

THE ACID TEST

Acids for testing precious metals

QUICKTEST, 01923 220206 (not 24 hours). www.quicktest.co.uk

These chemicals are for trade or professional use only.

Full set of safety sheets available (117 pages)

See the back page for safety precautions including what to do in the case of an accident and technical information.

Keep the bottles upright, store them in their box and keep the box locked when not in use; keep them away from children; avoid extreme heat.

Always wear acid-proof gloves when handling acids.

USING THE BOTTLES

Using acids requires a steady hand and good eyesight, so if you need to find your reading glasses or a magnifier, do so before you start; also have a tissue ready before you start. *Wear acid-proof gloves.*

Plastic bottles

Have a tissue ready to catch any drops that spill. To open, push cap down *firmly* whilst unscrewing (when new, a tamper-proof seal will break), it's the same as a childproof cap on a medicine bottle. Carefully mop up, with tissue, any acid on the outside of the nozzle. Then turn the bottle upside down, watch the acid move down the nozzle (you may have to squeeze *gently*), let a spot of acid form on the outside of the nozzle and touch it onto the filed area of the metal. After each use, mop up the acid-spot on the item and mop up any acid from the outside of the nozzle. When replacing the cap, press downwards as you tighten it, otherwise it *will* leak.

Glass bottles

Have a tissue ready to mop up the spot of acid after the test. Upon removing the cap, take care not to breathe any fumes. Replace the cap when not in use, even for a few seconds, so that if you knock the bottle over it won't spill.

DISPOSAL

Plastic bottles

Go to a sink, turn on the taps. Gently squeeze any remaining into the flowing water. Then tip the end into the flowing water, squeeze, let go, clean water will be sucked into the bottle. Squeeze it out into the flowing water. Repeat this or three or four times. The bottle is now clean and can be thrown away.

Glass bottles

Go to a sink, turn on the taps. Gently tip any remaining acid into the flowing water, then very gently rinse out the bottle and the cap, taking care not to splash. The bottle is now clean and can be thrown away.

JUST HOW DANGEROUS ARE THE ACIDS?

Five case histories – to put the danger into perspective

The Case of the Stained Hand

A lady called to say, "I've spilt the silver fluid, it's stained my hand yellow and won't wash off." She was horrified to learn that the 'yellow stain' was, in fact, a chemical burn and was not going to 'wash off'. But she was relieved to hear that the skin would grow back over the next few days. Had it been the *blue* acid (that had not been washed off immediately) it may have required hospital treatment.

Conclusion

If you do have an accident with the acid, don't panic, keep calm, wash the acid off under the tap, two or three minutes is long enough for skin, but ten minutes for eyes (and you *must* seek medical attention if the accident involves eyes). Incidentally, if you wash yourself in icy cold water, the cold will make the skin go completely numb, the feeling will come back when the skin warms.

The Case of the Child

A distraught father telephoned. He had been using the acid and, against all the warnings, had left the cap off, had left it within reach of a three-year-old, then left the room. The child spilt the acid down her leg, the parents did not follow the safety precautions, did not wash the acid off, the acid had burnt down to the bone, the child needed major surgery and will be scarred for life. This accident involved a glass bottle, the entire bottle was spilt. Plastic bottles are safer, if you knock it over it will only spill one drop.

Conclusion

Treat the acid as you would any other household chemical (bleach, ammonia etc): KEEP IT AWAY FROM CHILDREN.

The Case of the Sniffed Fumes

A man telephoned to say he had used the acid, had accidentally sniffed some of the fumes, and a few hours later he felt sick and dizzy. He went to his G.P. who said that it was most unlikely that his symptoms had anything to do with the acid.

Conclusion

Regarding sniffing acid: it is not to be advised, and certainly not on a regular basis, it is not good for the lungs. However, don't worry if you accidentally sniff it just very occasionally, there really is no need to rush to the doctor. Jewellers who have various bottles, old and new, sort them by sniffing the fumes to see which is the strongest - *but this is not to be advised!*

However, wholesalers, and some large chains of shops, buy hundreds of bottles at a time – please be particularly careful with the *blue* fluid, it *always* leaks fumes, and whereas the fumes from one bottle will not be noticeable (unless you sniff it) the fumes from hundreds of bottles in an un-ventilated area can be hazardous. Also, if you work with other chemicals that produce fumes, it is possible that the combination of fumes will be harmful. *There is no safety data available for the infinite possible number of combinations of chemicals.* The best precaution is to work (and to store chemicals) in a well-ventilated area.

The Case of the Eye

A customer telephoned to say that his friend had got some acid in his eye. We asked when this happened and he said a few minutes ago; we asked where the friend was and he said, standing right here; we asked how sore the eye felt and he asked his friend and his friend said 'quite sore'; we gave the official advice which is to hold the eye open under a running tap for at least ten minutes; he asked if he should seek medical advice and (since he had asked) we said yes - we had to assume he had got acid in his eye, we couldn't possibly tell him, "It's probably nothing" when we had no way of knowing.

Conclusion

Please be aware of two extremes. If the person is screaming with pain as their eye dissolves into their brain, do not telephone us for advice, get that eye forced open under a running tap and dial 999. At the other extreme, if you *think* you may have had some acid on your finger and rubbed your eye but really don't know if you've rubbed acid or dirt (note how black your hands become from handling scrap) - keep calm, the eye 'feeling irritated' does not constitute a major injury, give it a wash and see how you feel in a few minutes.

The Case of the Splashed Acid

A shop worker testing customers' jewellery splashed acid over her top and into her face and ended up in hospital with a third degree burn. It seemed improbable to us that such an accident could happen. Then we got to see the security video of the incident. The user was not (as we advise) sitting comfortably at a firm surface with a good light where she could work slowly and carefully. She was standing up and was in a hurry, she held the item and the open bottle in one hand, the applicator in the other, and as she applied the acid she tipped the open bottle upside down over her hand (she wasn't wearing protective gloves) and over her top. She then panicked and dropped the bottle, which hit a work surface, bounced and splashed acid in her face. She washed the acid off her face (it stained the skin, but that soon healed) but she didn't remove her top. The acid-soaked fabric remained in contact with her skin and by the time she got to hospital she had a third degree burn. In other words, she ignored every bit of safety advice. This particular accident involved a glass bottle with a screw-cap lid, the entire bottle was spilt. Plastic bottles with droppers are safer, they can only spill one drop.

Conclusion

Even if you are experienced, follow the instructions, follow the safety precautions, sit comfortably, don't rush, acid is dangerous.

STORAGE

Individual sets and small numbers of bottles

All bottles leak fumes, though only in microscopic amounts, and these fumes *will*, given enough time, corrode the metal hinge and catch of the wooden box. Wholesalers who keep sets on the shelves for several weeks should remove the bottles from the boxes so that the fumes don't *start* to corrode the catches and hinges.

Large numbers of bottles

Wholesalers and large retail chains store large numbers of bottles, maybe several, maybe several dozen. Breathing acid fumes over a long period can be harmful to the lungs so do not store acid in an un-ventilated area where people are working and do not allow staff to continue working in an area that smells of fumes. Take special care with the BLUE / 14-24ct fluid. Store all fluids in a ventilated area away from metal.¹

If you *do* enter a room and notice the smell of fumes, there is no need to rush to the doctor, just open the windows and doors until the fumes clear. Then store the bottles somewhere else.

Do not store bottles (especially the BLUE / 14-24ct fluid) in sealed containers. Although this will stop fumes escaping into the surrounding area, the fumes will condense inside the container and the outside of the bottles will become damp with acid². A good method is to store the bottles in open containers lined with sheets of tissue paper, both underneath and on top. Change the tissue when it becomes discoloured (a safe way of disposing of such tissue is to flush it down a toilet).

'USE BY' DATES

For maximum life, keep the bottles tightly capped when not in use, store in their secure box (out of the light, especially the clear fluid), avoid extreme heat (e.g. a window in the sun), do not mix up the caps.

Generally, the white, blue and amber fluids last between 1 and 2 years

From the date of manufacture, the dates on the "Use by" labels are calculated as follows:

- 18 or 19 months for the *white* fluid (not gold / 9ct)
- 18 or 19 months for *blue* fluid (high carat).
- 16 or 17 months for *amber* fluid (silver).

These don't suddenly go off on the use-by date, the reactions become slower over the months until eventually the *white* and *blue* fluids show *everything* to be gold, and the *amber* fluid shows everything to be not-silver.

For serious traders (and busy stores) we recommend they are changed after a year.

Generally, the green and clear fluids last, "about a year"

From the date of manufacture, the dates on the "Use by" labels are calculated as follows:

- 13 or 14 months for *green* fluid (white metals).
- 10 or 11 months for *clear* fluid (8ct/high zinc).

These can go off quite suddenly, they simply stop working, we do not advise using them after the use-by date.

¹ The fumes from large numbers of bottles *will* corrode metal (metal shelving, tools, anything made of metal) in confined spaces over the months and years.

² You can wipe the bottles clean but you will have to handle each bottle carefully with tissue or acid-proof gloves (ideally, by a sink so that you can wash your hands); also, you will find that the acid has dissolved the seal and discoloured the label. The cleaned-up bottles will be perfectly safe to use but they won't look nice.

Keep the bottles upright, store them in the box and keep the box locked when not in use; keep them away from children; avoid extreme heat.

The health warnings on this page refer to exposure. "Exposure" means a chemical makes contact with your skin/eyes or gets inside your body. Avoid exposure from spillage: wear acid-proof gloves. Avoid exposure to fumes: use in a well-ventilated place.

BOTTLE CONTENTS

WHITE FLUID (9ct)

Acid: nitric HNO₃ EC 231-714-2



BLUE FLUID (14-24ct)

Acid: Nitric HNO₃ EC 231-714-2
Acid: Hydrochloric HCL EC 231-595-7



AMBER FLUID (silver)

Acid: Nitric HNO₃ EC 231-714-2
Additive: Chromium trioxide CrO₃ EC 215-607-8



GREEN FLUID (white metal)

Acid: Hydrochloric HCL EC 231-595-7
Additive: Tin chloride SnCl₂ EC 215-689-5



CLEAR FLUID (8ct / zinc)

Acid: Nitric HNO₃ EC 231-714-2
Acid: Sulphuric H₂SO₄ EC 231-639-5
Additive: Silver sulphate SnCl₂ EC 215-689-5



THE ACIDS

GENERAL: use and store in a well-ventilated place away from extreme heat. If spilt on fabric or furniture soak with water (plus bicarbonate of soda if readily available). May be corrosive to metals.

MEDICAL: can cause severe skin burns / eye damage. Toxic if inhaled. If exposed or concerned, seek medical advice.

If inhaled remove to fresh air, keep comfortable for breathing, call POISON CENTRE/doctor.

If in eyes rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing and call a POISON CENTRE/doctor.

If on skin (or hair) remove contaminated clothing,¹ rinse skin with water under a tap or shower.

If swallowed call POISON CENTRE/doctor. Rinse mouth (do not induce vomiting).

THE ADDITIVES

GREEN FLUID (white metal) contains tin chloride SnCl₂ EC 231-868-0

May cause respiratory irritation; harmful if swallowed; may cause damage to organs (cardio-vascular system) through prolonged or repeated exposure.

AMBER FLUID (silver) contains chromium trioxide CrO₃. EC 215-607-8

May cause fire or explosion; strong oxidizer. Toxic if swallowed or in contact with skin.

May cause an allergic skin reaction; may cause allergy, asthma symptoms or breathing difficulties if inhaled; may cause respiratory irritation². May cause genetic defects; may cause cancer; suspected of damaging fertility. Very toxic to aquatic life with long lasting effects. Keep away from heat. Do not breathe fumes².

CLEAR FLUID (8ct/zinc alloy) contains silver sulphate AgSO₄ EC 233-653-7

Causes serious eye damage. Same advice as for acids, above.

¹ Any fabric against the skin that is soaked in acid must be removed or the acid will continue to burn through the skin. Take special care if using glass bottles, it is possible to spill the entire bottle; a plastic bottle (if knocked over) will only spill one drop from the dropper.

² Chromium trioxide is a powder and is dissolved in acid so you cannot inhale it. Also, this particular fluid does not fume so it would be difficult to "inhale". However do not deliberately sniff the amber fluid and take extra care not to spill it on your skin.