TICs DETECTION TUBES

Detection tubes for most common TICs

Tubes dimensions ∅ 6 x 105 mm

Usable in different hand and electric pumps

Tube DT11 in a hand pump UNIVERSAL, CZ

Tube DT12 in a hand pump Draeger, DE

El. pump CHP-5, ORITEST, CZ

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AOBP
Asociace obranného a bezpečnostního průmyslu ČR
Defence and Security Industry of the Czech Republic Association

Verze 01-2012

PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 001**

Application	**PHOSGENE**
Code	**DT-001**
Marking	Phosgene $COCl_2$ DT-001
Sensitivity	0,5 $mg.m^{-3}$
Suction	10 strokes per 100 ml, or 1 litre
Colour	Yellowish → red
Reaction	Phosgene and Diphosgene react with s 4-(p-nitrobenzyl)pyridine creating quartere ammonia salts.
Description	The detection tube contains one indication layer formed by silica gel impregnated with 4-(p-nitrobenzyl)pyridine and N-fenylbenzylamine.
Detection procedure	A prescribed number of strokes are executed (equivalent air volume) .Colour of the indication layer should be compared with the etalon on the label.
Selectivity	Similar colour as phosgene creates also acethylchloride, benzoyl chloride and other acylation substances.
Interferences	High concentration of hydrogen chloride and other strongly acid gases and vapours may interfere
Temperature	0-50 °C
Humidity	The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	DT 002

Application	**HYDROGEN CYANIDE, CYANOGEN CHLORIDE**
Code	**DT-002**
Marking	Hydrogen cyanide, Cyanogen chloride HCN, ClCN DT-002
Sensitivity	3 $mg.m^{-3}$
Suction	10 strokes per 100 ml, or 1 litre
Colour	AC,CK: brownish yellow → pink-violet
Reaction	Cyanogen Chloride is detected by a modified König reaction. Hydrogen cyanide is converted to Cyanogen chloride on the auxiliary layer.
Description	The tube contains two layers. The upper auxiliary layer and lower indication layer.
Detection procedure	Provide prescribed number of strokes (equivalent air volume) and compare the colour of the detection layer with the etalon on the label.
Selectivity	Tabun can be also detected (cleaves hydrogen cyanide). The indication layer is specific for halogens or phosgenoxime.
Temperature	0-50 °C
Humidity	The tube can be used in a broad range of air humidity (10 – 90%).
Construction	

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PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 003**

Application **CHLORINE**

Code **DT-003**

Marking Chlorine Cl_2 DT-003

Sensitivity 3 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour Yellow - red

Reaction Reaction of chlorine with potassium bromide releases bromide that creates a red product with fluoresceine.

Description The tube contains one indication layer, silica gel impregnated with chromogen reagents (potassium bromide and fluoresceine).

Detection procedure To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.

Selectivity The tube can detect also another strong oxidating reagents mainly bromide or natrium dioxide (in a higher concentration).

Interferences Tube sensitivity is influenced presence of high concentration of acid gases and vapours..

Temperature 0-50 ^{o}C

Humidity The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 004**

Application **NATRIUM OXIDES**

Code **DT-004**

Marking Natrium oxides NO_x DT-004

Sensitivity 2 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour White – yellow up brown

Reaction Reaction of natrium dioxide with potassium iodide releasing iodide

Description The tube contains one indication layer, silica gel impregnated with potassium iodide.

Detection procedure To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.

Selectivity The tube can detects also other strong oxidizers mainly chlorine and bromine.

Temperature 0-50 °C

Humidity The tube can be used in a broad range of air humidity (10 – 95%).

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	DT 005

Application **SULPHUR DIOXIDE**

Code **DT-005**

Marking Sulphur dioxide SO_2 DT-005

Sensitivity 5 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour White – yellow

Reaction Reaction of sulphur dioxide with Ellman reagent creating coloured thiolate.

Description The tube contains one indication layer, silica gel impregnated Ellman reagent and the buffer.

Detection procedure To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.

Selectivity Sulphide reacts similarly

Interferences Presence of high concentration of acid gases and vapours.

Temperature 0-40 °C

Humidity The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	DT 006

Application **SULPHIDE**

Code **DT-006**

Marking Sulphide H_2S DT-006

Sensitivity 5 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour Light blue - brown

Reaction Reaction of sulphide with cupric ions creating colouric cooper sulphide.

Description The tube contains one indication layer, silica gel impregnated with cooper acetate.

Detection procedure To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.

Selectivity The reaction is specific.

Interferences The reaction system is very resistant to interferences.

Temperature 0-50 °C

Humidity The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 007**

Application	**CARBON DISULPHIDE**
Code	**DT-007**
Marking	Carbon disulphide CS_2 DT-007
Sensitivity	20 $mg.m^{-3}$
Suction	10 strokes per 100 ml, or 1 litre
Colour	Light blue – yellow up brown
Reaction	Reaction of carbon disulphide with cupric ions and piperazine creating coloric cupric dithiocarbamate.
Description	The tube contains one indication layer, silica gel impregnated with cupric acetate and piperazine.
Detection procedure	To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.
Selectivity	Sulphide creates similar colour.
Temperature	0-50 °C
Humidity	The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 008**

Application	**AMMONIA**
Code	**DT-008**
Marking	Ammonia NH_3 DT-008
Sensitivity	50 $mg.m^{-3}$
Suction	10 strokes per 100 ml, or 1 litre
Colour	Yellow – green up blue
Reaction	Reaction of ammonia with phosphoric acid a change of pH is indicated by acidobasic indicator with bromo-cresol greenth.
Description	The tube contains one indication layer, silica gel impregnated with bromo-cresol greenth, phosphoric acid and glycerine.
Detection procedure	To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.
Selectivity	Similarly react also another alcalic gases and vapours, e.g. volatile, aliphatic and cyclic amines and hydrazines..
Temperature	0-50 °C
Humidity	The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	DT 009

Application **HYDROGEN CHLORIDE**

Code **DT-009**

Marking Hydrogen chloride HCl DT-009

Sensitivity 10 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour Yellow - red

Reaction Reaction of hydrogen chloride with an alkalia, a change of pH is indicated by acido basic indicator with methyl orange..

Description The tube contains one indication layer, silica gel, impregnated with methyl orange.

Detection procedure To provide described number of strokes (equivalent air volume. Colour of the indication layer should be compared with the etalon on the label.

Selectivity Similarly react also another acid gases and vapours, e.g. phosgene, phosphor chloride, organic and mineral acids.

Interferences 0-50 °C

Temperature The tube can be used in a broad range of air humidity (10 – 95%)

Humidity

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	**DT 010**

Application **FORMALDEHYDE**

Code **DT-010**

Marking Formaldehyde HCHO DT-010

Sensitivity 0,5 $mg.m^{-3}$

Suction 10 strokes per 100 ml, or 1 litre

Colour White - violet

Reaction Reaction of formaldehyde with specific reagent creates coloured 6-merkapto-5-triazol-(4,3-b)-s-tetrazine.

Description The tube contains one indication layer and an ampoule with solution. The layer is of Silica gel impregnated with chromogene reagent. Saturated solution of natrium perchlorate in 10% natrium hydrate.

Detection procedure Provide described number of strokes (equivalent air volume). Crush the ampoule and shake. Colour of the indication layer should be compared with the etalon on the label.

Selectivity Similar reaction is with volatile aldehydes. The colour could be different.

Intervferences Acid agents in air degreses the tube sensitivity.

Temperature 0-50 ^{o}C

Humidity The tube can be used in a broad range of air humidity (10 – 95%)

Construction

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PRODUCT INFORMATION	
TIC DETECTION TUBE	DT 011

Application **CARBON MONOXIDE**

Code **DT-011**

Marking Carbon monoxide CO, DT011

Sensitivity 30 $mg.m^{-3}$

Suction 30 strokes per 100 ml, or 3 litres

Colour Yellow-green → grey to black

Reaction Carbon monoxide reduces palladium metal from its salt.

Description The tubes contains one indication layer and an ampoule with solution.

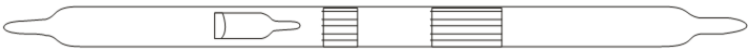
Detection procedure First crush the ampoule and provide prescribed number of strokes (equivalent air volume). Colour of the indication layer should be compared with the etalon on the label.

Selectivity Similar reaction is with another reducing compounds e.g. sulphur dioxide, hydrogen sulphide, thiols, unsaturated hydrocarbons etc.

Temperature 0-50 °C

Humidity The tube can be used in a broad range of air humidity (10 – 80%).

Construction



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PRODUCT INFORMATION	
CWA DETECTION TUBE	**DT 12**

Application **PHOSGENE, DIPHOSGENE, CHLOROCYANIDE, HYDROGEN CYANIDE CG (DP), CK, AC**

Code **TT-12**

Marking 2 green stripes

Sensitivity

Phosgene (diphosgene)	5 $mg.m^{-3}$
Chlorocyanide	5 $mg.m^{-3}$
Hydrogen cyanide	5 $mg.m^{-3}$

Suction 30 strokes per 100 ml, or 3 litres

Colour

Phosgene (diphosgene)	yellowish → red
Chlorocyanide:	yellowish → pink
Hydrogen cyanide:	yellow → orange up to brown

Reaction Phosgene and diphosgene react with 4-(p-nitrobenzyl)pyridine, yielding a quaternary ammonium salt. Chlorocyanide is indicated by the modified reaction according to König. 4-benzylpyridine and dimedone are the basic components of this preparation.
Hydrogen cyanide reduces sodium picrate yielding the sodium salt of isopurpuric acid.

Description The detection tube contains three indication layers formed by silicagel impregnated with chromogen preparations. The upper layer serves for the detection of phosgene (diphosgene), the central layer for the detection of chlorocyanide and the bottom layer for the detection of hydrogen cyanide.

Detection Procedure A prescribed number of strokes are executed (equivalent air volume) and the colour of individual layers is compared with the etalon.

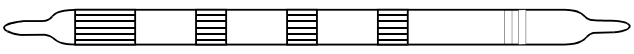
Selectivity The indication layer for phosgene and disphosgene is also sensitive to other acylation substances, for example, benzoyl chloride, chloromethyl formate, etc.
The indication layer for chlorocyanide responds to bromocyanide, but also to phosgeneoxime.
Other reducing agents may react similarly as hydrogen cyanide, unless they are intercepted by the preceding indication layer. For this reason, the detection of hydrogen cyanide is sufficiently selective.

Interferences High concentrations of hydrogen chloride and other strongly acid gases and vapours may interfere with the detection of phosgene and diphosgene. The layer becomes yellow by the effect nitrogen dioxide. The layer for chlorocyanide becomes pink by the action of nitrogen dioxide.
The layer for hydrogen cyanide is coloured orange or brown by the action of higher concentrations of sulphur dioxide.

Temperature 0-50^{0}C (below 15°C heating required). Under normal conditions, a higher sensitivity can be achieved, primarily for hydrogen cyanide, when heating the tube after sampling contaminated air.

Humidity The tube can be used in a broad range of air humidity (10-90%).

Construction



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