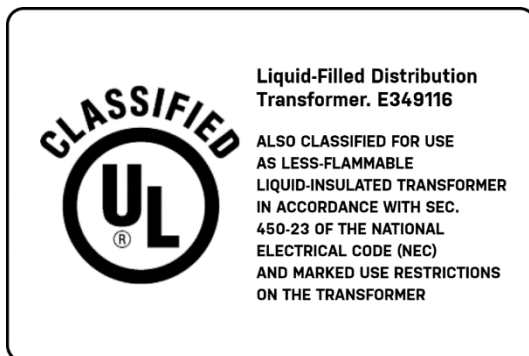


## UL Combination Classification Listing

### Certification of Less-Flammable Liquid-Filled Transformers

It is not uncommon for liquid filled transformers to be installed in areas of enhanced fire safety. Installation requirements per the National Electrical Code, as well as insurer and local code requirements, may influence the type of transformer specified. These installations may require a “listing” based on third-party evaluation of the transformer or components and are specific to the products and manufacturer. The NEC 450-23 defines generally accepted guidelines for less-flammable liquid filled transformers. Underwriters Laboratory (UL) and Factory Mutual (FM) are common third-party organizations that certify transformer designs for use in areas that require less flammable insulation fluid.



### UL Combination Classification Listing

When required, VanTran can provide a UL Combination Classification listing for less flammable liquid-filled transformers. The UL Combination Classification Listing combines a UL listed transformer with a UL Classified fluid and places the special requirements for NEC 450-23 compliance within the Classification of the fluid. The UL Combination Classification Listed Transformer includes the following features:

- Transformer designed to requirements of IEEE C57.12.00
- Tank designed for minimum withstand of 12 psi before rupture
- Fluid fire point of at least 300°C
- Pressure relief device with a flow rate suitable for the transformer kVA rating (per Table 1)
- Transformer primary overcurrent protection (per Table 1)

Transformer 3-phase Transformer Rating kVA	Required Protection*		Required PRD Flow Rate SCFM
	Current Limiting Fusing Maximum I <sup>2</sup> t	Or Overcurrent Protection Maximum I <sup>2</sup> t	
45	500000	700000	35
75	500000	800000	35
112.5	550000	900000	35
150	600000	1000000	50
225	650000	1300000	100
300	750000	1400000	100
500	900000	1900000	350
750	1100000	2200000	350
1000	1250000	3400000	350
1500	1500000	4500000	700
2000	1750000	6000000	700
2500	2000000	7500000	5000
3000	2250000	9000000	5000
3750	2500000	11000000	5000
5000	3000000	14000000	5000
7500	3000000	14000000	5000
10000	3000000	14000000	5000

\*A power system coordination study must be conducted by others to ensure proper overcurrent protection of the transformer to limit the I<sup>2</sup>t let through current available in the system.

Table 1



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