GBA Laboratory Group can serve you in various fields

In addition to the parameters listed in DIN EN 60422, it is also recommended to test for gas in the oil as well as furan compounds.

Based on your information, we will gladly put together a schedule for your routine testing in order to enable a fundamental statement about the transformer. We can also carry out further supplementary tests for a more precise definition of your transformer's condition. Such tests would, for example, allow to determine the suitability of a specific insulating oil for a particular type of equipment.

Safety and Quality

The GBA Laboratory Group is a nationwide operating service laboratory. In addition to comprehensive accreditations according to DIN EN ISO/IEC 17025:2005, GBA is also authorized according to §18 BBodSchG, §17 LBodSchG, §25 LAbfG, §9 par. 2, and §4 par. 9 BioAbfV and §3 par. 2 and 4 AbfKlaerV.

The **GBA Laboratory Group** is one of the leading laboratory and consulting service providers in Germany. Currently, the internationally operating company has 10 locations and employs over 430 people on 15,000 m² of laboratory space in Germany.

Our services in environmental analysis

- Groundwater, drinking water (tab water), surface water, wastewater, sewage water, untreated water and process water
- Polluted areas, landfill monitoring, waste management
- Soil, sediment, and dredged material
- Waste, residues, and recycling material
- Biota
- Gas and air

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-14170-01-00

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GBA LABORATORY GROUP ENVIRONMENT

Know what's inside.

GBA Laboratory Group

Analysis of Transformer Oils and Insulating Oils

LABORATORY ANALYSIS AND CONSULTING SERVICES – PRECISE, CONCLUSIVE, AND ON TIME RESULTS!

25 Years
1989–2014

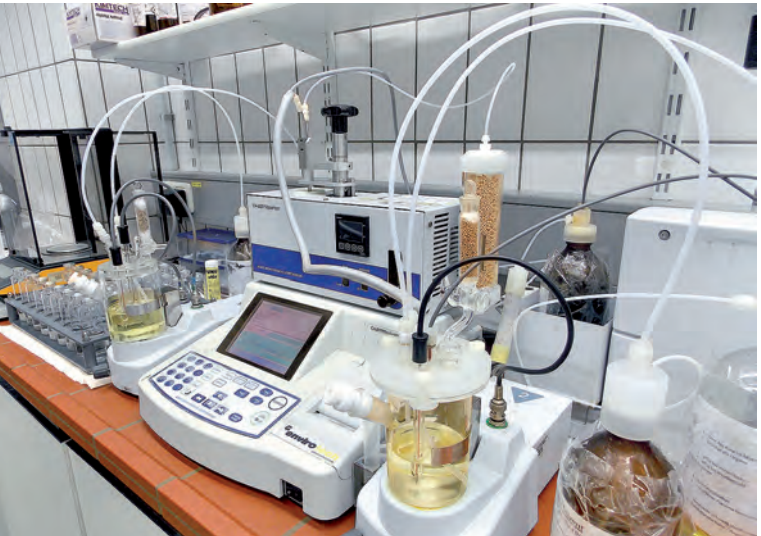
GBA-GROUP.DE

Routine Testing of Transformer Oils and Insulating Oils to Avoid Malfunctions

Utilization of Transformer Oils

In order to efficiently transport electrical energy over long distances, high voltage is utilized. In transformer stations or electrical substations, the energy is transformed in order to make it usable for the consumer.

The oil contained within the transformer serves as a coolant, as protection against sparks, and as insulation for the transformer's coils. In order to inhibit the oil's flammability, in the 1960s polychlorinated biphenyls (PCBs) or polychlorinated terphenyls (PCTs) were used as insulating oils directly or as additives. Due to their toxicological relevance, since 1999 these substances have been prohibited in concentrations over 50 ppm, even within existing equipment. They were replaced by synthetic organic fatty acid esters, with fire point over 300° C and flash points over 250° C.



Due to the thermal and electrical stress, insulating oil ages with time. Discoloration due to air exposure, the formation of acidic compounds, and precipitations of sludge are just a few of the potential consequences. Variations in the electrical and thermal characteristics can also occur. These can be caused by water, solid particles, and other compounds that dissolve in the oil.

Routine Testing of Insulating Oils

In order to avoid unplanned malfunctions and to increase the lifespan of transformers through optimized usage, routine tests should be carried out. The DIN EN 60422 „Guideline for the monitoring and maintenance of insulating oils based on mineral oils in electrical equipment" calls for testing intervals between two and six years. By evaluating certain parameters, the goal is to early recognize flaws, avoid breakdowns, and thus increase profitability.

Sampling

With our qualified and experienced employees, we will gladly assist you with the sampling. The insulating oil is taken directly from the electrical device according to DIN EN 60475 standards and promptly transported to the GBA Laboratory Group's own facilities.

Feel free to contact our competent project consultants about this topic.

Analysis of Insulating Oils

The determination of the individual parameters is conducted according to the relevant DIN and DIN EN standards. The scope of the testing varies depending on the age, the usage, and the operating time of the transformer. In order to provide a statement about the condition of the transformer, the following analytical parameters are available:

Routine Testing
Color and appearance, breakdown voltage, water content, neutralization number (acidity), dielectric loss index, resistivity, and in certain cases also the inhibitor content.

Supplementary Tests
Residue/sedimentation, interfacial tension (IFT), particles.

Special Guideline Tests
Oxidation stability, flash point, miscibility, pour point, density, viscosity, polychlorinated biphenyls (PCB), corrosive sulfur, dibenzyldisulfide (DBDS), passivator content.