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### **iis memo 2303: Reproducibilities of Purity and Impurities in Methanol**

Since 1999 proficiency tests for Methanol have been organized by the Institute for Interlaboratory Studies based on the latest version of the IMPCA specification.

The technical committee of IMPCA contacted the Institute for Interlaboratory Studies (iis) with the request to investigate the reproducibilities for Purity and Impurities using the test results of the iis PTs over the years. The objective is to look whether the observed reproducibilities are suitable to be used for the IMPCA 001 test method for the determination of Purity and Impurities of Methanol.

It was decided to use the iis PT data gathered between 2009 till 2022 to estimate a target reproducibility for the determination of Purity and Impurities of Methanol.

Component	unit	number iis PTs	application range	Reproducibility
Purity on dry basis	%M/M	14	99.90 – 100	$R = -1.2275 * X + 122.75$
Acetone	mg/kg	11	10-30	$R = 0.3878 * X$
Ethanol	mg/kg	13	13-60	$R = 0.3352 * X$
Benzene/Toluene	mg/kg	11	9-30	$R = 0.3045 * X$

Table 1: Overview of the estimation reproducibility

Note: X = measured test value

Good estimations of the reproducibility are obtained and a clear linear curve is observed between the mean PT value and the corresponding reproducibility. Therefore, a linear regression was calculated over these data, see table 1.

For future PTs on Purity and Impurities in Methanol, starting with the 2023PT of iis23C04, iis will use these equations to estimate the target reproducibilities to be used for the evaluation of the quality of the test results.

This document can be downloaded from the iis website [www.iisnl.com](http://www.iisnl.com)



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### Appendix 1

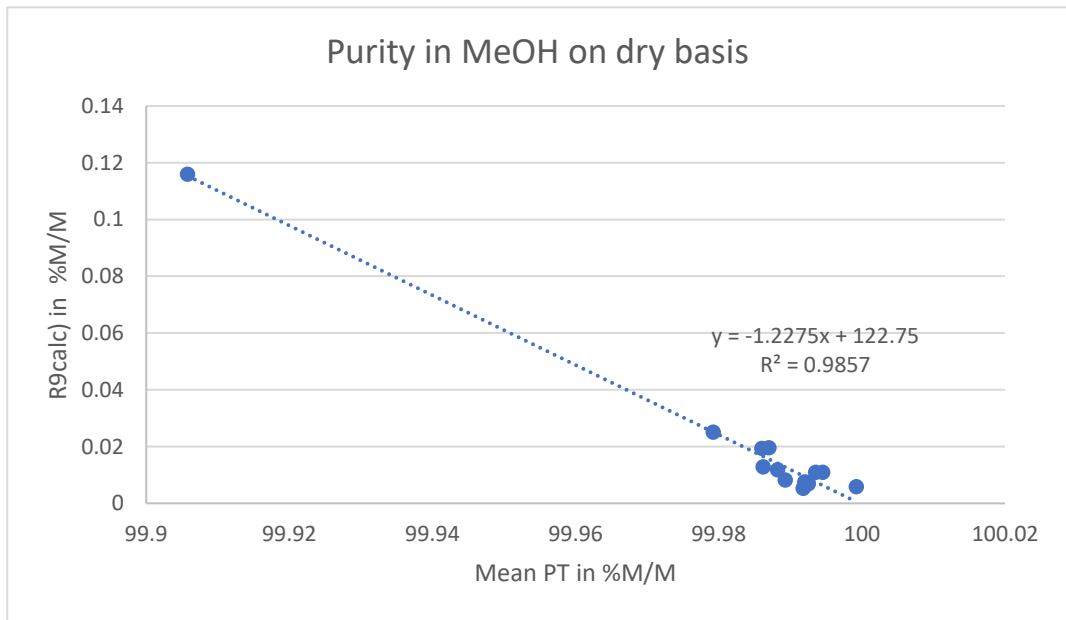


Figure 1: The observed reproducibilities of Purity of Methanol in iis PTs 2009-2022

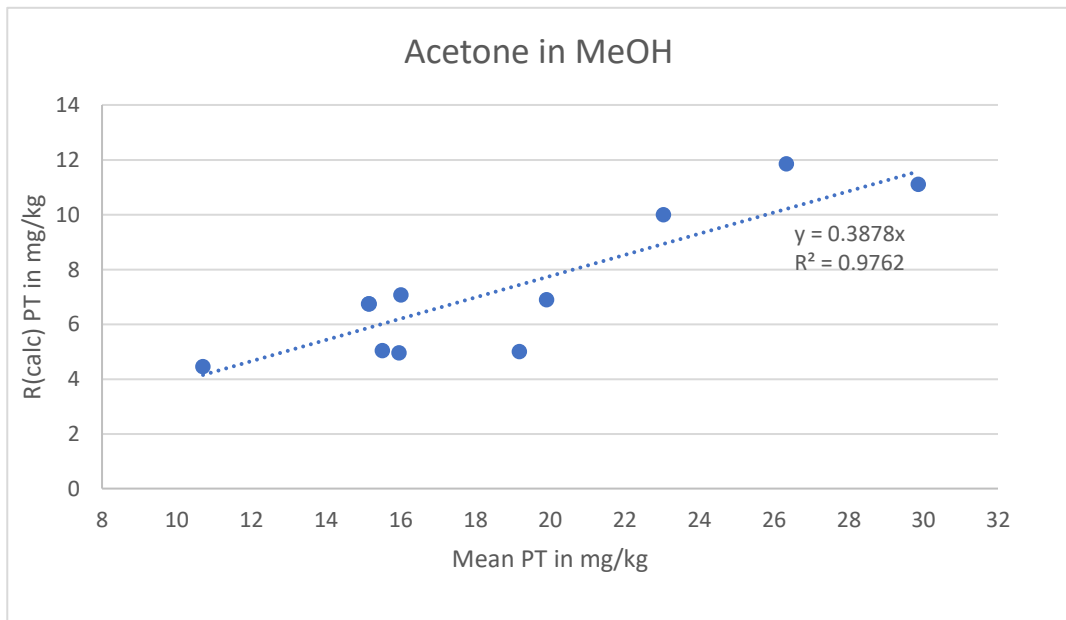


Figure 2: The observed reproducibilities of Acetone in Methanol in iis PTs 2009-2021



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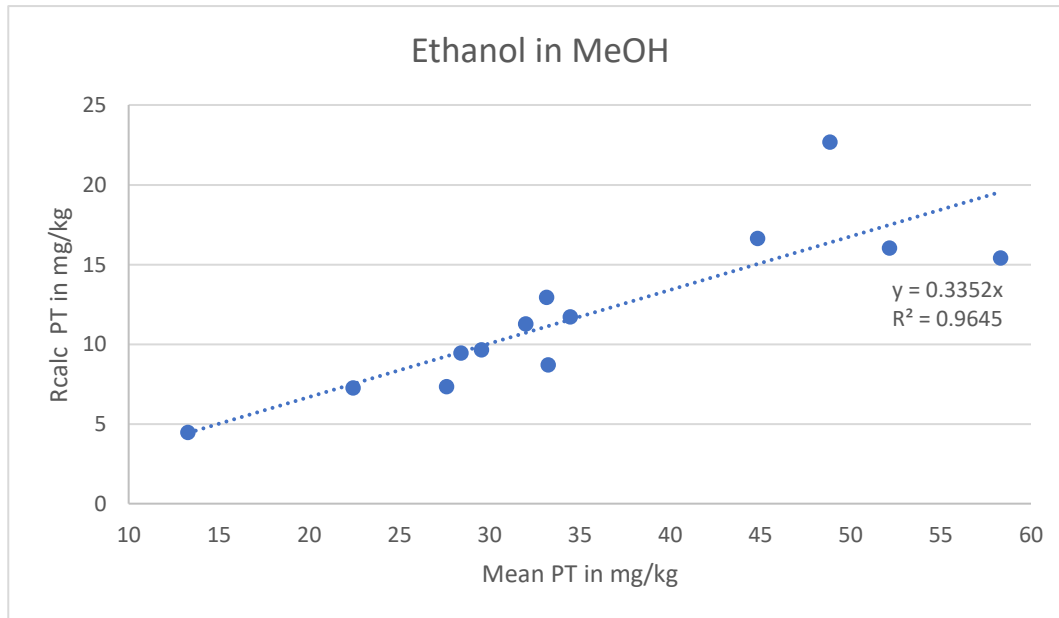


Figure 3: The observed reproducibilities of Ethanol in Methanol in iis PTs 2009-2022

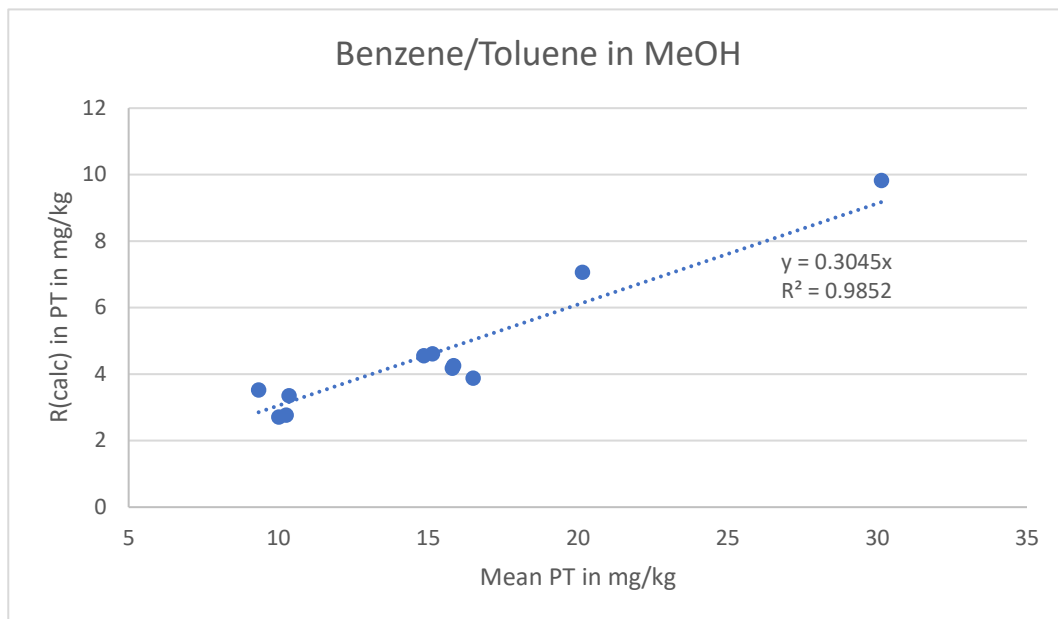


Figure 4: The observed reproducibilities of Benzene/Toluene in Methanol in iis PTs 2009-2022