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Silica Gel Breather for Transformers

The Silica Gel Breather is an essential accessory used in conservator-type oil-filled transformers. It prevents moisture from entering the transformer conservator during the breathing process caused by expansion and contraction of transformer oil due to temperature variations.
As the transformer cools, air is drawn into the conservator tank. Before entering the transformer, the air passes through the silica gel breather, where moisture is absorbed by the silica gel desiccant. This ensures that only dry air enters the transformer, thereby preserving the insulating properties of the transformer oil and extending equipment life.

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Construction

The Silica Gel Breather consists of a transparent or metal container filled with moisture-absorbing silica gel crystals. The breather is connected to the conservator tank through suitable piping and incorporates an oil seal arrangement at the bottom to prevent direct contact between atmospheric air and the conservator.
The housing is designed for easy inspection and replacement of the silica gel when it becomes saturated.
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Working Principle

Transformer oil expands and contracts with changes in load and ambient temperature.
•During oil contraction, air is drawn into the conservator tank.
•The incoming air passes through the silica gel chamber.
•Moisture present in the air is absorbed by the silica gel desiccant.
•Dry air then enters the conservator, preventing moisture contamination of the transformer oil.
When the transformer oil expands, air is expelled through the breather. The breathing cycle continues throughout transformer operation.
The silica gel changes color as it absorbs moisture, providing a visual indication of its condition and replacement requirement

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Features

Efficient moisture removal from incoming air
Protects transformer oil from moisture contamination
Transparent design for easy inspection of silica gel condition
Robust and corrosion-resistant construction
Easy silica gel replacement and maintenance
Long service life
Suitable for indoor and outdoor installations

Advantages

•Maintains transformer oil dielectric strength
•Reduces oxidation and aging of insulating oil
•Extends transformer service life
•Prevents moisture-related insulation failures
•Improves transformer reliability and performance
•Economical and maintenance-friendly solution

Applications

•Distribution Transformers
•Power Transformers
•Generator Transformers
•Furnace Transformers
•Oil-Filled Reactors

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Technical Data at a Glance

Parameter	Specification
Type	Silica Gel Breather
Desiccant Material	Silica Gel
Mounting	Conservator Connection
Function	Moisture Removal from Incoming Air
Maintenance	Periodic Silica Gel Replacement
Application	Oil-Filled Transformers