



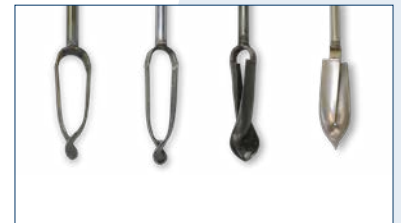
Rust on gouges and augers

These augers and gouges are made of high tensile-strength forgeable iron-manganese steel. Both iron and manganese are non-toxic metals, abundant in the earth's crust on which we live. Natural concentrations are very high.

During storage and transport some rust may develop on the bare metal surface. During first use this rust will scour off quickly. You may also scour with some wet sand prior to first use. The auger or gouge is then ready for sampling of soil on all metals like zinc, cadmium, chromium, copper and even iron and manganese!

Question 1: How do I clean and maintain my augers, gouges, and other sampling tools?

In practice augers keep themselves clean (and sharp) by the high friction of soil particles rubbing the augers surface. Augers or gouges used in acid, saline or alkaline soil are prone to oxidation and should be rinsed with pH neutral water after use. After a drilling in an oil-polluted borehole you may clean the auger with a brush in a bucket of water mixed with neutral baby-shampoo. Spraying our detergent 20.05.29 is very effective too and will also mobilize trace-metals, even the zinc plating from the extension rods! Use this detergent with care, or limit the use to stainless steel or plastic tools only. Isopropylalcohol on a tissue is fine for rapid on-site cleaning. Acetone is more effective and will even remove tars from metals. Dismantle coupling sleeves and other loose parts prior to cleaning to allow rapid and complete drying after the final water rinse. Store in a well ventilated area free from dust and, for plastic materials, smells.



Question 2: Why did we not prevent the development of natural rust?

- A paint will blister off quickly and will pollute samples with a variety of organic pollutants during a prolonged period, necessitating a difficult and cumbersome cleaning procedure prior to first use.
- A zinc plating is very soft. The zinc will be scratched off in a couple dozen drillings, resulting in measurable quantities of zinc in your soil samples and influencing your measurements during a prolonged period. After a few days or weeks the zinc will have completely disappeared and lost its effect.
- A wax or grease is easy to apply, but fairly difficult to remove and, again, risky. Greases, oils and waxes will influence a gas chromatogram (GC) made from soil samples taken with such a grease-treated auger or gouge. In addition, the layer is sticky and will unavoidably rub off all over in the carrying bag or case, extension rods, gloves and consequently soil samples. This should be avoided at all times.



Question 3: The extension rods and upper part are zinc plated. Does this zinc plating contaminate the soil sample?

No, since there is no intense friction contact between soil sample and the rods there is no influence.

Question 4: Do stainless steel soil samplers (coring tubes and rings) contaminate soil samples?

Stainless steel is an alloy of high percentages of mainly chrome, iron and nickel. Alloys have characteristics that are different from the characteristics of a simple "mix" of these metals! Stainless steel is so chemically stable that no loose oxides are formed. It is also hard; scouring with soil will not lead to detectable levels of iron, chromium or nickel concentrations in soil.

Question 5: Does the chromium plated gouge Model P (04.03) contaminate a soil sample.

This gouge is plated with a pure thick layer of nice shiny chromium. Chromium is an extremely hard metal and will only and partly be rubbed off in years of use! Although there is very little chance that these quantities will contaminate a sample with chromium we would not recommend this gouge as first choice for soil analysis on chromium.

