



ASHRAE American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.

Technical Committee 3.2 – Refrigerant System Chemistry

Draft Agenda Annual Conference 2018

Houston

Monday June 25th, 2018 – 2:15 to 4:15 pm

Hilton – Grand D, 4th Floor

Name	Affiliation
Voting Members	
Warren Clough – Chair	Carrier
Ed Hessell - Vice Chair	Lanxess
Rob Yost - Standards	National Refrigerants
Joe Karnaz- Secretary	Shrieve Chemical
Greg Smith- Handbook	Honeywell
Dave Vincent- Webmaster	BVA Inc.
Tom Leck- MTG Liaison	TJLeck Consulting Services
Sonny Sundaresan	Sundaresan Consulting
Steve Baker	Emerson
Danny Halel	ACCA
Sarah Kim	Arkema
Steve Kujak	Ingersoll Rand
Chris Reeves	Sporlan Division of Parker Hannifin
John Senediak	Intertek
Non-Voting Members	
Brad Boggess- Programs	Emerson Climate Technologies, Inc.
Mark Baker- Research	CPI Fluid Engineering

- 1.) Call To Order (**Warren Clough**)
 - Introduction of Members and Guests
- 2.) ASHRAE Code of Conduct - <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>
- 3.) Confirmation of Quorum (**Warren Clough/Joe Karnaz**)
- 4.) Approval of Agenda (**Warren Clough**)
- 5.) Approval of 2018 Chicago Winter Meeting Minutes (**Warren Clough**)
- 6.) Report of TC Chair’s Breakfast (**Warren Clough**)
 - This meeting provides the Section 3 Chairs’ a forum for distribution of current direction and guidelines for any requirements related to ASHRAE activities including technical and research direction, standards, publications, etc.

5.) Liaison Comments (may be adjusted to accommodate the Liaison's schedule)

- Jay Kohler (Section Head)
- Steve Kujak (Research)
- Don Fenton (Handbook)

6.) Subcommittee Reports

Program (Brad Boggess)

Review of Sponsored, Co-sponsored or programs of interest

Houston

- No presentations

Update from Monday's Program Subcommittee Meeting.

Discussion of Future Programs:

Atlanta Considerations (Jan 12-16, 2019)

- TRP-1774, "Effects of System Materials Towards the Breakdown of Lubricants and Low GWP Refrigerants"
- Future mini-track (working outline spreadsheet)

Kansas City, June 22-26, 2019

- ASHRAE 125th Celebration

Manuscript was submitted titled, "THERMAL STABILITY, CHEMICAL STABILITY AND MATERIAL COMPATIBILITY OF REFRIGERANTS AND LUBRICANTS THROUGH THE YEARS" (see Addendum 2)

Contributing authors- Rosine Rohatgi; Tom Leck, Warren Clough, Sonny Sundaresan, Julie Majurin, Greg Smith, Elyse Sorenson

Handbook (Greg Smith)

- Committee members: Greg Smith (chair); Rosine Rohatgi; Brad Boggess; Ed Hessell; Warren Clough
- Proof was reviewed in March by the Handbook committee

Standards (Rob Yost)

Updates:

- GPC 38P (Former Standard 175): "Metal Pressure Vessel Testing to Test Materials Used with Refrigeration Systems" – Update from Committee Chair Joe Karnaz
- Standard 97 - 2007 "Sealed Glass Tube Method to Test Chemical Stability of Materials for Use Within Refrigerant Systems" – Update from Committee Chair Chris Seeton

Research (Mark Baker)

Update:

- TRP 1774 – "Effects of System Chemicals Towards the Breakdown of Lubricants and Lower GWP Refrigerants " (Julie Majurin)
 - PMS approved for a committee vote
 - By letter ballot, Chair made a motion to approve TRP-1774, Danny Halel seconded
 - Letter ballot vote- 14/0/0 Approve/Against/Abstain (see Addendum 1)
 - RAC is recommending a re-vote once the changes are incorporated by the contractor
- RTAR 1790 – "Distribution of Water between Vapor and Liquid Phases of Low GWP Refrigerants " (Brad Boggess)
- RTAR- How does sealed tube testing that included process chemicals correlate to valve clogging (Brad suggested revising the title) Mark Baker, Elyse Sorenson, Warren Clough, and Brad Boggess volunteered to draft the RTAR.

- Update from Sunday's Research Subcommittee Meeting.
- Future Research needs- Ad Hoc Committee to lay out roadmap of future research needs
- New research ideas?

Webmaster (**Dave Vincent**)

Website Update

7.) Membership (**Warren Clough/Joe Karnaz**)

Update:

- Voting Members (14): Ed Hessell; Steve Kujak; Sonny Sundaresan; Tom Leck; Greg Smith; Chris Reeves; Joe Karnaz; Warren Clough; John Senediak; Rob Yost; Dave Vincent; Steve Baker; Danny Halel; Sara Kim
- Ed Hessell, Sonny Sundaresan, and Steve Kujak will roll off as voting members June 30th, 2018
- Rosine Rohatgi, Jian Sun-Blanks, Elyse Sorenson, and Sage Tomlinson will roll on as voting members
- Committee Members:
 - Chair – Warren Clough
 - Vice Chair – Ed Hessell
 - Secretary – Joe Karnaz
 - Handbook- Greg Smith
 - Programs – Brad Boggess
 - Standards – Rob Yost
 - Research – Mark Baker
 - Webmaster – Dave Vincent
 - ALI – Scott Gustafson
 - MTG Low GWP – Tom Leck

Roster: Anyone interested in becoming a corresponding member please go to the ASHRAE website and join as a Provisional Member:

<https://www.ashrae.org/standards-research--technology/technical-committees/applying-for-membership-on-a-technical-committee-2015>

8.) MTG Lower GWP Refrigerants (**Tom Leck**)

Update: Recent activity

9.) Old Business (**Warren Clough**)

10.) New Business (**Warren Clough**)

11.) Adjourn

Addendum 1

TRP 1774 Vote

Voting member	Approve	Against	Abstain	Comments
Warren Clough	x			<p>Comprehension and use of the report could be improved per the following comments</p> <ul style="list-style-type: none">• Use same/standard scaling for charts instead of auto scaling each chart. Include all compounds on charts. Allows for easier comparisons.• Consider rank order vs using semi-arbitrary acceptance criteria to avoid potential misuse/overlook of using only results tables. Add commentary for why visual observations were weighted heavier than analytical results.• Include background on what process chemicals contain/use the compounds tested. Enhances use of this comprehensive test.• Add commentary whether the different levels of H₂O in the compounds tested impacted test results.• Discuss the source of dissolved iron in oil for iron-containing compounds tested: compound vs steel coupon. Initial iron content from compound is determinable.
Ed Hessel	x			
Rob Yost	x			
Joe Karnaz	x			
Greg Smith	x			
Dave Vincent	x			
Tom Leck	x			
Sonny Sundaresan	x			
Steve Baker	x			
Danny Halel	x			
Sarah Kim	x			
Steve Kujak	x			
Chris Reeves	x			
John Senediak	x			

Addendum 2

Thermal and chemical stability of refrigerants and lubricants intended for use in HVAC&R systems measure how well the fluids maintain their integrity when exposed to typical or severe application conditions, materials, and contaminants. These working fluids are required to be sufficiently stable to prevent negative impacts on the performance and reliability of HVAC&R equipment and components throughout the lifetime of their application, which in some cases may be up to or exceeding 20 years of service. The fluids must have sufficient stability such that they don't degrade into compounds that change their safety classification or handling criteria. In addition, the fluids must be compatible with materials of construction and other components that they are intentionally or incidentally exposed to in an application. Therefore, understanding thermal stability, chemical stability, and material compatibility of a specific refrigerant or refrigerant/lubricant combination begins as early as in the development phase, and often continues over an entire product lifecycle. As new refrigerants or lubricants are developed as alternatives to existing fluids, it is common practice to compare the stability and compatibility of the new and incumbent fluids without looking too far back in history. This paper takes a broader look at the stability and compatibility of working fluids that have been evaluated and applied through the years, and reviews the evolution of methods that have been used to understand and characterize these properties. Other factors, such as changes in equipment designs and new component development, will also be discussed as they relate to shaping the stability and compatibility requirements of working fluids for an application.