

Committee Correspondence

December 21, 2011

To: SAE ICCSC members

From: Ward Atkinson Bill Hill

Subject: R-40 Refrigerant Issues

As noted in recent activities there is evidence that R-40 has been supplied in 30# cylinders and marked as R-134a. R-40 and R-40 with other refrigerants have been used to service, both stationary and Mobile A/C systems in various parts of the world. At the present time we do not have any indication that cylinders containing R-40 are in the North American marketplace. However, with this extensive indication worldwide there may well be the potential of the refrigerant appearing in the North American marketplace.

R-40 is extremely toxic, flammable and highly reactive when exposed to aluminum. In some cases R-40 may react with aluminum to form a third, highly unstable compound that can react violently with air.

With its potential in any MAC system worldwide we are attempting to provide some guidelines should the R-40 refrigerant cylinders or a contaminated system be encountered.

Since this refrigerant can damage MAC systems and service equipment it may be advisable that vehicle and service equipment manufacturers provide notice to their dealers.

The R-40 issue will be discussed during the January SAE ICCSC meeting.

In order to address this issue there has been some work done on how to determine if a container contains this refrigerant. (See included press release)

Current thoughts are to establish information regarding this refrigerant for both the commercial and mobile sectors. This issue was discussed during the 21 December Standard 700 Subcommittee (AHRI) meeting.

- Establish the ability to identify cylinder contents
- Establish a safe method on how to determine if the system contains R-40
- Establish how to remove the refrigerant from a system
 - What type of equipment
 - How to dispose of it
- Damage to systems that contain aluminum
 - Potential of early failures plate fin evaporators
 - Requires complete MAC refrigerant system component replacement
- Exposure issues
 - Technician servicing MAC Systems
 - Vehicle occupant toxic exposure when the refrigerant is installed into a system that has a leaking evaporator

- Occupant toxic safety when the refrigerant is installed into a system that develops a leaking evaporator or other refrigerant circuit components

Background Information

Review of any R-40 MSDS sheet provides detail information on the refrigerant

DuPont Statement - Shipping Container Incidents

DuPont recently became aware that during the past year, there have been three explosions involving refrigerated shipping containers, and that two of these incidents resulted in fatalities. DuPont expresses its condolences to the victims' families for the loss of life resulting from these incidents. To our knowledge, the cause of these unfortunate incidents has not yet been determined. DuPont has no information that would indicate that DuPont products were involved in any of these incidents.

One of the primary refrigerants used in refrigerated shipping containers is R-134a, which is manufactured by DuPont and other companies. R-134a is a refrigerant that was introduced in the early 1990s and is used in a range of applications. It has been extensively tested for both performance and compatibility with various materials, and has been demonstrated to be safe for its intended uses in refrigeration and air conditioning systems. R-134a has been the subject of counterfeiting by unscrupulous suppliers who pass off other products for R-134a to unsuspecting users. DuPont has an active program in place to enforce the proper use of its trademark and trade name in this market and to bring counterfeiters to justice. At this point, we do not know the composition of the refrigerant used in the refrigerated shipping containers mentioned above at the time of the explosions.

Published on 24 - November - 2011

Honeywell extends fight against fake refrigerants

HONEYWELL today announced today that it has expanded its ongoing campaign against counterfeit refrigerants being fraudulently sold under the Honeywell Genetron brand name in the Middle East.

Approximately 6,000 cylinders of fake refrigerant branded as Honeywell Genetron 134a were seized in August in the UAE. They were found to contain "dangerous toxic and flammable substances" says the press statement.

This recent seizure is part of the refrigerant manufacturer's 10-year campaign against counterfeiters with successful seizures in more than 20 countries over six continents. During the last two years alone, Honeywell, working with local governments, have seized more than 200,000 counterfeit products.

"We have invested substantial resources to develop and commercialise our innovative refrigerant technology. We are taking the necessary actions to protect that investment and ensure that users get the high-quality product they need," said Paul Sanders, Managing Director for Honeywell Fluorine Products in Europe, Middle East, Africa and India.

Honeywell also started using a new security measures to detect counterfeit refrigerants. The new anti-counterfeit technology allows for the identification of non-authentic products much faster and more easily than was previously possible.

Simultaneously, Honeywell continues efforts to build awareness among end customers on risks of using counterfeit products.

"We created simple posters for garages and services, where we explain in simple terms how dangerous it can be use non-genuine products," added Sanders.

The company emphasised the need to only buy Honeywell refrigerant from Honeywell-authorized suppliers.

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Date: December 21, 2011
Contact: Peter Coll, VP Neutronics Refrigerant Analysis
Phone: 610-524-8800 x 112 **Fax:** 610-524-8807

Dangerous R-134a Contamination Found Worldwide Immediate call to check all R-134a Cylinders Worldwide for Contamination

Exton, PA (December 21, 2011). Neutronics has issued the following urgent "*Statement of Action*" to all industries using R134a refrigerant:

Statement of Action

After review of information provided by many reputable sources, Neutronics urgently advises that all industries using R-134a refrigerant immediately test all cylinders thought to be virgin R-134a (including new 30 pound cylinders). This can be done with a Neutronics Ultima ID *DX or HV* series Refrigerant Identifier. Any cylinder that is "failed" by the identifier or found to contain 100% R134a with *ANY* "Air" or "Non(NCG)" should be isolated. It has been reported that cylinders containing contaminated refrigerant are marked as "R-134a" and some have counterfeit name brand chemical company labeling. This contaminated refrigerant cannot be identified using standard pressure and temperature measurements of the cylinder.

Background

Several months ago, Neutronics Inc., Refrigerant Analysis Division, was engaged by the ocean going shipping industry to assist with an R-134a refrigerant contamination problem that reportedly resulted in several deaths and a significant interruption to ocean going transport. During the course of this activity, it was discovered that this dangerous refrigerant contamination problem was not isolated to a single industry but had potentially penetrated the R-134a refrigerant supply for applications in many global markets including automotive.

Much of the contaminated R-134a refrigerant has been shown to contain significant quantities of **R-40** (aka Methyl Chloride or Chloromethane). R-40 is extremely toxic, flammable and highly reactive when exposed to aluminum in that it forms a third, highly volatile compound. It is critical to note the safety concerns that R-40 is a harmful and dangerous material that is not suited for use in R-134a refrigeration air conditioning systems. Most, if not all of the contaminated R-134a has been found in counterfeit labeled "virgin" R-134a cylinders. In one instance it was reported that "thousands" of 30 lb. R-134a refrigerant cylinders have been found to be counterfeits of name brand product. Other suspect virgin R-134a containers have also been found to contain large quantities of R-22 and R-12 refrigerants.

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The vast majority of Neutronics manufactured refrigerant identifiers are configured for the detection of R-134a, R-12, R-22 and Hydrocarbons. *It is important to note that the ONLY acceptable readings on Neutronics Ultima ID DX or HV series refrigerant identifiers for a "virgin" R-134a cylinder are:*

R134a	100%
R12	0.0%
R22	0.0%
HC	0.0%
Air/Non	0.0%

No current or previous Neutronics R-134a identifier is/was designed for detection of R40 as a direct contaminant. Not all Neutronics refrigerant identifiers are suitable for safely detecting the presence of R-40 in R-134a (e.g. the "Mini ID R-134a" identifier is not suitable for R-40 detection). Neutronics has evaluated the performance of both current and legacy refrigerant identifiers to determine their suitability for use in testing cylinders with the suspect R-40 material. To date, all reported cases of "virgin" cylinder contamination have included at least 30% -40% R-40 in the cylinder.

A new reference chart published by Neutronics Refrigerant Analysis is now available on the Neutronics website that details the various Neutronics Identifiers currently in the field and how they should react when exposed to R-40 refrigerant. Interested parties should visit www.refrigerantid.com for more information. This information will be readily available on the home page.

As refrigerant identification equipment is widely used in the automotive service industry, Neutronics has determined that their "DX" model automotive refrigerant identifier that meets **SAE J1771** requirements can be used for testing "virgin" R134a cylinders to determine the possible presence of the R-40 contaminant.

Neutronics Vice President Peter Coll commented, "As far as R-134a contaminants are concerned, R-40 is about as bad as it can get. Neutronics Refrigerant Analysis will continue to work closely with SAE, AHR and all other pertinent organizations to help mitigate this very troublesome development."

For additional information, please contact Peter Halpern, Marketing Manager or Peter Coll, Vice President, Neutronics Inc., 456 Creamery Way, Exton, PA 19341, 610-524-8800, 610-524-8807(f), or toll-free 800-378-2287.