Safe Working Procedure for the Use of *Aqua Regia*

*Aqua regia* is a highly corrosive mixture of hydrochloric acid and nitric acid. It is commonly used to remove noble metals such as gold, platinum and palladium from substrates. Glassware may also be washed with *aqua regia* to remove organic compounds. For routine glassware cleaning, however, non-oxidising alternatives such as KOH in *iso*-propanol should be considered.

**Hazards**

*Aqua regia* is both highly corrosive and highly oxidising. Mixing with organic materials is likely to result in a violent explosion.

**Precautions**

When preparing the *aqua regia*, always add the nitric acid to the hydrochloric acid slowly. *Aqua regia* is very likely to become hot. The hot *aqua regia* must be left in an open container until cool.

Any flasks, beakers or other containers of *aqua regia* must be clearly labelled. The label must include the GHS symbols for corrosive and oxidiser.

*Aqua regia* must not be mixed with organic materials except under controlled reaction conditions.

Mix fresh *aqua regia* for each use. Do not store *aqua regia*. Excess *aqua regia* should be neutralized before disposal.

After use, the spent solution should be neutralized before disposal (e.g. by cautious addition of sodium bicarbonate). If the solution is contaminated with heavy metals, the neutralized solution should be collected as hazardous waste. Containers that contained *aqua regia* should be thoroughly washed with aqueous base and water before any further washing.

Any spilled *aqua regia* should be neutralised by addition of a solid base, such as sodium carbonate.

The following personal protective equipment (PPE) is to be used: Safety Glasses, Labcoat, Latex gloves, Long pants, Covered shoes. *Aqua regia* should always be prepared and used in a well-ventilated fume cupboard.