IsoTec
Reliable. Safe. Sustainable.

IsoTec NE 350

Increased Fire Safety

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Transformer fires are especially severe — they can spread rapidly, cause significant destruction, and sometimes even result in loss of life. In essence, such fires occur regularly in power networks across the globe.

IsoTec NE 350 provides an ideal solution for reducing fire risk. As a high fire point K-class insulating fluid, it belongs to a group of dielectric liquids that have maintained a flawless 100% fire safety record since their introduction in the 1970s.

FM Global® and Underwriters Laboratory, two globally recognized insurance organizations, have classified IsoTec NE 350 as a less-flammable dielectric fluid. As a result, it demands fewer fire protection measures compared to mineral oil. Moreover, the fluid's excellent fire-resistant characteristics make it suitable for use in transformers installed indoors or in critical locations where mineral oil would not be permitted.

Flash and Fire Point

IsoTec NE 350 has been specially formulated to exhibit exceptionally high flash and fire points—significantly exceeding the thresholds defined for K-class fluids under IEC 61039 and greatly outperforming conventional mineral oil (see Table 1).

Table 1 **- Flash and Fire Points - IEC 61039 Class K2**

Parameter	Test Method	IsoTec NE 350	Mineral Oil
Flash Point	ISO 2592 / ASTM D92	327°C	160°C
Fire Point	ISO 2592	360°C	170°C
Net Calorific Value	ASTM D240-02	37.5MJ/kg	46.0MJ/kg

Data quoted above are typical values

The exceptionally high fire point of IsoTec NE 350 makes ignition highly unlikely and virtually eliminates the risk of pool fires. Furthermore, as a K-class fluid, IsoTec NE 350 allows for reduced equipment spacing in accordance with IEC 61936. This can lead to considerable cost savings by enabling a more compact installation and shorter cable lengths.

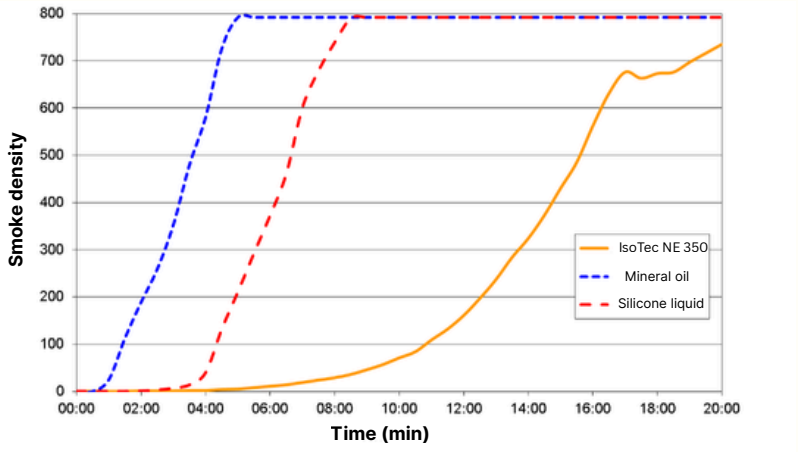
Smoke and Combustion Products

In the highly unlikely event that IsoTec NE 350 does ignite, it would generate non-toxic smoke that is significantly lighter than the smoke produced by burning mineral oil. Additionally, the smoke from IsoTec NE 350 is far less dense than the white silica smoke emitted during silicone fluid fires—an important advantage when planning for safe evacuation and rescue operations.

Method

The smoke density of IsoTec NE 350 was evaluated by the accredited fire safety laboratory Exova Warrington using a modified version of the NFX 10-702 method, which is typically applied to assess materials used in railway carriages. This test measures the optical obscuration of smoke generated when the sample material burns. For IsoTec NE 350, results were compared with those of mineral oil and silicone fluid, with the time taken to reach full obscuration serving as an indicator of relative smoke production.

Figure 1 **– Smoke density test results**



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Results

As illustrated in Figure 1, IsoTec NE 350 generated smoke at a significantly slower rate than the other two fluids and did not reach the maximum obscuration level within the 20-minute test period. As expected, mineral oil produced dense black smoke, while silicone fluid generated grey smoke—both noticeably heavier than the light white smoke emitted by IsoTec NE 350.

Additional fire testing has been carried out by Vielhauer GmbH in collaboration with their laboratories, with detailed results available upon request. When it comes to ensuring the safety of both personnel and property, IsoTec NE 350 clearly stands out as the preferred choice for a fire-safe insulating fluid.