

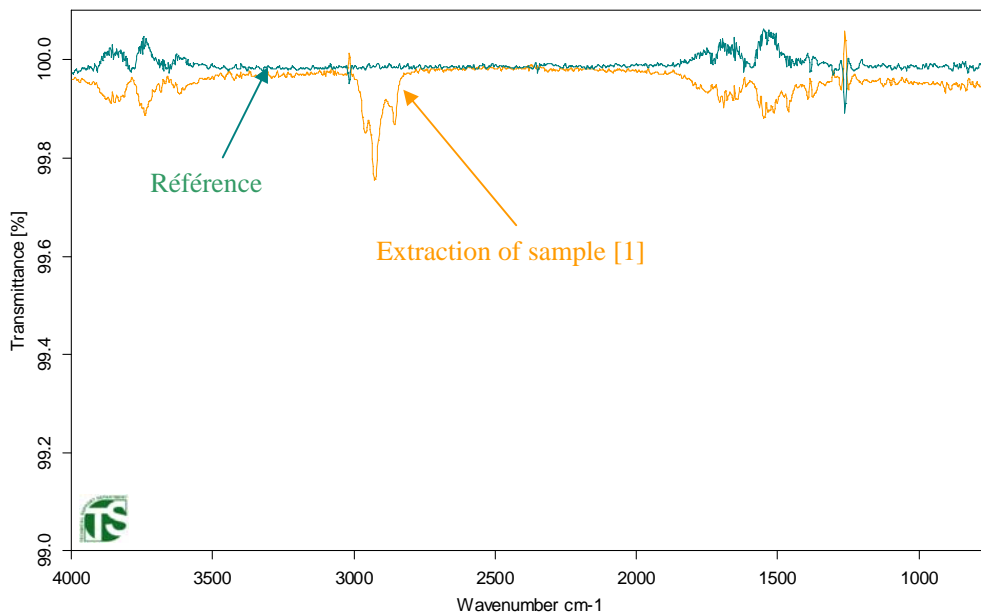


TS / MME – CCS
Chemistry Laboratory

Analytical Chemistry		<i>N° EDMS</i>																										
		<i>N° MME-CCS : X-36/07.07</i>																										
Applicant :		Reception date: 26.07.2007																										
Antonio Pellegrino PH/ULB - 162572	Sébastien Bachmann PH/ULB - 162038																											
Object of request : <i>Cleanliness state control of stainless steel tubes for LHCb Outer Tracker gas systems in point 8 (LHC).</i>																												
Samples : <ul style="list-style-type: none"> [1]: RackROA13 side A Output 204(35)-OT [2]: Rack ROA13 side A Input 202(28)-OT [3]: Rack ROA13 side C Input 201-OT [4]: Rack A3BO4 side A Output 204-OT [5]: Rack A3BO4 side C Output 203-OT-CRLP P250 [6]: Rack A3BO5 side C Input 201-OT-CRLP249 																												
Sampling : The sampling extractions were realized in the LHCb cavern, using PTFE filters and n-hexane. Two filters were used by pipe.																												
Method, instrument, norms : <ul style="list-style-type: none"> – FT-IR Spectrometry; Instrument : Bruker Vertex 70. – Procedure: SM-CP: EDMS Nr. 410981 – “Identification de produits siliconés présents comme contaminants sur différents supports”. – Procedure: MME-CEM - Preparation procedure to extract the organic contaminants 																												
Results and discussion :																												
<table border="1"> <thead> <tr> <th>Sample number</th> <th>Results/comments</th> </tr> </thead> <tbody> <tr> <td>[1]</td> <td>Traces of Hydrocarbons products</td> </tr> <tr> <td>[2]</td> <td>Negligible Traces of Hydrocarbons products</td> </tr> <tr> <td>[3]</td> <td>Negligible Traces of Hydrocarbons products</td> </tr> <tr> <td>[4]</td> <td>Non negligible traces of Hydrocarbons products</td> </tr> <tr> <td>[5]</td> <td>Pollution by Hydrocarbons products</td> </tr> <tr> <td>[6]</td> <td>Pollution by Hydrocarbons products</td> </tr> <tr> <td>[7]</td> <td>Pollution by Hydrocarbons products</td> </tr> <tr> <td>[8]</td> <td>Non negligible traces of Hydrocarbons products</td> </tr> <tr> <td>[9]</td> <td>Non negligible traces of Hydrocarbons products</td> </tr> <tr> <td>[10]</td> <td>Non negligible traces of Hydrocarbons products</td> </tr> <tr> <td>[11]</td> <td>Traces of Hydrocarbons products</td> </tr> <tr> <td>[12]</td> <td>Traces of Hydrocarbons products</td> </tr> </tbody> </table>			Sample number	Results/comments	[1]	Traces of Hydrocarbons products	[2]	Negligible Traces of Hydrocarbons products	[3]	Negligible Traces of Hydrocarbons products	[4]	Non negligible traces of Hydrocarbons products	[5]	Pollution by Hydrocarbons products	[6]	Pollution by Hydrocarbons products	[7]	Pollution by Hydrocarbons products	[8]	Non negligible traces of Hydrocarbons products	[9]	Non negligible traces of Hydrocarbons products	[10]	Non negligible traces of Hydrocarbons products	[11]	Traces of Hydrocarbons products	[12]	Traces of Hydrocarbons products
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No silicone contamination was observed.																												
Hydrocarbon contaminations were observed on certain tubes (see table above); the sampling procedure does not permit a quantitative measurement; the analyses carried out show evidence of the presence of a pollution of different grades caused by hydrocarbon products.																												
Realized by: B.TEISSANDIER Date : 2 august 2007		Verified by : Sorin ILIE																										

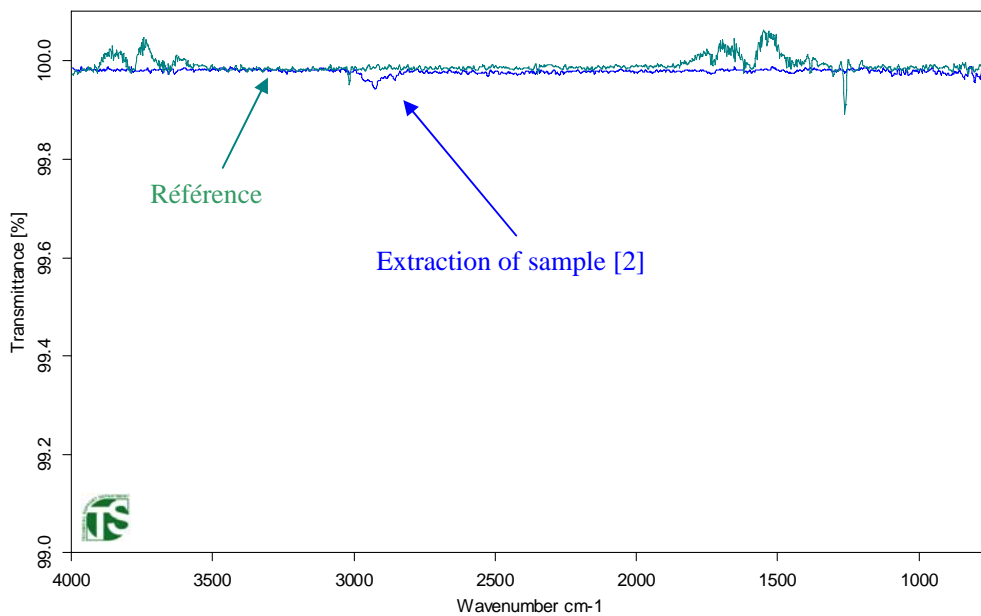
Spectrum MME-CCS X-38/08.07 Fig. 1

FT-IR Spectrum to the extraction of sample [1] - reference (IRTRAN 2 window)



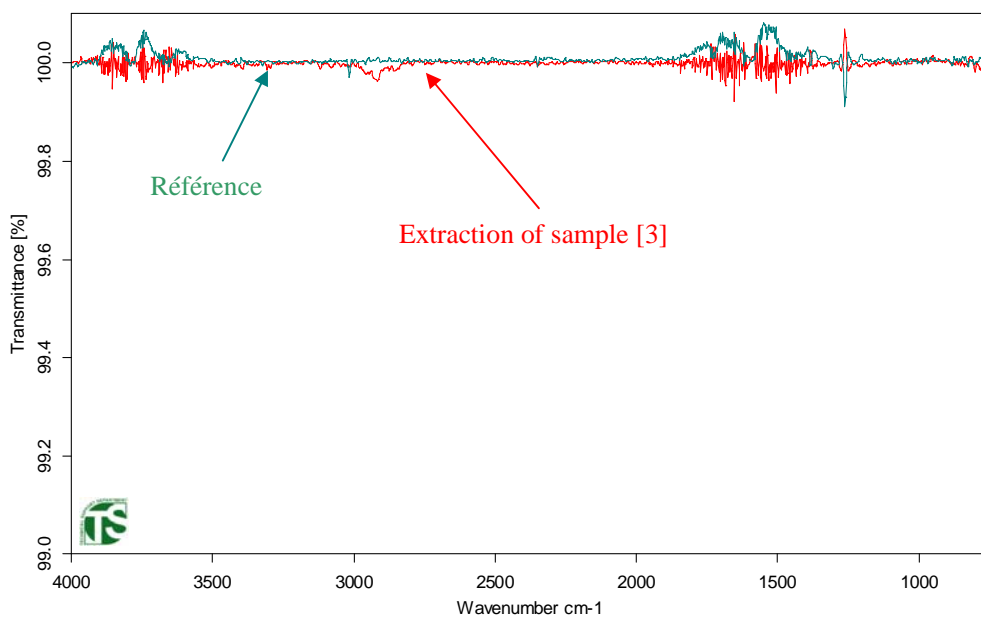
Spectrum MME-CCS X-38/08.07 Fig. 2

FT-IR Spectrum to the extraction of sample [2] - reference (IRTRAN 2 window)



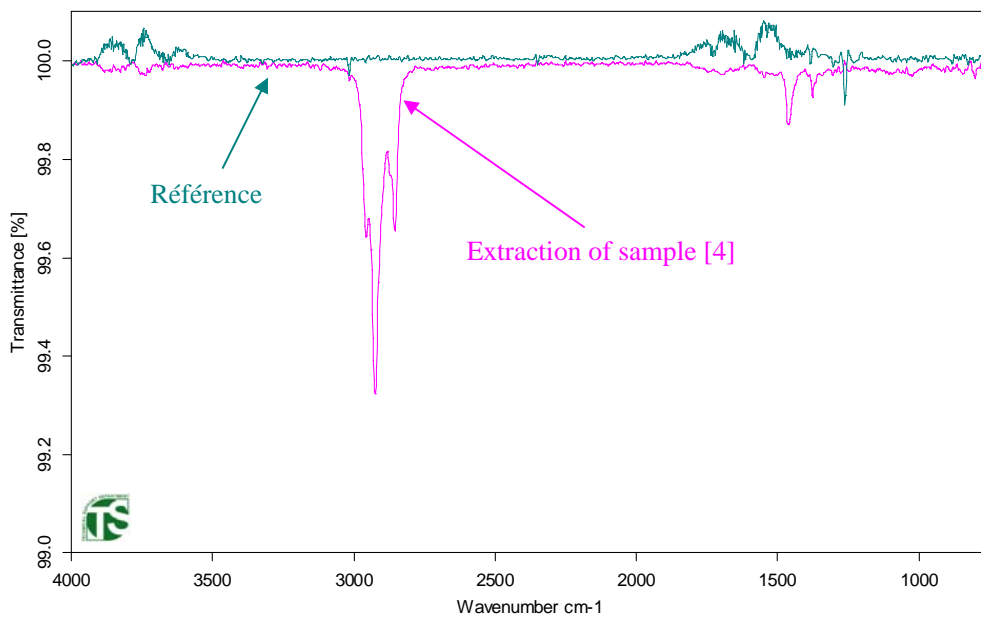
Spectrum MME-CCS X-38/08.07 Fig. 3

FT-IR Spectrum to the extraction of sample [3] - reference (IRTRAN 2 window)



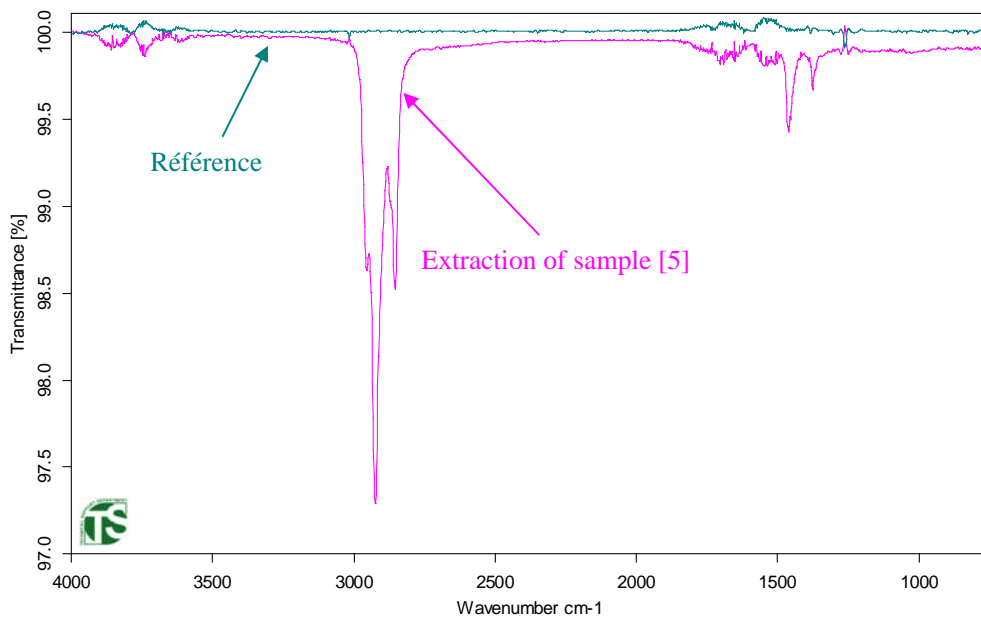
Spectrum MME-CCS X-38/08.07 Fig. 4

FT-IR Spectrum to the extraction of sample [4] - reference (IRTRAN 2 window)



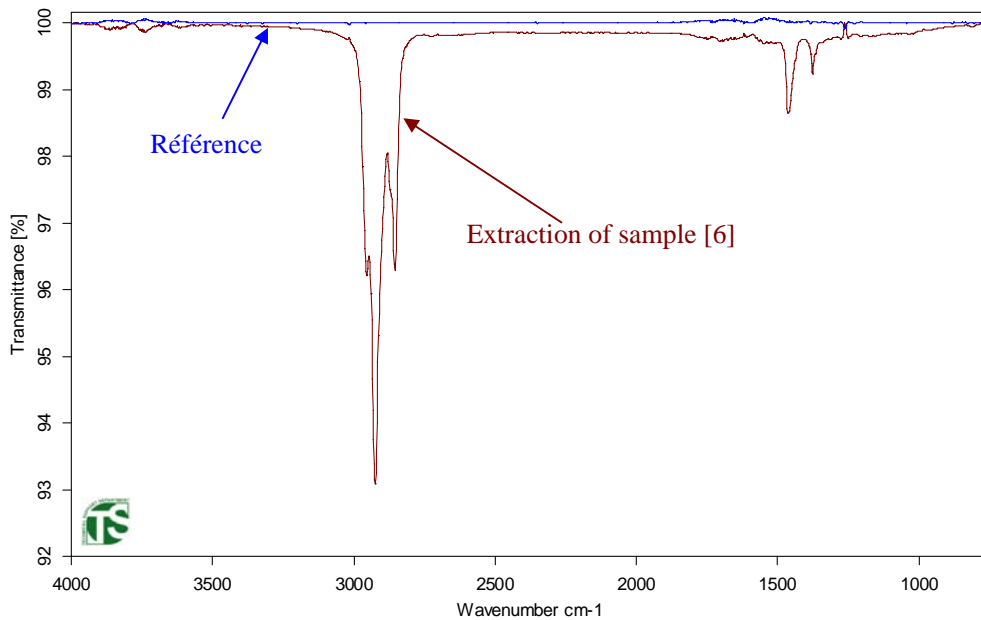
Spectrum MME-CCS X-38/08.07 Fig. 5

FT-IR Spectrum to the extraction of sample [5] - reference (IRTRAN 2 window)



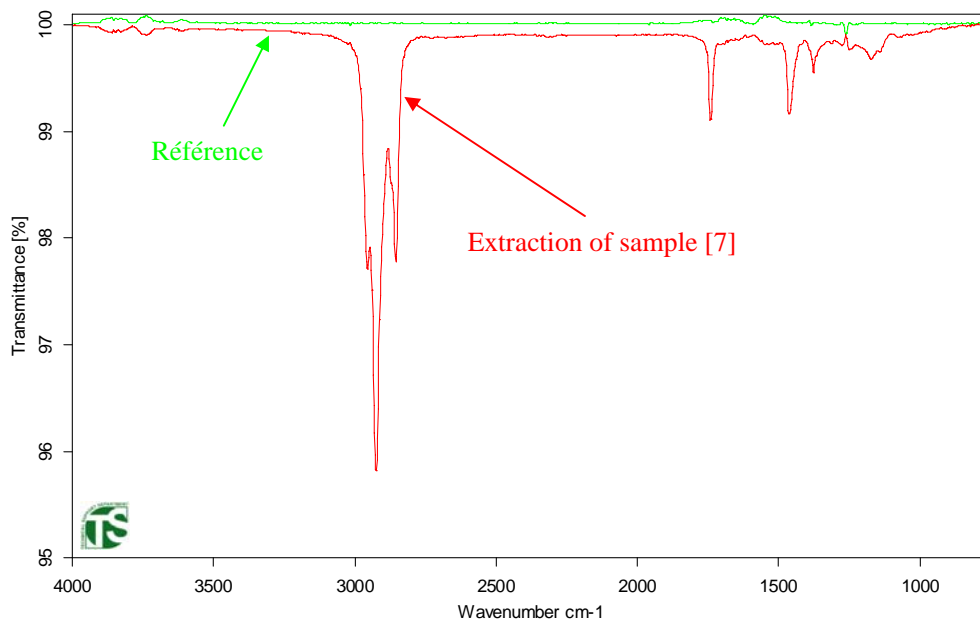
Spectrum MME-CCS X-38/08.07 Fig. 6

FT-IR Spectrum to the extraction of sample [6] - reference (IRTRAN 2 window)



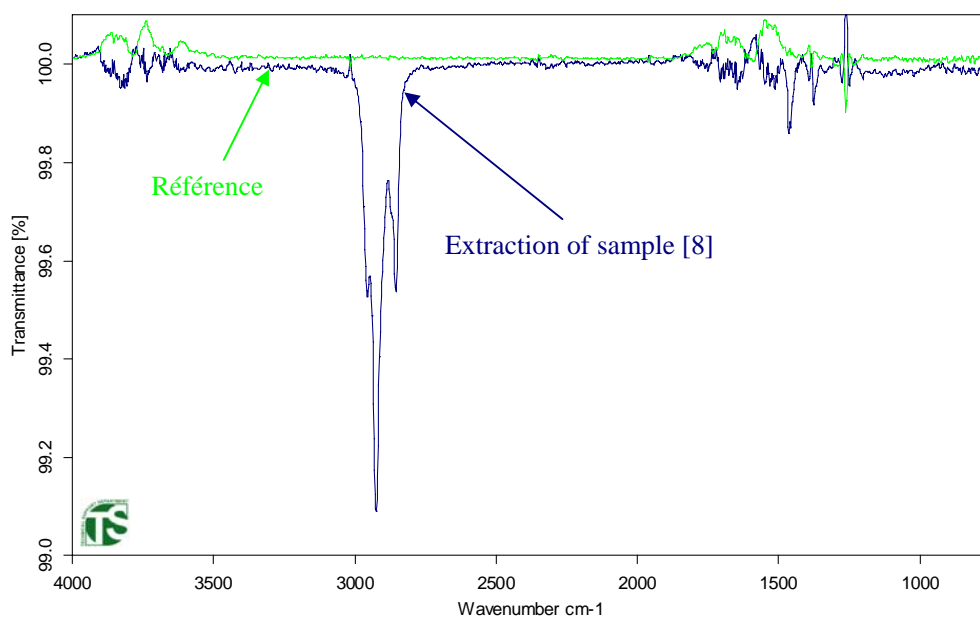
Spectrum MME-CCS X-38/08.07 Fig. 7

FT-IR Spectrum to the extraction of sample [7] - reference (IRTRAN 2 window)



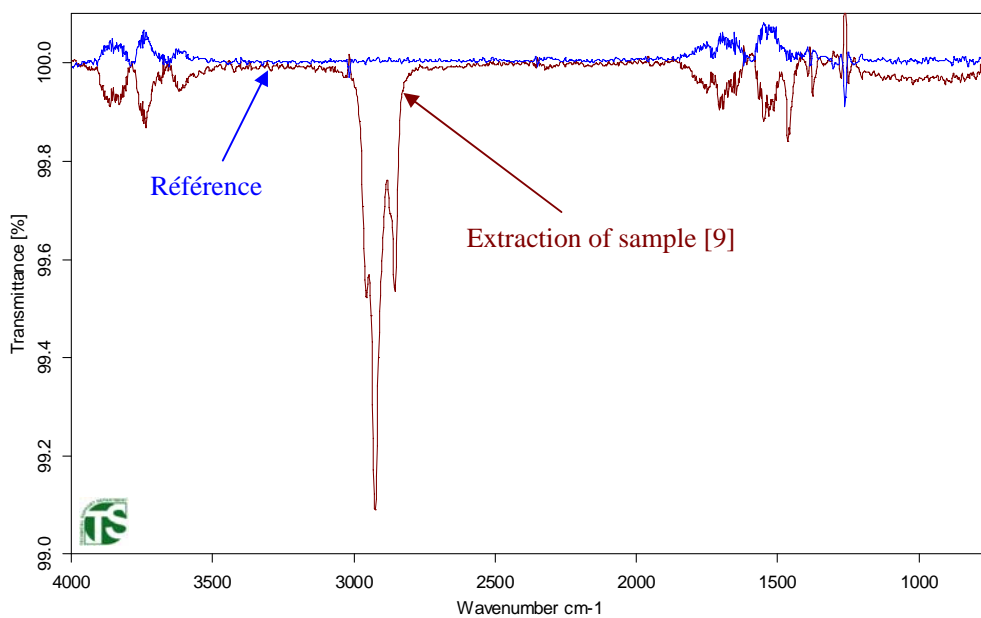
Spectrum MME-CCS X-38/08.07 Fig. 8

FT-IR Spectrum to the extraction of sample [8] - reference (IRTRAN 2 window)



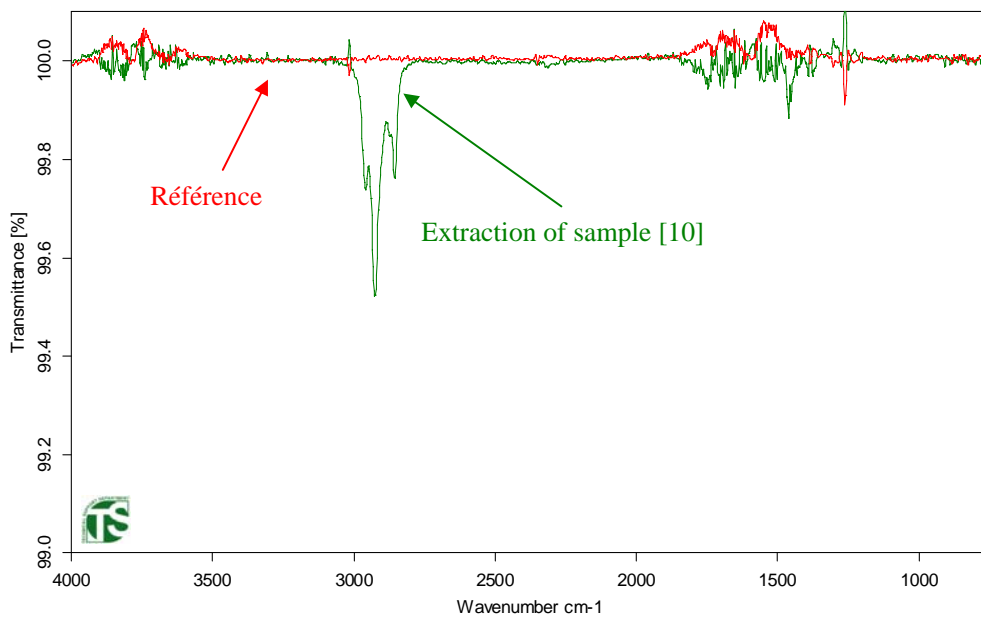
Spectrum MME-CCS X-38/08.07 Fig. 9

FT-IR Spectrum to the extraction of sample [9] - reference (IRTRAN 2 window)



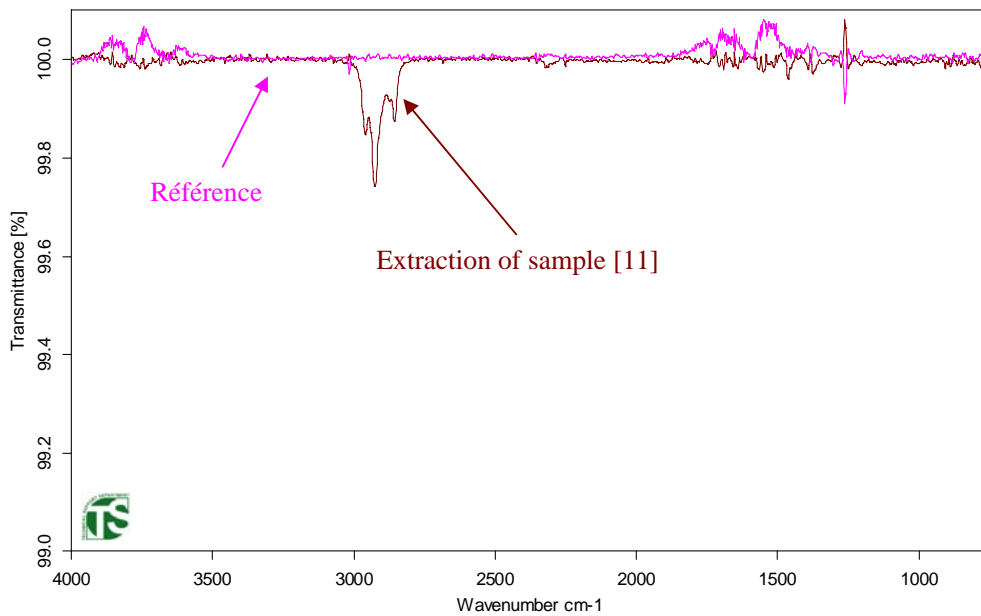
Spectrum MME-CCS X-38/08.07 Fig. 10

FT-IR Spectrum to the extraction of sample [10] - reference (IRTRAN 2 window)



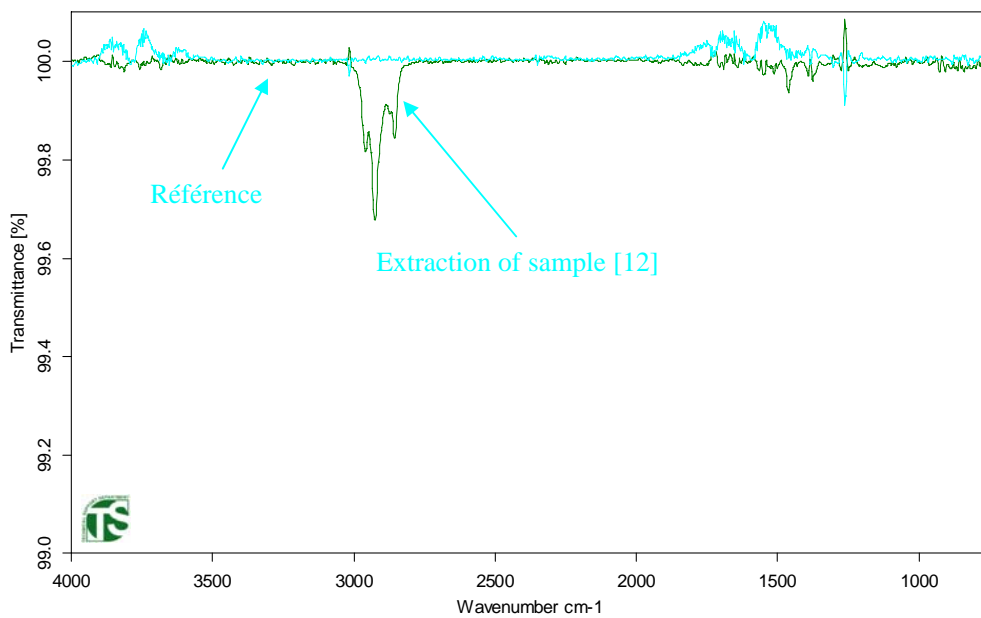
Spectrum MME-CCS X-38/08.07 Fig. 11

FT-IR Spectrum to the extraction of sample [11] - reference (IRTRAN 2 window)



Spectrum MME-CCS X-38/08.07 Fig. 12

FT-IR Spectrum to the extraction of sample [12] - reference (IRTRAN 2 window)



Annexes:



Tube location : [1], [2] and [3]



Tube location : [4], [5], [6], [7] and [8]



Tube location : [9] and [10]



Tube location : [11] and [12]