

**DRUG TESTING KIT EVALUATION – RESULTS REPORT –MMC – MDMA
DRUG TESTING KIT**

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1.0 SCOPE

On behalf of the Association of Chief Police Officers (ACPO) and the Drug Testing Kit (DTK) Committee the Home Office Centre for Applied Science and Technology (CAST) has evaluated the suitability of commercially available DTKs for use by the Police in England and Wales in evidential testing of samples suspected to be MDMA in guilty plea and non-guilty plea possession cases.

The evaluation process has involved three different phases; (I) a paper evaluation; (II) a usability study; and (III) a full laboratory evaluation

This document presents the results to the DTK Committee from the Phase I to III testing of the *MMC MDMA Colorimetric* kit, which is based on the Marquis Reagent.

2.0 RESULTS

The results from Phase I and Phase II were considered by the DTK sub-group Committee consisting of representatives from ACPO, the Forensic Regulator's Office and CAST.

The DTK was required to meet the pass criteria in Phases I and II before progressing to the laboratory testing in Phase III. Full details of each Phase are given in the Technical Specification in Appendix A.

2.1 Phase I

Each application was initially assessed on how, on paper, it met the requirements set out in Phase I.

Phase I was divided into three separate sections; (i) requirements of the DTK, (ii) requirements of the sample identification process and (iii) additional requirements for electronic devices.

The *MMC MDMA Colorimetric kit* passed the requirements set out in Phase I.

2.2 Phase II

Phase II of the approval process involved placing examples of the device into police stations across England and Wales and asking police officers and/or trained civilian staff to comment on the suitability of the DTK for use in an operational setting.

The *MMC MDMA Colorimetric kit* passed all the requirements set out in Phase II.

2.3 Phase III

Phase III involved a series of laboratory tests undertaken by scientists at CAST. The testing was split up into four different sections: (A) response to street-seized samples, (B) response to other controlled drugs and new psychoactive substances (NPS), (C) response to cutting agents and adulterants and (D) response to pharmaceuticals.

Each section was weighted equally and the DTK had to meet the minimum requirements set out in each section to pass Phase III.

2.5.1 Section A

The DTK was tested against 300 'real' samples of MDMA that have been seized by police forces in England and Wales. All samples used in the testing were confirmed to contain MDMA by a forensic laboratory using gas-chromatography-mass spectrometry (GC-MS).

Each sample was tested once on each device and the result was interpreted as either 'positive' or 'negative'.

Pass Criteria

The DTK must have a true positive rate of at least 90% (lower 95% confidence interval must be more than or equal to 85%). The device should therefore positively identify 265 or greater samples out of 300.

Result

The DTK met the pass criteria by positively identifying 297/300 of samples tested.

2.5.2 Section B

The aim of this section was to establish if pharmaceutical grade (99.5%+ purity) controlled drugs or new psychoactive substance (NPS) produces a positive result with a kit. The 24 substances tested have been identified as ones that could be encountered operationally by the police.

Each substance was tested 20 times using the sampling equipment provided and in accordance with the manufacturer's instructions.

Pass Criteria

The DTK must demonstrate no greater than a 10% false positive rate with each of the substances. This means that each substance cannot achieve a greater than 2/20 false positive result otherwise it will be classified as a 'fail' on that particular substance.

The DTK is allowed to fail on two of the 24 substances tested. Failure on any more than two substances will result in it being rejected.

Result

The DTK did not meet the pass criteria for this section, false positive results were obtained for 20/20 samples tested for (i) 5-APB which is currently controlled under a temporary class drugs order and, (ii) 5-MeO-DALT and (iii) MPA which are not controlled under the Misuse of Drugs Act, 1971.

2.5.3 Section C

This purpose of this section was to establish if pharmaceutical grade (99.5%+ purity) cutting agents and adulterants produce a positive result with the DTK. The cutting agents and adulterants tested have been identified as either (i) being likely to occur within an MDMA sample or (ii) are likely to occur within a seizure containing MDMA.

Each substance was tested 20 times using the sampling equipment provided and in accordance with the manufacturer's instructions.

Pass Criteria

The DTK must demonstrate no greater than a 10% false positive rate with each of the substances. This means that each substance cannot achieve a greater than 2/20 false positive result otherwise it will be classified as a 'fail on that particular substance.

The DTK will only be allowed to fail on two of the 20 substances listed. Any more than two substances will result in it being rejected.

Result

The DTK met the pass criteria of this section as no false positive results were observed with any of the substances tested.

2.5.4 Section D

The purpose of this section was to establish whether common pharmaceutical substances produce a positive result with the DTK. The substances that were tested have been identified as ones that could be encountered operationally by the police.

Each substance was tested 20 times using the sampling equipment provided and in accordance with the manufacturer's instructions.

Pass Criteria

The DTK must demonstrate no greater than a 10% false positive rate with each of the substances. This means that each substance cannot achieve a greater than 2/20 false positive result otherwise it will be classified as a 'fail' on that particular substance.

The DTK will only be allowed to fail on two of the 15 substances listed. Failure on any more than two substances will result in it being rejected.

Result

The DTK met the pass criteria of this section as no false positive results were observed with any of the substances tested.

2.54 Additional Observations

The test

The testing procedure took approximately two minutes to complete. The glass vials containing the colorimetric reagent were well packaged and none were broken. For MDMA the black colour obtained matched the color given for an MDMA positive on the DTK vial.

Ease of use

The DTK would be easy to use by someone who has no previous scientific training. The test contains chemicals including sulphuric acid, formaldehyde and methanol and should be completed wearing personal protective equipment (PPE). The vials need to be disposed of in a sharps bin

Instructions supplied with DTK

The DTK instructions are generic for all testing kits MMC sell and would benefit from health and safety information and a colour chart indicating what a positive/negative result is. There is no mention in the instructions for the need to use a clean spatula each time or to clean down the work surfaces after each test.

Sample preparation

The spatula provided with the DTK was not easy to use and unsuitable for sampling and transferring MDMA tablets into the vials

3.0 SUMMARY

The *MMC DTK for MDMA* failed Section B of the Phase III testing stage, giving false positive results with three new psychoactive substances. To pass this section the DTK would have been allowed to fail on two out of the 24 substances listed. All other requirements set out in the DTK Technical Specification were met.