

DIN EN 16602-70-05:2015-01 (E)

Space product assurance - Detection of organic contamination surfaces by infrared spectroscopy; English version EN 16602-70-05:2014

Contents	Page
Foreword	5
1 Scope.....	7
2 Normative references.....	8
3 Terms, definitions and abbreviated terms.....	9
3.1 Terms defined in other standards	9
3.2 Terms specific to the present standard	9
3.3 Abbreviated terms.....	11
4 Principles	13
5 Requirements.....	14
5.1 Preparatory activities	14
5.1.1 Hazard, health and safety precautions	14
5.1.2 Facilities.....	14
5.1.3 Materials	15
5.1.4 Handling.....	15
5.1.5 Equipment.....	15
5.1.6 Miscellaneous items.....	16
5.2 Procedure for sampling and analysis	17
5.2.1 Summary	17
5.2.2 Direct method.....	17
5.2.3 Indirect method	17
5.3 Reporting of calibration and test data.....	21
5.4 Quality assurance	21
5.4.1 Data	21
5.4.2 Nonconformance.....	21
5.4.3 Calibration.....	21
5.4.4 Traceability	25
5.4.5 Training	25
5.5 Audit of measurement equipment	26
5.5.1 General	26

5.5.2	Audit of the system (acceptance)	26
5.5.3	Annual regular review (maintenance) of the system.....	27
5.5.4	Special review.....	27
Annex A (normative)	Calibration and test results – DRD.....	28
Annex B (informative)	Selection criteria for equipment and accessories for performing the infrared analysis of organic contamination	30
Annex C (informative)	Calibration of infrared equipment.....	35
Annex D (informative)	Interpretation of infrared spectra	40
Annex E (informative)	The use of molecular witness plates for contamination control.....	44
Annex F (informative)	Collecting molecular contamination from surfaces by wiping and rinsing	49
Annex G (informative)	Contact test	54
Annex H (informative)	Immersion test.....	56

Figures

Figure 5-1: Sampling and analysis procedure flow chart.....	20
Figure C-1 : Example for a calibration curve.....	38
Figure C-2 : Measurement of peak heights.....	39
Figure D-1 : Characteristic spectrum of bis (2-ethylhexyl) phthalate	41
Figure D-2 : Characteristic spectrum of a long chain aliphatic hydrocarbon.....	41
Figure D-3 : Characteristic spectrum of poly (dimethylsiloxane)	41
Figure D-4 : Characteristic spectrum of poly (methylphenylsiloxane).....	41
Figure E-1 : Witness plate holder and witness plate used for organic contamination control	44
Figure E-2 : Example of a witness plate information sheet	48
Figure F-1 : Example of a sample information form	53

Tables

Table 5-1: Standard materials used for the IR analysis.....	22
Table B-1 : Important properties of common window materials used for infrared spectroscopy	33
Table B-2 : Examples of compound references and suppliers	34
Table C-1 : Volumes to be applied from stock solutions and respective target amounts	38
Table C-2 : Example results of the direct calibration method	39
Table D-1 : Assignment of infrared absorption bands for the four main groups of contaminants.....	42