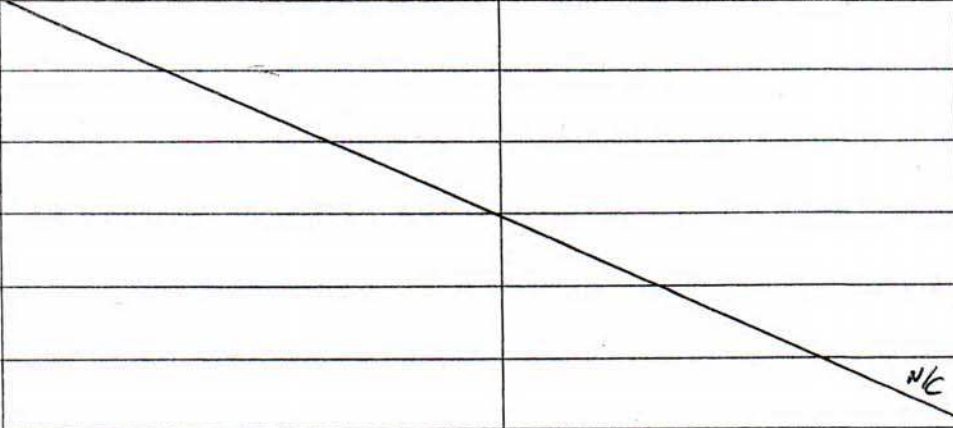


LABORATORIOS HAYMANN S.A.		Montevideo		Uruguay	
CERTIFICADO DE ANÁLISIS DE MATERIA PRIMA			Form N°: 024 - E314/1		Edición: 12/09
			Reemplaza ed.: 12/07		Página 1 de 1
PRODUCTO: HIDROFLUOROALCANO (HFA)		N° DE ENTRADA: 17648		N° DE ANÁLISIS: 17070	
CANTIDAD: 790 Kg		FECHA DE ENTRADA: 21/05/10			
ORIGEN: IPROS FLUOR		ENVASES X CANTIDAD: 1 x 790 Kg			
F. EXP.: 05/15		LOTE DE ORIGEN: RB09224-1			
F. REANÁLISIS: 05/12		ENVASES MUESTREADOS: 1			
MÉTODO ANALÍTICO: M 520 Ed:		STANDARD: N/C			

DETERMINACIÓN	CRITERIO DE ACEPTACIÓN	RESULTADO
ASPECTO	Gas incoloro a temperatura ambiente, claro con ligero olor etéreo. Líquido claro e incoloro bajo presión	CUMPLE
TEMP. DE EBULLICIÓN	Aproximadamente - 26°C	-25°C CUMPLE
ACIDEZ	≤ 0.1 ppm (HCl)	CUMPLE
RESIDUO DE ALTO PUNTO DE EBULLICIÓN	≤ 0.01 %	0,001 %. CUMPLE
	No deja residuo oleoso, a lo sumo una aureola opaca	CUMPLE
	Absorbancia < 0.1 entre 200 y 400 nm	CUMPLE
OTRAS:		
CUMPLE ESPECIFICACIONES: Si		ANALISTA: 
☒ APROBADO ☐ RECHAZADO		FECHA: 28/05/10
OBSERVACIONES: N/C		DATOS ORIGINALES:
		CUADERNO: 03 PAG: 140-141
		FIRMA JEFE L.C.: 

LABORATORIOS HAYMANN SA
AGUSTIN IBARBURU
GIANELLI 1489. ZC 11811
MONTEVIDEO
URUGUAY



INEOS Fluor Limited

PO Box 9
Rocksavage Site
Runcorn
Cheshire WA7 4JE
United Kingdom

www.ineosfluor.com

Certificate of Analysis

Name: 1,1,1,2-tetrafluoroethane
Synonyms: HFA 134a
Propellant 134a
Zephex 134a
Grade: Pharmaceutical

Printed 19th October 2009

Sample Ref No.: 106157

Batch No.: RB09224-1

Container: Drum x 5
ID No(s).: See cover note

Date Analysis Started: 16/09/2009
Date of Manufacture: 13/09/2009

Tag Seal No(s).: See cover note

INEOS Order No: 00140529
Customer Reference: 197/09

Specification / Issue: GCK134PGC15 / I12

Sample Spec. Status:

Pass

Component	Result Value	Specification	Status
Identity by I.R.	Agrees With Std Spectra	Agrees With Std Spectra	Pass
Identity by G.C.	Agrees With Std Chromatogram	Agrees With Std Chromatogram	Pass
218	N/D	<=3 ppm w/w	Pass
125	N/D	<=3 ppm w/w	Pass
32	N/D	<=3 ppm w/w	Pass
C-318	N/D	<=3 ppm w/w	Pass
152a	0.1 ppm w/w	<=3 ppm w/w	Pass
1243zf	0.3 ppm w/w	<=5 ppm w/w	Pass
22	N/D	<=3 ppm w/w	Pass
12	N/D	<=3 ppm w/w	Pass
263fb	N/D	<=3 ppm w/w	Pass
124	0.7 ppm w/w	<=3 ppm w/w	Pass
40	N/D	<=3 ppm w/w	Pass
1122	2.3 ppm w/w	<=5 ppm w/w	Pass
iso-butane	N/D	<=3 ppm w/w	Pass
31	N/D	<=3 ppm w/w	Pass
C-1122a	0.1 ppm w/w	<=5 ppm w/w	Pass
T-1122a	N/D	<=5 ppm w/w	Pass
133a	N/D	<=3 ppm w/w	Pass
T-1131	N/D	<=5 ppm w/w	Pass
12B1	N/D	<=3 ppm w/w	Pass
1131a	N/D	<=5 ppm w/w	Pass
1112a	N/D	<=5 ppm w/w	Pass
123	N/D	<=3 ppm w/w	Pass
123a	N/D	<=3 ppm w/w	Pass
11	N/D	<=3 ppm w/w	Pass
132b	N/D	<=3 ppm w/w	Pass
115	N/D	<=3 ppm w/w	Pass
1123	N/D	<=5 ppm w/w	Pass

Handwritten signatures and dates:
20/05/10
27/04/10

INEOS Fluor

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United Kingdom

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Sample Ref No.: 106157 Batch No.: RB09224-1
Container: Drum x 5 Date Analysis Started: 16/09/2009
ID No(s): See cover note Date of Manufacture: 13/09/2009
Tag Seal No(s): See cover note INEOS Order No: 00140529
Customer Reference: 197/09

Specification / Issue:	GCK134PGC15 / I12	Sample Spec. Status:	Pass
Component	Result Value	Specification	Status
143a	N/D	<=10 ppm w/w	Pass
1234yf	N/D	<=5 ppm w/w	Pass
114	N/D	<=3 ppm w/w	Pass
114a	N/D	<=3 ppm w/w	Pass
1225ye	N/D	<=5 ppm w/w	Pass
245cb	N/D	<=3 ppm w/w	Pass
227ea	N/D	<=3 ppm w/w	Pass
134	47.9 ppm w/w	<=90 ppm w/w	Pass
Unknown 1	N/D	<=3 ppm w/w	Pass
Unknown 2	N/D	<=3 ppm w/w	Pass
Unknown 3	N/D	<=3 ppm w/w	Pass
Total Unknowns	N/D	<=3 ppm w/w	Pass
1122a	0.1 ppm w/w	<=5 ppm w/w	Pass
Total Unsaturates	2.7 ppm w/w	<=5 ppm w/w	Pass
Total Organics	51.4 ppm w/w	<=100 ppm w/w	Pass
134a Purity	99.99486 % w/w	>=99.99% wt	Pass
Total Other Saturated Impurities	0.1 ppm w/w	<=10 ppm w/w	Pass
Water	7 ppm w/w	<=10 ppm w/w	Pass
Appearance	Clear & Colourless	Clear & Colourless	Pass
High Boiling Impurities	<0.01 % v/v	<=0.01 % v/v	Pass
Malodour	No Malodour Present	No Malodour Present	Pass
Halides	Test Pass	Test Pass	Pass
Acidity as HCl	<0.1 ppm w/w	<=0.1 ppm w/w	Pass
Involatile Residue	<1 ppm w/w	<=5 ppm w/w	Pass

The drums that this certificate covers were filled from isotank 104465-8. The data for this certificate has been transcribed from the analysis of the isotank.

The product was analysed at the Medical Propellants Laboratory, Rocksavage Site, Runcorn, Cheshire.

The product was manufactured at the Zephex 134a Plant, Rocksavage Site, Runcorn, Cheshire.

QAD Tel.: +44 (0)1928 517374 or 6935.

Retest date of this batch is September 2014.

Issued By Name: J. M. Jones Signature: [Signature] Date: 10.11.09
Laboratory Analyst

Approved By : Name: H. HARRIS Signature: [Signature] Date: 10.11.09

Position: QA OFFICER

P 28/05/12
22/04/10