# TROYTEST-4 INSTRUCTIONS

Website: www.quicktest.co.uk. Telephone: 01923 220206

## BEFORE YOU START

**Read the safety data.** There is a summary below and there is more technical 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 tissue, 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.

**Plastic 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.

**Glass bottles.** Upon removing cap, take care not to breathe fumes. Replace cap when not in use, even for a few seconds.

## 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.** To use a plastic bottle, turn it upside down, gently squeeze, watch the acid move down the nozzle, let a blob 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 acid from the outside of the nozzle. With a glass bottle, use the very tip of the applicator to apply tiny spots of acid, or the entire side of the spatula to apply larger drops. With a glass bottle, use the very tip of the spatula to apply tiny drops, or its entire side for larger drops.

## 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

# 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 overleaf. 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: dark over a period of a few seconds.** This 'period' varies, depending on the particular mixture (alloy) of 9ct, it also varies in extremes of temperature, slower if it's cool (e.g. 15°C), quicker if it's hot (e.g. 25°C). At approx room temperature and for most alloys of gold, fresh acid turns dark over a period of **5 to 10 seconds**. But don't worry if the reaction is 2 or 3 seconds quicker or 2 or 3 seconds slower, it's the 'turning dark' that is important, not the speed of the reaction. The acid *will* slowly turn green and bubble if left for too long, but nothing like the reaction on brass or copper - try it out so that you can see the difference, especially if you haven't used acid before. All reactions become slower over the weeks and months.

**Tips.** 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 top 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.

**Better than 9ct:** clear = the gold is better than 9ct

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

The acid will change colour over a short period. This 'period' varies, depending on the particular gold mixture (alloy), it also varies in extremes of temperature, slower if it's cool (e.g. 15°C), quicker if it's hot (e.g. 25°C). Despite these 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%.

**14ct / : dark and *still* over a period of a few seconds** (can be as quick as 1 - 2 secs or as slow as 3 - 6 secs) but if it quickly turns very dark (reddish quickly turning to dark red) and bubbles on WHITE metal, double-check for Palladium (see next page).

**18ct** **Yellow*** quite quickly (can be as quick as 3 - 6 seconds or as slow as 8 - 15 seconds). The important factor is that it turns yellow, and that it does this quite quickly, in a few seconds.

**22ct** **Yellow*** as above but much slower (varies from 15 - 30 seconds, to 30 - 60 seconds)

**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.

## 14ct / 18ct / 22ct BOTTLE - WHITE METALS

Use this section for a WHITE metal, when you know that it is neither silver nor 9ct. Apply the acid to the metal in the normal way (see first page), *allow plenty of time for a colour-change*, soak up the 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** | Reactions on white gold are the same as for yellow gold, see *14ct / 18ct / 22ct BOTTLE - ALL GOLD*, on previous page to determine exact carat | From greenish / yellowish-green, to yellowish, to very light yellow (the higher the carat the lighter) | Dark.<br>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 & 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) |

**FOR THE COLOUR-BLIND: 9ct bottle:** hisses, froths and turns a light vivid tone (and you might *hear* it fizzing) = not gold. Dark and still (may slowly start bubbling after a few seconds) = 9ct. Clear = better than 9ct. **14ct-24ct bottle:** Simply dark / blackish and *still* = 14ct or 15ct; mid-tone colour that very rapidly changes to a very dark colour *and bubbles* = Palladium (white metal only, and only if the 9ct test stays clear); light-ish = yellow. **Silver bottle:** clear translucent = amber. A vivid 'deep' tone = deep red. Wishy-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 we recommend changing them after a year. Platinum (green) lasts 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. We print the *date of bottling* on each bottle label in the format MONTH-YEAR, e.g. 12-11 means December 2011. If we bottle more than one batch in a month, we add a letter to the end, e.g. 12-11-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 regularly 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 COSSH data sheets. However, they do not distinguish between a road tanker full of acid and a perfume bottle full 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 official COSSH data sheets (ten pages) unless specifically requested.[1] 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 10mns and seek medical attention.
**Skin contact:** drench skin thoroughly with water. Remove contaminated clothing.[2] Unless contact has been slight, seek medical attention.[3]
**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, death[4]

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[1] 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).

[2] This advice is for clothing soaked in acid and does not apply to tiny drops of acid, which will rot tiny amounts of fabric.

[3] This advice is for serious burns, e.g. spilling a bottle. Many jewellers routinely ignore burns caused by small drops and their skin is 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.

[4] This refers to *drinking* the acid. If you have a residue on your finger and touch your mouth, none of this applies.