-green color blindness or difficulty with determining color contrast should not be performing this color analysis (color blindness can be accurately determined using the Farnsworth Munsell 100 Hue Test - www.munsell.eu).

If both strips are **RED** and remain **RED** for the duration of 2 minutes, the sample has no Lead. If one strip is **RED** and the other strip either develops immediately or within 2 minutes, a brown, green, or similar color that is not **RED**; then the paint sample should be considered positive for Lead (see Pictures 10-13 for possible results). NOTE: Pictures 10-12 show positive results for Lead, while Picture 13 shows a negative result for Lead.

Positive

Positive

Positive

Negative

List of 487925-V2 Components

10 - Tubes (small polystyrene test tube)
1 - eXact® Reagent Acid-1 (Dropper bottle)
1 - eXact® Reagent PB-2 (Dropper bottle)
1 - eXact® Strip PB-3P (Bottle of 50 strips)
1 - eXact® Strip PB-4 (Bottle of 25 strips)
1 - Foam Test Tube Holder
1 - Instruction Manual (not pictured)
1 - Lead Paint Drywall Standard (486989) **Included Free**

Components not supplied but required (also see p. 2):
Box cutter or sharp scalpel for sampling
1/4" or 1/8" sharp chisel for sampling
Timer for 10 second and 5 minute timing
Sharp Scissors
Forceps may also help
Clean sheet of paper
Clean water

Optional Components (not supplied)
Small square funnel
Test tube brush
Safety glasses
Rubber gloves
Lead Paint Drywall Standard (486989)

487925-V2

Record your Results:

Date of Test	Sample Location/Details	Color of 1st Strip	Color of 2nd Strip

About the Reliability of this Test Kit

This test kit has been improved to give a reliable indication if Lead is in your paint. You should become familiar with the use of this test kit by testing the Lead Paint Drywall Standard (486989) before using the test kit on unknown paint. It is recommended that a minimum of three paint samples be sampled and tested for each room for a more confident assessment. If any of the three test samples confirm Lead present then you should consider that room contains Lead in the paint. If only one sample is positive for Lead and the other two samples are negative, then the safe conclusion is that there is Lead in the paint. You can do more tests at different locations in the room for further analysis.

In our lab we did an evaluation of this test kit in the hands of technical and non-technical persons. A technical person is considered one who has some skills in laboratory testing. It was found that a technical person achieves better results. We found the non-technical person's capability with this kit is improved when this instruction booklet is read carefully and understood, which may require reading this manual several times. Also helpful in improving results is the availability of technical assistance to answer questions regarding the procedure (see Technical Support on the back cover). Sampling of the paint properly is very important to get accurate results. Below are typical results that can be expected from our test kit.

Lead Level mg/cm2	Type of Lead	Non-Technical % Positive	Technical % Positive
0	none	15	5
0.4 to 0.7	white	50	60
1.2 to 1.7	white	80	90
2.5 to 3.5	white	95	100
0.4 to 0.7	yellow	10	20
1.2 to 1.7	yellow	65	75
2.5 to 3.5	yellow	70	85

Also available: Professional Paint Test that has complete ETV evaluation in Spring, 2010. Further details about this kit are available at www.LeadPaintCheck.com

About This Lead Paint Test Kit:

1. Read and follow directions carefully.
2. For best results, be sure to clean all equipment and tubes immediately after testing.
3. Wash hands with soap and water after running the test. Rinse skin immediately with a generous amount of water if any contact occurs with Acid-1.
4. When sampling paint, use caution as to the direction you cut to avoid personal injury from box cutter, scalpel, or chisel.
5. Use reagent and strips by expiration date.
6. You may intermix components from other lots of this same test kit.
7. Read the MSDS. Be especially careful when handling Acid-1, which has a pH below 1.0 (strong acid). For your protection, safety glasses and disposable gloves should be worn when running this test.
8. The reagents and paint can be disposed of as ordinary waste. You should observe local and state requirements that may apply to disposal of used reagents and any kit components not used.

Summary of LEADQuick™ Chemistry:

Lead from the paint sample is first solubilized to Pb^{2+} by the addition of the Acid-1 reagent and a five minute wait step. Pb-2 Buffer is added to make the solution slightly alkali (pH 8). The eXact® Strip Pb-3P contains the porphyrin indicator, which reacts with any Lead present to form a green, green-brown, or brown color. A red color indicates the lead concentration is below detection level. To adjust for paint sample variation a Pb-4 strip is dipped in only one of the sample tubes, which prevents the green lead-porphyrin color from forming and allows a true ZERO color for that specific sample.

A procedure using the porphyrin 5,10,15,20-terakis (1-methylpyridinium-4-yl) porphine as indicator is described in Mirochim Acta volume 157, page 87-91 published in 2007 K. Kawamura, et al. For convenience the indicator is referred to as TMPYP. Our test uses TMPYP. Please refer to the Lead Test Interference chart (Table 1) for details as to what concentration of ions the test will tolerate. From our extensive laboratory testing with paint samples, the ions below have shown no interferences in the detection of lead in paint.

All interfering ions listed, except for Mercury and Cadmium, inhibit TMPYP-Pb^{2+} complex formation. Mercury and Cadmium give similar color reaction with TMPYP. Mercury and Cadmium are rarely found in paint.

Table 1:

Lead Test Interferences

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

Rev. 07/03/07

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 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.

NOTE: This is a strong acid. Dispose excess reagent carefully by dropwise addition to running tap water. Avoid inhalation of fumes that may be generated by this disposal method.

MSDS 2

Material Safety Data Sheet

Section 1 **Chemical Identification**

Catalog # / Description: Part Number 486991
Name: eXact® Reagent Pb-2 (65 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 1.1
- Vapor Density: Not determined
- pH: 10

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 486993
Name: eXact® Strip Pb-3P (50)
Company Name: Industrial Test Systems, Inc.
1875 Langston Street
Rock Hill, SC 29730 USA
Phone: (800) 861-9712, (803) 329-9712
Fax: (803) 329-9743
eMail: its@sensafe.com

Section 2 **Composition / Information on Ingredients**

CAS #: 36951-72-1
Chemical: meso-Tetra(N-methyl-4-pyridyl)prophine tetratosylate salt impregnated on strip pad
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 powder on pad. Slightly soluble in water

Physical Properties:

- Melting Point: >400°C
- Vapor Pressure: Not Applicable
- Specific Gravity: 1.98
- Vapor Density: Not Applicable
- pH: 9.5

Stability: Stable 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 486992
Name: eXact® Strip Pb-4 (25)

Section 2 **Composition / Information on Ingredients**

CAS#: 64-02-8
Chemical: EDTA Tetrasodium salt impregnated on strip pad pH adjusted to 10.5

Section 3 **Hazards Identification**

Precautionary Statements:

- May be irritating to eyes and nasal passages.
- Low toxicity orally due to small amount in test pad
- LD50: None reported.

Section 4 **First-Aid Measures**

- If swallowed, give large quantities of water and call a physician or the Poison Control Center as a precaution.
- In case of skin contact, flush with copious amounts of water.
- In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Call physician.

Section 5 **Fire Fighting Measures**

Not Applicable since the amount of Reagent in pad and kit is negligible.

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:

- White powder. Soluble in water.

Physical Properties:

- Melting Point: >300°C
- Vapor Pressure: Not Applicable
- Specific Gravity: Not Applicable
- Vapor Density: Not Applicable

Stability:

- Stable when stored under proper conditions.

Hazardous Polymerization:

- Will not occur.

Incompatibilities:

- None reported.

Section 8 **Toxicological Information:**

- 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. Keep away from children and pets. Store in a dry, cool place. Keep container tightly closed.

How to Order Replacement Parts

Part number	Product	Retail Price
487925-V2	LEADQuick™ Paint - Home Test Kit (25 Tests)	$59.99
486999	17mL Acid-1 Reagent	$14.99
486991	65mL Pb-2 Reagent	$24.99
486993	eXact® Strip Pb-3P (50 tests)	$24.99
486992	eXact® Strip Pb-4 (25 tests)	$15.99
486989	Lead Paint Drywall Standard	$29.99

Please note: the retail price does NOT include sales tax and shipping charges.

For more details about Lead Paint testing, go to our website at www.LeadPaintCheck.com.

For Customer Service:

By Telephone:
8:00am - 4:30 pm EST
Monday through Friday
1-800-861-9712

By Fax:
1-803-329-9743

By Mail:
Industrial Test Systems, Inc.
1875 Langston Street
Rock Hill, SC 29730 USA

By Internet:
www.SENSAFE.COM

By eMail:
its@sensafe.com

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By Telephone:
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