CHEMTEQ®

Filter Breakthrough Indicator
Selected Organic Vapors (SOV BTI LFF)

(PN: 103-0000)

Manual

1. Application

The Breakthrough Indicator (PN: 1030000) is qualitative (yes/no) colorimetric indicator for the exhaustion and end-of-service life of low-flow filters. The indicator is designed to provide real-time indication of the breakthrough of HPLC solvents vapors, including:

1. Acidic vapors (i.e. acetic acid, hydrochloric acid and trifloroacetic acid), 2. Acetone, 3. Acetonitrile, 4. Acrylonitrile, 5. Carbon tetrachloride, 6. Chloroform, 7. DCM/Methylene Chloride (Dichloromethane), 8. Ethanol, 9. Ethyl Acetate, 10. Ethyl acrylate, 11. Ethyl ether, 12. HFIP Hexafluoroisopropanol, 13. Methanol, 14. Methyl acrylate, 15. Phenol, 16. Sulfolane, 17. THF (Tetrahydrofuran).

2. Specifications

2.1. Overall Specification

a.	Weight:	3.8g (0.14oz)
b.	Dimensions:	79mm (3.1in), diameter: 10mm (0.39in)
c.	Operating temperature:	4°C to 35°C (39°F to 95°F)
d.	Operating humidity:	5% RH to 85%RH
e.	Minimum detectable limit:	See performance specifications (2.2.)
f.	Color change:	Orange to red
g.	Storage temperature:	4°C to 25°C, (39°F to 77°F)
h.	Service life:	1 year
i.	Shelf life:	14 Mon. at 4°C to 25°C, (39°F to 77°F)

2.2. Performance Specification

To determine the sensitivity of the breakthrough indicator, a solution/mixture of 10% solvent in water was bubbled with ambient air at a flow rate of 5cc/min. The airflow was passed through the breakthrough indicator until a color change was observed. The elapsed time to observe the first noticeable and the final colors for the respective organic solvent is depicted in the table below.

2.3. Cross interferences and limitations

Basic vapors in high concentrations impair the performance of the organic vapors breakthrough indicator. The indicator does not respond to aliphatic hydrocarbons (i.e. hexane, pentane and octane), aromatic hydrocarbons (i.e. benzene, toluene and xylene), aldehydes (i.e. formaldehyde) or basic organic vapors (i.e. pyridine and aliphatic amines). No other interferences or limitations are known.

Solvent (10% in Water)	Breakthrough Detection Time	
	First Noticeable Color (min)	Final Color (min)
Acetic acid	6	14
Acetone	10	30
Acetonitrile	10	30
Acrylonitrile	7	42
Carbon tetrachloride	10	30
Chloroform	2	5
Ethanol	2	5
Ethyl acetate	2	5
Ethyl acrylate	7	39
Ethyl ether	>1	5
HFIP Hexafluoroisopropanol	1	4
Hydrochloric acid	> 1	4
Methanol	2	5
Methyl acrylate	4	36
Methylene chloride	2	4
Phenol	4	12
Sulfolane	8	17
Tetrahydrofuran	10	20
Trifloroacetic acid	4	30

3. Operating Instructions

a. Ensure that packaging pouch is intact.
b. Open packaging pouch by tearing off the top part from one of side notches.
c. Remove breakthrough Indicator from packaging pouch.
d. Remove the ⅜" plug from the filter outlet lid.
e. Remove the protective red plug to activate the breakthrough indicator.
f. Attach Breakthrough Indicator into filter outlet (closed pores foam adapter is required; please contact us for details).

g. Replace filter when the Breakthrough Indicator changes color to red.