National Refrigerants, Inc.
Analytical Laboratory

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☐ **Problems Found Action Required**

☑ **Normal Results No Action Needed**

SL: 03

Refrigerant Analysis Report

Customer:	Johnson Controls	**P.O. No.:**	NRIHP
Address:	812 First St Blvd.	**Refrigerant Type:**	R-134a
	Wilmington, DE	**Job Location:**	DuPont Experimental Station
	19804	**System S/N:**	GACM 117 864
Contact:	Kevin Fraze	**Sample ID#:**	Chiller 8
Telephone:	302-353-0315	**Lab. Reference:**	181228-08
Fax:	kevin.m.fraze@jci.com	**Date Rec.:**	12/28/18

Analysis

		Sample Results	In-Service Limits
Identification	By Gas Chromatography	R-134a	
Moisture	parts per million by weight	35	120 Max.
High Boiling Residue	per cent by volume	0.21	2 Max.
Acidity	parts per million (as HCl)	<0.20	1 Max.
Non-Condensable Gas	per cent by volume	-	1.5 Max.
Chloride	pass/fail	Pass	pass
Purity	% by weight (Gas Chromatography)	99.95	99.5 Min.
Particulates	pass/fail	Pass	pass
Other	Total Hrs Run: 52,182, Starts: 2,279		

(1) 20 ppm for R-11, 113, 123.

Comments: The high boiling residue (0.21%) is a hazy light yellow oil. All other above test results show good quality in-service R-134a and indicate normal system performance. Trace organic impurities present are R-22: 0.03% and R-143a: 0.01%. Resample at next scheduled maintenance interval.

Laboratory Supervisor: Dan Wright, Manager Digitally signed by Dan Wright, Manager DN: cn=Dan Wright, Manager, o=National Refrigerants Inc., ou=Analytical Lab, email=dan.wright@refrigerants.com, c=US Date: 2019.01.03 07:45:52 -05'00'

Date: 1/2/2019

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