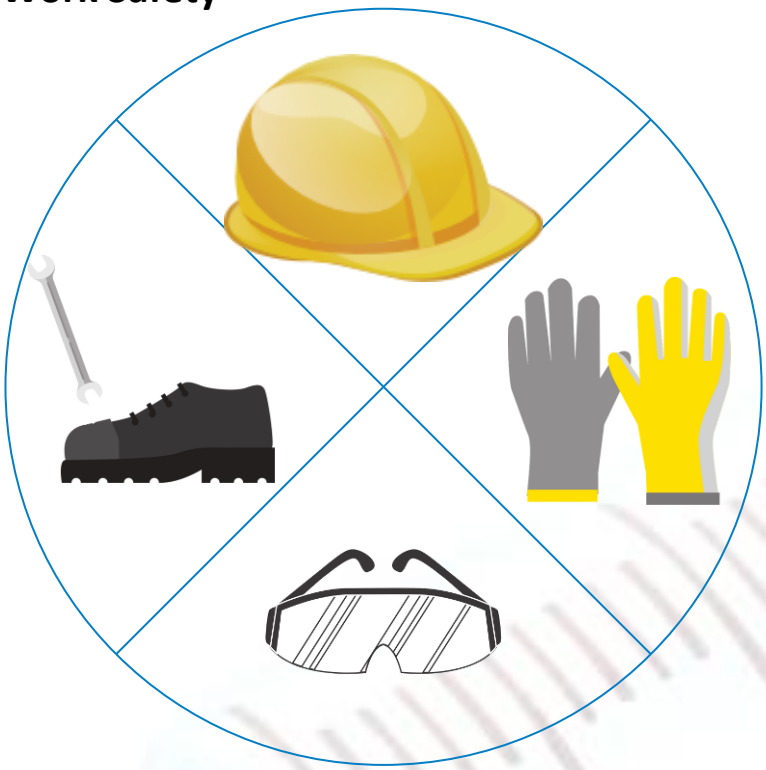
1. Work Safety

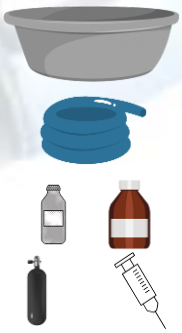


Instructions of transformer user are essential in terms of work safety and they should be applied in priority.

The sampling process should be conducted in company with at least one officer of transformer owner.

- Please use safety helmet, safety glasses, gloves, protective boots and other equipments specified by transformer user.
- If the transformer is energized; 1kV/cm safety clearance should be considered while approaching energized parts. During the sampling process, it must be guaranteed that system will not be energized.
- If oil leakage is detected in the transformer, authorized personnel must be informed.
- During sampling, cigarette and similar products must not be used in any way.

2. Equipment Required During Sampling



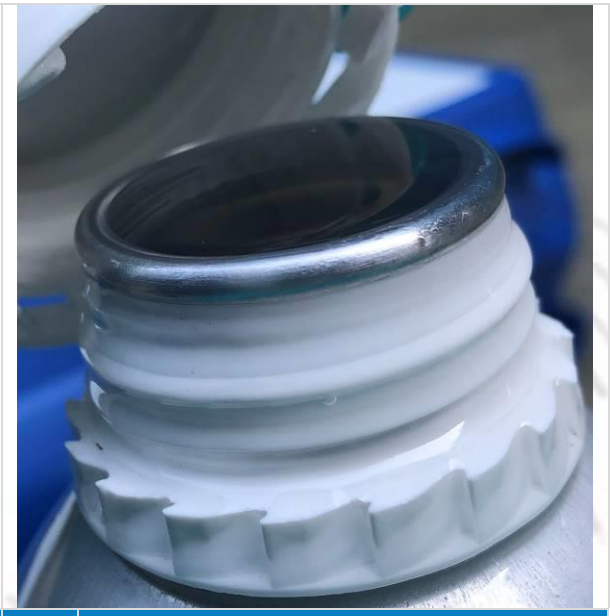
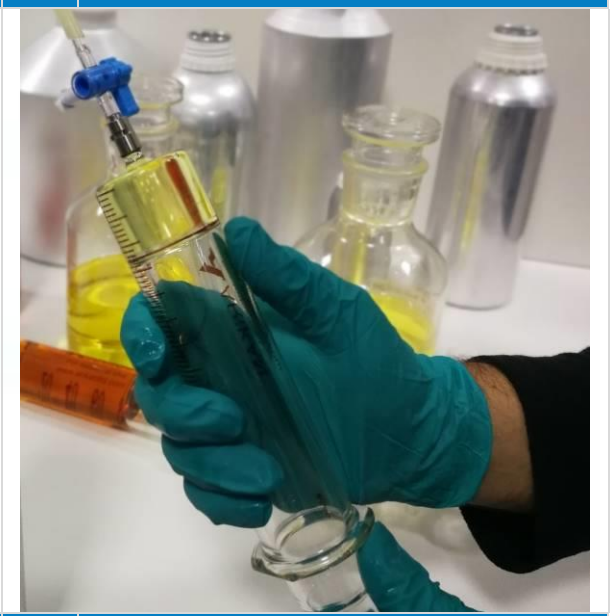
Waste Oil Container

Leakproof Hose

Aluminium / Colored Glass / Stainless steel Bottle or Glass Syringe

3. Sampling Procedure

			
1	Taking oil sample is inadvisable in rainy weather. If taking the sampling in rainy weather is compulsory, the area must be covered. Sample in glass bottles should not be exposed to the sun.	**2**	Sampling equipment must be clean. In case of necessity, proper adaptor should be mounted on valve and a short, leakproof hose compatible with transformer oil is sealed to the end.
3	At least 2 litres oil is drained to waste oil container to remove cumulated oil in tubes. Samples are taken from the bottom valve for oil tests and DGA respectively.	**4**	After some oil is taken in sample bottle a few times, it is shaken slowly; in this way, oil contacts inner side. Then, the oil is poured into the waste oil container.
			
5	Ending of hose which is linked to valve is placed at the bottom of sampling bottle. Valve is opened slowly to prevent bubbles and filled by starting from bottom of bottle.	**6**	Filling continues until a little oil overflow from bottle.

			
7	Then, oil flow is stopped and bottle is sealed with cap. If glass bottle is used, a little oil is poured out by tilting the bottle before cap is closed.	**8**	If an aluminium bottle is used, it can be closed as fully filled. After bottles are closed, surfaces of bottles are cleaned by a cloth.
9	Then, "Insulation Liquid Test Request Form" is filled. The form is sent together with sampling bottles or e-mail.	**10**	Sample number on the bottle is written to "Additional Information" section on "Insulation Liquid Test Request Form". A different form is filled for each sample.
			
11	Oil sample can be taken in same way for dissolved gas analysis or a glass syringe is linked to valve directly beginning from step 4, it is filled and drained completely at least 3 times.	**12**	More than 100 ml oil sample is drawn to syringe; then the syringe is held perpendicularly, oil is fixed to 100 ml by removing surplus oil and air bubbles. Valve on syringe is closed.

4. Critical Points

- It must be made sure that positive pressure is available in transformer when the sample is taken from closed type transformers. For this, pressure indicator of transformer must be checked. Also, oil flowing direction can be checked by using a long hose. If flow of the oil is towards transformer tank, valve can be closed immediately. If sample is taken under negative pressure, air bubble might enter into transformer. This situation might cause important electrical problems.
- When sample is taken by syringe; it is preferable if transfer of oil sample is taken in the syringe by the plunger is pushed with positive pressure, not manually pulling the plunger down.
- To protect the sample against heat, light, sample containers must be placed in a light-proof box in a way to prevent damage. Also, packaging must be carried out providing that the plunger of the syringe will not move during transportation.

- Sampling container must be chosen from the bottles which are well dried and not exposed to moisture. Also, any foreign substance in container (grease oil, dust etc.) might cause test results to conclude completely different.
- Filling up the data in "Insulation Liquid Test Request Form" (as fully as possible) has an important role for following the trend of transformer and interpreting.