

TROYTEST-5 INSTRUCTIONS

Website: www.goldtest.co.uk. Telephone: see lid of box for the number of your supplier.
Chemical content and emergency phone number (not 24 hours) is on each bottle label.

BEFORE YOU START

Read the safety data. There is a summary below and there is more information on back cover.

Using testing 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. You will also need to work on a stable flat surface in good light. After each test you will need to mop the spot of acid up with tissue¹, so have a tissue ready before you start.

If you have a new bottle of acid, don't forget to remove the pharmaceutical shrink-seal (and / or tape) before you try to open it.

The bottles have a childproof cap: push down firmly and twist to the left (when new, a tamper-proof seal will break). Then gently unscrew. Carefully mop up, with the tissue, any acid on the outside of the nozzle. When replacing the cap, press downwards as you tighten it (you will feel it getting tighter) otherwise it will leak.

PREPARATION AND APPLICATION

Use a magnet. Gold and silver are not magnetic, if the magnet sticks, no other test is necessary.

File item with the steel file. File firmly (in a place where it won't show) to be certain to remove any plating. If the metal 'won't file' (because it is as hard as the file) the metal is not gold or silver, no other test is necessary.

Apply the acid. Turn bottle upside down, gently squeeze, watch the acid move down the nozzle, let a drop form on the outside of the nozzle and touch it on the filed area of the metal. Do not squeeze so hard that you drip acid. Have a tissue ready to catch any drops that spill. After each use, mop up the acid from the item and also mop up any residue from the outside of the nozzle.

SAFETY PRECAUTIONS

All fluids are toxic and corrosive and should be treated with extreme care

Do not breathe fumes

Avoid skin contact. In the event of skin contact, wash immediately with plenty of water

In case of eye contact wash with plenty of water and seek medical advice

If swallowed, wash mouth, drink plenty of water, and seek medical advice

Keep out of reach of children

In case of spillage, flood with plenty of water

More detailed safety precautions are on the back cover

¹ Tissue is best, it soaks up the acid easily, is easily destroyed (flush it down a toilet) and is inexpensive. If you don't have tissue, newspaper will do, or an old cloth (remember to dispose of it after use).

TO TEST FOR GOLD

File the item with the steel file. File it firmly (in a place where it won't show) to be certain to remove any plating. Apply the acid to the area you have filed (see previous page). The acid will change colour. If you are colour blind, see the special instructions opposite. It is most important to start with the 9ct bottle.

ALWAYS START WITH THE 9ct BOTTLE

Not gold: turns a vivid green and froths spectacularly in 1 to 3 seconds (if it's quiet you will hear it fizzing)

9ct: acid turns dark over a period of a few seconds. Summary: This 'period' varies, depending on the particular mixture (alloy) of 9ct, it can be anywhere from 1 second to 15 seconds. **Detail** 9ct is made partly of pure gold (9 parts out of 24) and partly of other metals. The 'other metals' can be any combination of copper, silver, zinc or nickel – some cause the acid to turn dark quickly, some slowly. On most 9ct alloys it turns dark slowly, over a period of 5 to 15 seconds. On some 9ct alloys the acid turns dark quickly, in 1 to 2 seconds (then it slowly turns green and gently bubbles - though nothing like the reaction on copper, where it bursts into spectacular green froth). The reactions become slower over the months as the acid becomes weaker.

Better than 9ct: acid clear = the gold is better than 9ct.

Tip. The test-area must be clean and bright, you will not be able to see the acid turn dark against a dark (dirty) background. Sometimes it is obvious that the acid has turned dark, sometimes not so obvious, turn the item so that you are looking at the surface of the acid against the light (instead of looking straight down at the metal): the acid will appear dark. By contrast, 'clear' is completely clear, crystal clear, like water, no matter how it is viewed.

Not sure? You will find that nearly every test gives a definite reading: as soon as you see the acid turn dark, you know you have 9ct, the test is concluded. But if it "slowly turns green and gently bubbles" and you think, perhaps, the reaction isn't *so* slow and the bubbles aren't *so* gentle, double-check by using the CLEAR bottle.

USE THE CLEAR BOTTLE ONLY IF THE 9ct BOTTLE IS GIVING INCONCLUSIVE READINGS

Clean the metal very thoroughly and apply the acid. It will remain clear on most 9ct; will show slight clouding on high-zinc 9ct; will just *start* to turn dark on 8ct (some say, "white/grey"); and will turn dark on copper. *This bottle should not be used in place of the 9ct bottle*, in 99.9% of tests, the 9ct bottle gives a clear reading.

14ct / 18ct / 22ct / 24ct BOTTLE – ALL GOLD

The acid will change colour over a period of a few seconds. This 'period' varies, depending on the particular mixture (alloy) of 18ct. Despite the variations it *will* be obvious as to whether the reaction takes 'a few seconds' or 'several seconds' or 'a minute or two', and with practice you should be able to judge the carat to within 5%. The reactions become slower over the months as the acid becomes weaker. Remember to file the item first, if it is 'too hard to file' then it cannot be a precious metal (it's probably steel) and no further test will be necessary.

14ct: dark and still over a period of a few seconds (can be as quick as 1 - 2 seconds or as slow as 3 - 6 seconds). The number of seconds isn't important, merely that it turns dark quickly. **Exception on white metal:** if it turns very dark (reddish at first, quickly turning to dark red) and bubbles, check for Palladium (see next page).

18ct: yellow* quite quickly, can be as quick as 2 - 3 seconds or as slow as 10 - 15 seconds, the *number* of seconds isn't important, merely that it turns yellow quite quickly, in a few seconds. **Exception on white metal:** if it turns yellow, then bubbles and / or goes dark, check for steel (see next page) – or file it to see how hard it is.

22ct: yellow* as above but slowly, varies from 15 - 30 seconds, to 30 - 40 seconds (as you wait and watch, you will be aware that it's taking a very long time compared with 18ct).

24ct: yellow* if very nearly 24ct, it will take 1 to 3 minutes to change colour. If 24ct, it remains clear.

* this is a light green-ish yellow-ish colour, the exact shade really isn't important.

WHITE METALS: 14ct / 18ct / 22ct BOTTLE + THE PLATINUM (“GREEN”) BOTTLE

Use this section for a WHITE metal, when you know that it is neither silver nor 9ct. Apply the *blue* acid to the metal in the normal way (see first page), *allow plenty of time for a colour-change*, soak up the spot of acid from the metal with test paper, add a drop from the Green bottle to the stain on the paper.

| Metal | Colour of Blue fluid on metal | Colour of stain on paper | Green fluid added to the stain on the paper |
|---------------------|---|--|---|
| 14ct to 18ct | Dark or yellow (the same as for yellow gold, see <i>14ct / 18ct / 22ct BOTTLE - ALL GOLD</i> , on previous page). | From greenish / yellowish-green, to yellowish, to very light yellow (the higher the carat the lighter) | Dark. Lower carats tend to go black-blotchy, higher carats go completely black |
| 22ct to 24ct | 22ct to 24ct can only be yellow, this chart is for white metals only | | |
| Platinum | Clear | Clear | Clear |
| Steel | Varies from very slight yellow to bright yellow (and can bubble and leave behind a greyish stain) | Yellowish-green | Bleaches out |
| Palladium | Reddish, rapidly turning dark red and bubbling | Red-ish | Black [very dark] |

TO TEST FOR SILVER

Use the **SILVER** bottle. File small area of item to be tested to ensure you have removed any plating. The acid must touch the filed area only, if it touches any silver plating, the reading will indicate SILVER in error.

| | |
|---------------|---|
| Amber | not silver |
| Very pale red | low grade silver (approx. 800 parts per thousand) |
| Deep red | Sterling silver (925 parts per thousand) |

SPECIAL INSTRUCTIONS FOR THE COLOUR-BLIND

9ct bottle: hisses, froths and turns a light vivid tone (and you might *hear* it fizzing) = not gold. Dark = 9ct (totally ignore anyone debating if it has gone brown, green or grey, you only need to know if it has ‘turned dark’). Clear, like water = better than 9ct. **Clear bottle:** it stays clear or goes milky or turns dark. **14ct-24ct bottle:** Dark / blackish = 14ct or 15ct; mid-tone colour that very rapidly changes to a very dark colour and bubbles = check for Palladium (white metal only); light-ish = yellow (totally ignore anyone debating the extent of yellow or green, you only need to know that it has ‘gone a light colour’). **Green bottle:** as above, it either turns a light colour or a dark colour. **Silver bottle:** clear translucent = amber. A vivid ‘deep’ tone = deep red. Wisby-washy pale tone as if poorly-painted from a child's paint box = pale red.

SHELF LIFE

The 9ct, 14-24ct and silver bottles last between one and two years from the date of bottling, but it’s best to change them after a year. The platinum (green) and *clear* bottles last a maximum of a year from the date of bottling, which inevitably means less than a year from the date of purchase. All acids must be protected from prolonged exposure to air and daylight, otherwise the shelf life will be considerably reduced. The *date of bottling* is printed on each bottle label, and is in the format MONTH-YEAR, e.g. 11-12 means November 2012. If we bottle more than one batch in a month, we add a letter to the end, e.g. 11-12-b.

DISCLAIMER: Testers must be used in conjunction with the user’s skill, knowledge and experience. Under no circumstances shall the manufacturers or any of its distributors be liable for direct or indirect loss sustained in connection with any item. It is your responsibility to check the reactions against known samples.

SAFETY DATA

IF YOU HAVE OLD ACID BOTTLES, DESTROY ANY REMAINING ACID

Go to a sink, turn on the taps. Gently squeeze any remaining acid 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 three or four times. The bottle is now clean and can be thrown away.

The following is a summary of the official COSHH data sheets, but they do not distinguish between a road tanker full of acid and 5ml of acid, and many of the precautions will not apply to the small quantities you will be using. For this reason we do not issue the COSHH data sheets (ten pages) unless specifically requested.² The chemical constituents of each mixture is printed on the bottle, so if you do have an accident and you can't find this sheet, show the doctor the bottle.

| | | | |
|-------------------------------|---------------------------------|-------------------|-------------------|
| 9ct Bottle (white cap) | Nitric Acid above 50% | EEC No. 231-714-2 | CAS No. 7697-37-2 |
| 18ct Bottle (blue cap) | Nitric Acid below 50% | EEC No. 231-714-2 | CAS No. 7697-37-2 |
| | Hydrochloric Acid above 50% | EEC NO.231-595-7 | CAS No. 7647-01-0 |
| Silver ('amber' cap) | Nitric Acid above 14.5% | EEC No. 231-714-2 | |
| | Chromium (VI) oxide below 12.2% | EEC No. 215-607-8 | |

HAZARDS IDENTIFICATION Toxic if swallowed, Causes severe burns.

FIRE FIGHTING Explosive with combustible material. May evolve toxic fumes in fire.

FIRST AID MEASURES

Eye contact: irrigate thoroughly with water for at least 10mins and seek medical attention.

Skin contact: drench skin thoroughly with water. Remove contaminated clothing.³ Unless contact has been slight, seek medical attention.⁴

Ingestion: wash out mouth thoroughly with water, give plenty of water to drink. Seek medical attention.

HANDLING AND STORAGE Store at room temperature (below 15° recommended). Keep tightly closed and protected from direct sunlight and moisture. Store away from combustible materials.

TOXOLOGICAL INFORMATION Strongly corrosive substance. After skin contact - burns. After eye contact - risk of blindness. After inhalation of vapours - coughing, dyspnoea. Inhalation may lead to the formation of oedemas in the respiratory tract. After ingestion - tissue damage (mouth, oesophagus, gastrointestinal tract), strong pain (risk of perforation), bloody vomiting, death⁵

² If you are a shop manager or safety officer, you may wish to have them on file (we can post or email them to you).

³ This is to prevent acid-soaked fabric coming into contact with skin, as the acid will continue to burn through the skin. Ignore this if the amount spilt is so small that it cannot possibly soak the fabric and make contact with skin.

⁴ This advice is for serious burns, e.g. spilling a bottle. Many jewellers routinely ignore burns caused by small drops and their finger tips are permanently burnt yellow. It is better to wash the acid off immediately, then the damage will be minimal, otherwise the burn could take several days to heal. Better still, ask your supplier for special acid-proof gloves.

⁵ This refers to *drinking* the acid. If you have a residue on your finger and touch your tongue, none of this applies.