ANALYT MESSTECHNIK



TECHNICAL NOTE

SKC Full Disclosure Kit for Lead

What the SKC Full Disclosure Kit for Lead detects and how it performed in testing: detection limit, blanks, solution and colour stability, and interferences.

AMTC-TN-0002

About this note

The SKC Full Disclosure Kit for Lead shows lead on skin and surfaces by a colour change on a wipe. This note sets out what the kit detects and what it does not, and the results of the tests behind its performance: the lowest amount of lead the eye can reliably see, the blank value of the reagents, how long the solutions and the colour last, and which other metals interfere.

It is written for occupational hygienists and safety staff who choose the kit or interpret its results. The kit and its use (p. 4) describes how the kit works and how it is used; Test results (p. 5) gives the data, the forms of lead the kit detects and what the results mean in practice.

How to prepare the solutions and take a wipe sample, step by step, is in the operating instructions of the SKC Full Disclosure Kit for Lead.

How this note marks information

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Tip
A shortcut or recommendation; never a hazard.

Document information

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Revision history

Rev.	Date	Change
2	October 2026	Quality programme: new document type, number and identity pages.
1	October 2026	First issue.

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CHAPTER 1

The kit and its use

How it works

The SKC Full Disclosure Kit for Lead is a colour test for lead on skin and on other surfaces. Researchers at the US National Institute for Occupational Safety and Health (NIOSH) developed the chemistry as a simple, direct-reading check for lead on workers' skin, above all their hands, in lead-acid battery plants and on firing ranges.

The kit works with three reagents: the Disclosing Powder (#1), the Extraction Solution (#2) and the Developing Solution (#3), into which the powder is mixed. A wipe is taken from the skin or surface and sprayed with the Extraction Solution, which dissolves the lead, and then with the Developing Solution. If lead is present, the wipe turns pink to red at once. The immediate result tells you whether lead is there and whether further action is needed.

Qualitative and quantitative use

Read by eye, the kit is a qualitative test: it shows lead from about 18 µg per wipe upwards (see Lower limit of visual identification (p. 5)). For a measured amount, or when lower levels are suspected, the developed wipes go to a qualified laboratory for analysis by inductively coupled plasma spectrometry (ICP), atomic absorption spectrometry (AAS) or anodic stripping voltammetry.

Order code	Kit	Use
550-001	SKC Full Disclosure Kit for Lead	Qualitative: colour read on site
550-002	SKC Full Disclosure Kit for Lead, for quantitative analysis	Colour read on site, then laboratory analysis of the wipes

CHAPTER 2

Test results

The tests answer six questions: how long the solutions stay usable, how little lead the eye can reliably see, which forms of lead the kit responds to, whether the reagents themselves add lead, how long the colour lasts, and which other metals react. Table 2-1 sums up the answers.

Table 2-1. Key results

Property	Result
Developing Solution (#3)	Active for at least 10 days if kept chilled
Extraction Solution (#2)	Indefinitely at ambient temperature
Lower limit of visual identification	18 µg lead per wipe
Blank, with and without reagents	< 0.5 µg lead per wipe (reporting limit)
Colour on the wipe	Not stable: fades, read at once
Interfering elements	Silver, cadmium, barium, mercury, titanium (colour); tin (suppresses colour)

Stability of the solutions

In the test, the Developing Solution was chilled for about one hour and then used on and off over eight hours; it detected lead throughout. Kept chilled, it stays active for at least 10 days. The Extraction Solution keeps indefinitely at ambient temperature.

> **Tip**
> Chill the Developing Solution (#3) to 2 °C (35 °F) before you add the Disclosing Powder (#1); this keeps it usable for the longest time. Keep it chilled and use it as soon as you can.

Lower limit of visual identification

Ghost Wipes were spiked with known amounts of lead from an AccuTrace Lead Reference Standard (ICP-29N-1) at 1000 µg/mL, sprayed with the reagents and judged by eye. The first series covered 10, 20, 100 and 1000 µg of lead; a spike at 15 µg and a few further spikes then narrowed down the limit, as Table 2-2 shows.

Table 2-2. Colour response to spiked lead

Lead on the wipe	Observation
10 µg	No colour
15 µg	Very light pink — too faint, some observers could miss it
18 µg	**Consistent, reliable colour: the lower limit of visual identification**
20, 100 and 1000 µg	Pink to red

A wipe that stays white therefore means less than about 18 µg of lead on the wipe, not that there is no lead. When lower amounts matter, have the wipes analysed in a laboratory (see Qualitative and quantitative use (p. 4)).

What it detects

The kit responds to lead in forms that dissolve easily in the mildly acidic Extraction Solution — those common in lead-acid battery plants:

- elemental lead;
- lead oxides;
- lead nitrate, lead sulphate and lead acetate;
- other lead compounds that dissolve easily.

What it does not detect

NOTICE

The kit is not designed for: lead chromates, which do not dissolve in weak acids; alkyl lead, such as tetraethyllead (TEL) or tetramethyllead (TML); other lead compounds that resist dissolution; lead in paint or paint chips, on painted surfaces, or embedded in a material such as plastic: the lead may be enclosed in a resin and is then not dissolved by the Extraction Solution. A wipe without colour does not prove that these forms of lead are absent. Do not use the kit to rule them out.

Blank determinations

To check that the reagents carry no lead of their own, six unused wipes were analysed:

- three wipes taken from their pouches and sealed straight into glass vials, without reagents;
- three wipes taken from their pouches, sprayed with the Extraction Solution (#2) and the Developing Solution (#3) as in the operating instructions, and sealed into vials.

An AIHA-accredited laboratory analysed them by NIOSH Method 7300 (ICP-AES), with a reporting limit of 0.5 µg per wipe. The blanks were prepared on 17 March 2003 and analysed on 19 March 2003. All six results were below 0.5 µg per wipe: the reagents do not add to the lead background of the wipe.

Stability of the colour

NOTICE

The pink to red colour is not stable and starts to fade. A colour read late can be missed. Look at the wipe for a colour change immediately after spraying the reagents.

Interferences

Other metals react with the kit chemistry too, but far less sensitively than lead:

- **Silver, titanium and mercury** give a colour of a different hue, reddish-purple to hot pink.
- **Cadmium and barium** also form coloured complexes.
- **Tin** works the other way: at high concentrations it suppresses the colour reaction.

NOTICE

Silver, cadmium, barium, mercury, titanium and tin can produce a false colour or hide lead. Find out before testing whether any of them are present where you sample.

What the results mean in practice

- The kit gives an immediate yes-or-no answer for lead on skin and surfaces from 18 µg per wipe, enough to decide on the spot whether more action is needed.
- A wipe without colour is below about 18 µg, not lead-free. If lower levels are suspected, or a figure is needed, send the wipes to a qualified laboratory.
- The reagents contribute no measurable lead (below 0.5 µg per wipe), so developed wipes can go on to laboratory analysis.
- Read the colour at once, prepare the Developing Solution cold and keep it chilled, and check the site for interfering metals first.

CHAPTER 3

Contacts

Contact and support

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Kits, refills and laboratory analysis

Contact Analyt-MTC to order kits and replacement reagents, wipes and gloves, and for advice on sending wipes for laboratory analysis. Have at hand:

- the part number: 550-001 for the kit, 550-002 for the kit for quantitative analysis;
- what you test (skin or surfaces) and the lead compounds you expect.

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