Final Program

Gateway to North America’s Polyurethanes Industry

September 22-24, 2014
Gaylord Texan Resort & Convention Center
Dallas, Texas

Download the Polyurethanes Technical Conference app.

Detailed instructions on how to download inside!
Schedule of Events

**All events will be held on Convention Center Level 3 of the Gaylord Texan and require a badge for admission.**

Onsite Registration – outside of Grapevine Ballroom A-C
- Sunday, September 21, 2014 – 8:30 AM - 6:00 PM
- Monday, September 22, 2014 – 8:00 AM - 6:00 PM
- Tuesday, September 23, 2014 – 8:30 AM - 5:00 PM
- Wednesday, September 24, 2014 – 7:30 - 10:00 AM

Opening Session – Grapevine Ballroom B-D
- Monday, September 22, 2014 – 9:30 - 11:00 AM

Industry Reception – Grapevine Ballroom Pre-Function Area
- Monday, September 22, 2014 – 6:00 - 7:30 PM

Poster Session – Grapevine Ballroom A-C
- Monday, September 22, 2014 – 11:00 AM – 5:00 PM
- Tuesday, September 23, 2014 – 9:00 AM – 5:00 PM
- Wednesday, September 24, 2014 – 8:00 - 10:30 AM

Table Top Exhibits – Grapevine Ballroom A-C
- Monday, September 22, 2014 – 11:00 AM - 5:00 PM
- Tuesday, September 23, 2014 – 9:00 AM – 5:00 PM
- Wednesday, September 24, 2014 – 8:00 - 10:30 AM

Technical Sessions – Level 3 Meeting Rooms
- Monday, September 22, 2014 – 2:00 - 5:00 PM
- Tuesday, September 23, 2014 – 9:00 AM - 12:00 PM and 2:00 - 5:00 PM
- Wednesday, September 24, 2014 – 8:00 - 11:00 AM

Closing Luncheon/Awards Ceremony – Grapevine Ballroom B-D
- Wednesday, September 24, 2014 – 11:30 AM

Professional Development Program (PDP) – Level 3 Meeting Rooms
- Sunday, September 21, 2014 – 9:00 AM - 4:30 PM and 1:00 - 5:00 PM
- Monday, September 22, 2014 – 9:00 AM - 4:30 PM and 1:00 - 5:00 PM
- Tuesday, September 23, 2014 – 9:00 AM - 4:30 PM

Refreshment Breaks – Grapevine Ballroom A-C
- Monday, September 22, 2014 – 11:00 AM - 5:00 PM
- Tuesday, September 23, 2014 – 9:00 AM - 5:00 PM
- Wednesday, September 24, 2014 – 8:00 - 10:30 AM

Press Room – Fort Worth 1
- Sunday, September 21, 2014 – 12:00 - 6:00 PM
- Monday, September 22, 2014 – 8:00 AM - 6:00 PM
- Tuesday, September 23, 2014 – 8:30 AM - 5:00 PM
- Wednesday, September 24, 2014 – 7:30 - 10:00 AM
This conference and materials are intended to provide producers, users, and applicators of polyurethanes with general information regarding new technical innovations and applications for these important products, as well as technical aspects of safe handling, storage, and production. This conference and materials are not intended to serve as a substitute for in-depth training or specific handling, storage, or production of polyurethanes, nor are they designed or intended to create legal rights or obligations. This conference and materials are not intended to be a “how-to” program or to “recommend” any particular information, conclusion, opinion, product, service, practice, procedure, equipment design, or supplier, but rather are intended to provide a forum for appropriately moderated information exchange and discussion. Neither the American Chemistry Council, the Center for the Polyurethanes Industry, member companies, nor presenters endorse any information, conclusion, product, service, practice, procedure, equipment design, or supplier described in this conference or contained in these materials. Presentations made at this conference, and materials published for and from this conference, contain the views of the specific contributors and presenters, and such presentations do not represent the views of the American Chemistry Council or the Center for the Polyurethanes Industry. We assume no responsibility for the accuracy of the information presented at the conference or contained in the materials. Neither the American Chemistry Council, the Center for the Polyurethanes Industry, member companies, nor presenters makes any warranty or representation, either express or implied, with respect to the accuracy of completeness of the information contained in the conference and materials; nor do any of these entities assume any liability or responsibility for any use or misuse, or the results of such use or misuse, of any information, conclusion, opinion, product, service, practice, procedure, equipment design, or supplier described or discussed at this conference or contained in these materials. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

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All persons involved in handling, storage, production, or application of polyurethanes have an independent obligation to ascertain that their actions are in compliance with current federal, state, and local laws and regulations, and should consult with legal counsel concerning such matters. Information presented in this conference and materials is necessarily general in nature.

Note that individual companies may vary their approach with respect to particular practices based on specific factual circumstances, the practicality and effectiveness of particular actions, and economic and technological feasibility.

The American Chemistry Council and its member companies, as well as the Center for the Polyurethanes Industry and its member companies, are committed to adhering strictly to United States antitrust, copyright, trademark securities and other federal statutes, as well as state common laws covering libel, slander, defamation, false advertising, invasions of privacy and violations of the rights of publicity. For these reasons, we have included the American Chemistry Council’s Antitrust Checklist for American Chemistry Council Meetings in this manual as guidance for all conference sessions and workshops. In addition, we provide the following supplemental guidelines for all conference-hosted discussions of “incident” and “information” exchanges, which, when properly conducted, can provide conference participants with important information regarding the safety and safe handling of particular products:

1. Arrange for the American Chemistry Council’s legal counsel to conduct an antitrust briefing prior to any incident or information exchange, and to attend the incident and/or information exchange.

2. Limit incident exchanges to factual reports which describe the incident and any lessons learned, without making recommendations or drawing collective conclusions; limit information exchanges to factual reports which describe the presenter’s experience with the topic, without specifically identifying or advocating any particular product, process or supplier.

3. Avoid sweeping conclusions. Allow conference participants to draw their own conclusions; consensus is not the goal.

4. Avoid discussions and circumstances that could collectively imply an endorsement or lead to an inadvertent boycott of any product or service. Accordingly, all group discussions of and group presentations regarding particular products should be factual in nature and should be limited to technical specifications, testing or research results, and technical applications of and for products.

5. Consult the Antitrust Checklist for American Chemistry Council Meetings for more specific guidance.

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ANTITRUST CHECKLIST

ANTITRUST CHECKLIST FOR AMERICAN CHEMISTRY COUNCIL
MEETINGS This antitrust checklist, a part of ACC's Antitrust Compliance Guide, is for use by ACC staff and member company representatives in the conduct of ACC-sponsored meetings. Prohibited discussion topics apply equally to social gatherings incidental to ACC-sponsored meetings. The checklist is not exhaustive and does not address antitrust issues relating to activities other than ACC meetings. Participants in ACC meetings also should be thoroughly familiar with the Antitrust Compliance Guide.

DO

Do ensure strict performance in areas of:

OVERSIGHT/SUPERVISION:
• Have an ACC staff representative at each ACC-sponsored meeting;
• Consult with ACC counsel on all antitrust questions relating to ACC-sponsored meetings;
• Limit meeting discussions to agenda topics (unless additional topics have been approved by the ACC staff representative); and
• Provide each member company representative and ACC employee attending an ACC-sponsored meeting with a copy of this checklist, and have a copy available for reference at all ACC-sponsored meetings.

RECORD KEEPING:
• Have an agenda and minutes which accurately reflect the matters which occur; and
• Provide agendas and minutes to ACC legal counsel for review and approval in advance of distribution.

VIGILANCE:
• Protest against or stop any discussion or meeting activities which appear to violate this checklist. Member company representatives should disassociate themselves from any such discussion or activities and leave any meeting in which they continue.

DON’T

Don’t, in fact or appearance, discuss or exchange information on:

PRICES, INCLUDING:
• Individual company prices, price changes, price differentials, markups, discounts, allowance, credit terms, etc.;
• Individual company data on costs, production, capacity, inventories, sales, etc.; and
• Industry pricing policies, price levels, price changes, differentials, etc.

PRODUCTION, INCLUDING:
• Plans of individual companies concerning the design, production, distribution or marketing of particular products, including proposed territories or customers; and
• Changes in industry production, capacity or inventories.

TRANSPORTATION RATES:
• Rates or rate policies for individual shipments, including basing point systems, zone prices, freight equalization, etc.

MARKET PROCEDURES, INCLUDING:
• Company bids on contracts for particular products; company procedures for responding to bid invitations; and
• Matters relating to actual or potential individual suppliers or customers that might have the effect of excluding them from any market or influencing the business conduct of firms toward them.
MOBILE APP

Now Available for Conference Attendees!

Get the latest details on the Polyurethanes Technical Conference at the tips of your fingers and view detailed technical session, PDP, exhibitor and speaker information while on the go. Take notes, view maps, and network with your fellow attendees all from your mobile device. The CPI Conference app is a must-have resource to maximize the value you receive from your time in Dallas.

To download the app directly from your Android or iOS mobile device, search for “Polyurethanes” on Google Play or the Apple App Store. You may also visit https://crowd.cc/s/36ZC or scan the attached QR code.

You must be a registered attendee of the Polyurethanes Technical Conference to fully utilize the app. Your registration code is required to log in and is printed on your badge.

From a mac or pc, you are able to view the app and find download instructions through the following link:
https://crowd.cc/2014cpiconference

(Make sure to allow push notifications so that CPI may send you any important changes or updates to the program.)

Visit the registration desk for any help with the app!
Pre-Conference Workshop: Introduction to Environmental, Health and Safety Issues Relative to Diisocyanates

Sunday, September 21, 1:00 - 5:00 PM
Austin 1-2

To be successful in today’s polyurethanes industry, professionals must understand the fundamentals of regulations related to environment, health and safety (EHS) topics relevant to diisocyanates. This workshop, which is free to all registered conference attendees, will help professionals understand the fundamental concepts of EHS regulations, industrial hygiene, toxicology, medical surveillance and exposure controls. This workshop will help polyurethane professionals better educate those who work with diisocyanates on safe handling and use and help safeguard our environment.

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AIR PRODUCTS

Honeywell
Cast your vote for the 2014 Polyurethane Innovation Award Winner!

The Center for the Polyurethanes Industry (CPI) is proud of our industry’s continued leadership in innovative solutions and advances in technology. The Polyurethane Innovation Award aims to recognize the role that innovation plays in the polyurethane industry by acknowledging the efforts and foresight of companies and/or individuals whose visions and perseverance bring new products and technologies to the marketplace.

The 2014 finalists will showcase their innovative solutions and advances in technology during a short presentation during the Opening Session on Monday morning, September 22nd. Conference attendees will have the opportunity to vote on what they feel represents the most significant innovation.

An award will be presented for the most innovative application in the polyurethanes industry.

Ballots will be available for you to cast your vote! Be sure you return your completed ballot to an ACC staff member or drop your ballot in the voting box located outside the Opening Session ballroom.

**Here are the finalists:**

- BASF Corporation for Infinergy™
- Dow for TERAFORCE™ Technology
- Novomer Inc. for Converge®

The 2014 Innovation Award Winner will be announced on Wednesday morning, September 24th, during the Closing Session.

**PROFESSIONAL DEVELOPMENT PROGRAM**

In its 11th year, the Polyurethane Professional Development Program (PDP) provides education and training for the global polyurethanes industry. Participants choose from a variety of seminars that run concurrently with the 2014 Polyurethanes Technical Conference. Participants must register for each seminar of interest to receive the training materials and admission to the 2014 Polyurethanes Technical Conference.

**Sunday, September 21, 2014**

**PU 101: Introduction to Polyurethane Chemistry**  
Sunday, September 21, 9:00 am - 4:30 pm  
Room: Grapevine 2-3  
Instructor: Brian Fogg, Brian Fogg Polyurethanes Consulting

**PU 104A: Polyurethane Adhesives & Sealants**  
Sunday, September 21, 9:00 am - 4:30 pm  
Room: Grapevine 1  
Instructor: Jim O’Connor, SynUthane International, Inc.

**Monday, September 22, 2014**

**PU 104B: Polyurethane Coatings & Elastomers**  
Monday, September 22, 9:00 am - 4:30 pm  
Room: Austin 3  
Instructor: Jim O’Connor, SynUthane International, Inc.

**PU 105: Polyurethane Processing Equipment**  
Monday, September 22, 9:00 am - 4:30 pm  
Room: Austin 4  
Instructors: Christian Decker, DESMA GmbH  
Lutz Heidrich, Hennecke Inc.  
Dick Werner, Cannon USA

Monday, September 22, 1:00 – 4:30 pm  
Room: Austin 5-6  
Instructors: CPI Polyurethanes Raw Materials Analysis Work Group  
David Mullen, Rubicon LLC  
Randy Myrabo, BASF Corporation  
Juan Abreu, Bayer Materials Science LLC  
Dan Mowery, Dow

**PU 204: Physical Testing of Polyurethane Foams**  
Monday, September 22, 9:00 am – 1:00 pm  
Room: Austin 1-2  
Instructor: Roy Pask, Consultant

**Tuesday, September 23, 2014**

**PU 102: Introduction to Polyurethane Technology**  
Tuesday, September 23, 9:00 am - 4:30 pm  
Room: Austin 5-6  
Instructor: Paul Farkas, Consultant

**PU 103: Polyurethane Markets and Applications**  
Tuesday, September 23, 9:00 am - 4:30 pm  
Room: Austin 1-2  
Instructor: Brian Fogg, Brian Fogg Polyurethanes Consulting
NETWORKING OPPORTUNITIES

2014 Polyurethanes Technical Conference offers a multitude of networking opportunities to meet your peers, professional associates and industry leaders. This year’s event is sure to help you maximize your conference experience.

Industry Reception

The Industry Reception, a premiere networking opportunity, has become a much-anticipated event. The reception is an ideal place to network with peers and build new relationships. Hors d’oeuvres and beverages will be served.

Please Note: All attendees MUST be registered for the 2014 Technical Conference to attend the Industry Reception. NO exceptions will be made. Badges must be worn at all times while attending the Reception.

Monday, September 22, 2014

6:00 - 7:30 PM
Grapevine Ballroom, Pre-Function Area

The Industry Reception is sponsored by

POSTER SESSION

Grapevine Ballroom A-C

Join your colleagues from around the globe, make contacts and exchange ideas and thoughts as presenters address new, cutting-edge technologies in market and product areas.

See page 31 for a list of posters

TABLE TOP EXHIBITION

Grapevine Ballroom A-C

Monday, September 22: 11:00 AM – 5:00 PM
Tuesday, September 23: 9:00 AM – 5:00 PM
Wednesday, September 24: 8:00 – 10:30 AM

The 2014 Polyurethanes Table Top Exhibition is a perfect opportunity to peruse a myriad of products and services offered by companies and industry professionals from a wide range of disciplines.

See page 34 for a list of exhibiting companies.

Charge Up – Get Connected

Grapevine Ballroom A-C

Complimentary Wi-Fi and Cell Phone charging available in the Table Top Exhibition Hall.

Cell Phone Charging Stations
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Refreshment Breaks

Grapevine Ballroom A-C

Complimentary refreshment service is provided during the conference in the Table Top Exhibit Hall.

Refreshment Breaks sponsored by
Opening Session

Monday, September 22 at 9:30 AM
Grapevine Ballroom B – D
Sponsored by

9:30 AM Welcome
Lee Salamone, Senior Director
American Chemistry Council Center for the Polyurethanes Industry

9:40 PM Polyurethanes Technical Conference
Paul Duffy
Icynene Inc
2014 CPI Conference Committee Chair

10:00 AM CPI Vice Chairman’s Remarks
Tom Feige
Dow
CPI Steering Committee Vice Chair

10:30 AM Presentation of Innovation Award Finalists

10:45 AM Keynote Presentation
Vivek Wadhwa, Fellow at Arthur & Toni Rembe Rock Center for Corporate Governance, Stanford University; Director of Research at the Center for Entrepreneurship and Research Commercialization at the Pratt School of Engineering, Duke University; and Distinguished Fellow at Singularity University

Closing Session/ Awards Luncheon

Wednesday, September 24, 11:30 AM
Grapevine Ballroom B – D
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11:30 AM Luncheon

11:45 AM Conference Highlights and Presentation of Awards
Paul Duffy
Icynene Inc
2014 CPI Conference Committee Chair

12:45 PM 2015 Polyurethanes Technical Conference
Susan Norris
Momentive Performance Materials Holdings LLC
2015 Conference Committee Chair

1:00 PM Conference Adjourns
AFTERNOON TECHNICAL SESSIONS

Monday, September 22, 2014
2:00 – 5:00 PM
Grapevine 1-2

Blowing Agents
Sponsored by

Honeywell

Session Organizers: Mike Krupa, BASF Corporation
Jeff King, Dow
David Williams, Honeywell

Moderator: Mike Super, Bayer MaterialScience LLC

Vice Moderator: Mike Krupa, BASF Corporation

With greater global focus on the reduction of emissions of global warming gases, this year’s blowing agent session will provide critically important information to the industry on new blowing agent technologies in development. These new blowing agents aim to reduce emissions of global warming gases, both directly and indirectly, and will significantly change the blowing agents available to the foam formulator. The session will highlight papers discussing dimethoxymethane, and blowing agent changes in and options available for Article 5 countries will also be discussed. Each of the U.S. major blowing agent manufacturers will provide an update on the next generation HFOs.

Immediately following the blowing agent session, there will be a brief presentation from EPA on Significant New Alternatives Policy (SNAP) regarding rulings and timing of regulations on blowing agents used in the rigid foam industry within the U.S.

2:00 PM Moderator Opening Remarks

2:05 PM Forane® 1233zd - Continued Improvement in Resin Shelf Stability with this Low GWP Liquid, Non-flammable Blowing Agent
Joseph Costa, Arkema Inc.
Ben Chen, Arkema Inc.
Laurent Abbas, Arkema Inc.
Sri Seshadri, Arkema Inc.

2:30 PM Methylal: An Environmentally Friendly Blowing Agent Newly Introduced in North America
Michel Beaujean, Lambiotte Cie Sa

3:00 PM Cold Chain Industry: Energy Efficiency Solutions - Solstice LBA/Cyclopentane Blend Performance
James Bowman, Honeywell
John Szymanski, Honeywell
Salvador Mejia Gomez, Honeywell

3:30 PM BREAK

4:00 PM Formacel® 1100: a HFO with Unique Characteristics for Polyurethane Foam Applications
Gary Loh, DuPont
Konstantinos Kontomaris, DuPont
Saadat Ata, DuPont
Vaneeta Grover, DuPont

4:30 PM Technical Comparisons of Foams Using Various Blowing Agent Blends Containing HCFC141b, HFC 245fa, Solstice® LBA and Hydrocarbons in Domestic Appliances
Abhijit Borgohain, UOP India Pvt Ltd
Wilfred Selwyn T, UOP India Pvt Ltd
SP Chidambaram, UOP India Pvt Ltd
Pranav Mehta, UOP India Pvt Ltd

5:00 PM EPA on Significant New Alternatives Policy (SNAP)
Margaret Sheppard, U.S. Environmental Protection Agency

americanchemistry.com/polyurethane
AFTERNOON TECHNICAL SESSIONS (Cont.)

Monday, September 22, 2014

2:00 – 5:00 PM

Forth Worth 5-7

Environment, Health and Safety: General

Sponsored by

Huntsman

Session Organizers: William Robert, BASF Corporation
Cynthia Graham, Huntsman International LLC

Moderator: William Robert, BASF Corporation

Vice Moderators: Stephanie Burt, Dow
Cynthia Graham, Huntsman International LLC

This EHS session will highlight key regulatory issues and their impact in Europe and North America. First, ISOPA will share insight into regulatory issues in Europe. Next, the issue of polymer hazard versus risk under the EU REACH program will be discussed. The LEED initiative to evaluate risk through Environmental Product Declarations (EPD) and Health Product Declarations (HPD) for polyurethane products in building materials will also be highlighted. Next, states are increasingly requiring manufacturers to assume disposal of their products and the mattress industry has new approaches to end-of-life concerns. The final presentation will be an EPA update on Pre-Manufacture Notices for diisocyanates.

2:00 PM Moderator Opening Remarks

2:05 PM Safety in Polyurethanes - The European Approach
Jörg Palmersheim, ISOPA

2:30 PM The Advancing Tide of Interest in Polymer Hazards and Risks
Paul Ashford, Anthesis-Caleb

3:00 PM Product Disclosure: Opportunities and Challenges for the Polyurethanes Industry
James Hoff, TEGNOS Research, Inc.

3:30 PM BREAK

4:00 PM Mattress Recycling Update
Ryan Trainer, International Sleep Products Association

4:30 PM Proposed Regulatory Actions Under the Toxic Substances Control Act for Diisocyanates
Kenneth Moss, OPPT/US Environmental Protection Agency

Monday, September 22, 2014

2:00 – 5:00 PM

Grapevine 3-4

Flame Retardants and Combustibility

Session Organizers: Michael Nagridge, Novomer Inc.
William Nicola, Bayer MaterialScience LLC

Moderator: Ian Hughes, Bayer MaterialScience LLC

Vice Moderator: Carl Powell, Chemtura

This session will focus on new developments to meet flammability standards in the flexible and rigid foam applications as well as an overview of regulatory issues with regard to industry flammability issues. The first presentation will examine the various individual components of rigid polyurethane formulations and their effect on the burn characteristics of the foam. The following presenter will discuss why the raw material selection is critical in achieving excellent burn performance. The next presenter will focus on new developments that will help flame retardants used on certain rigid foam applications meet the various global construction standards. The third presenter will discuss development work utilizing sustainable, all-MDI based formulations for flexible foam applications. Finally, a presentation by the North American Flame Retardant Alliance (NAFRA) will provide an update on fire safety issues relevant to the polyurethane industry.

2:00 PM Moderator Opening Remarks

2:05 PM Flame Retardant Usage and Other Factors Affecting Burn Characteristics of Polyurethane Rigid Foams
David Modray, Foam Supplies, Inc.

2:30PM New Developmental Flame Retardants for the Rigid Foam Industry
Kali Suryadevara, ICL-IP America, Inc.
Jeffrey Stowell, ICL-IP America, Inc.
Barbara Williams, ICL-IP America, Inc.
Jens Leopold, ICL-IP Europe BV

3:00 PM New Sustainable all-MDI Flexible Molded Foam Technology Meeting Flammability Requirements for the Furniture Industry
David Honkomp, Dow

3:30 PM BREAK

4:00 PM NAFRA Update - Regulatory & Legislative Developments
Steve Risotto, North American Flame Retardant Alliance of the American Chemistry Council
The session will cover the latest developments in adhesives and coatings. It will open with polyurethane gels used in diverse applications such as biomedical devices, footwear, bicycle saddles and bedding, as well as other uses. The second portion of the session will include a discussion on polyurethane coatings obtained with polycarbonate diols intended for pipelines' internal coatings that are high-performing and durable. The third presentation will cover reactive hot melt adhesives from renewable, carbon dioxide-based polycarbonate polyols. The fourth paper discusses succinic acid-based polyester polyols, polyurethanes obtained with polycarbonate diol. The final presentation will be on spray urethane coatings, which can be formulated into both rigid and elastomeric spray coatings.

9:00 AM  Moderator Opening Remarks

9:05 AM  Polyurethane Gels
Yasmin Srivastava, Dow
Rajat Duggal, Dow

9:30 AM  Novel Polyurethane Coatings Obtained with Polycarbonate Diol for Pipelines with Improved Mechanical Properties and Hydrolysis Resistance
Jose Jofre-Reche, University of Alicante
Andres Yanez-Pacios, University of Alicante
Jose Miguel Martin-Martinez, University of Alicante
Manuel Colera, UBE Chemical Europe
Victor Costa, UBE Chemical Europe

10:00 AM  Novel CO2-based Polycarbonate Polyols for High Performance Polyurethane Hot Melt Adhesives
Anna Cherian, Novomer Inc.
Christopher Fordice, Novomer Inc.
Kim Jaskula, Novomer Inc.
Michael Nagridge, Novomer Inc.
Simon Waddington, Novomer Inc.
Wayne Willkomm, Novomer Inc.

10:30 AM BREAK

11:00 AM  Bio-Based Succinic Acid Based Polymers Polyols: Sustainable Building Blocks for Performance Driven TPU, PUDs and Coatings
William Coggio, Bio Amber

11:30 AM  Spray Urethane Coatings with VORAPEL™ Hydrophobic Polylol
Avery Watkins, Dow
Mikhail Gelfer, Dow
Beth Nichols, Dow
Enrique Millan, Dow
Tuesday, September 23, 2014
9:00 AM – 12:00 PM
Grapevine 3-4

Processing and Composites I

Session Organizers: Bob Pierce, Cannon USA, Inc.
Richard Rossio, Chem-Trend L.P.
Barry Metzler, Graco Inc.
John Tolley, Hennecke Inc.

Moderator: Richard Werner, Cannon USA
Vice Moderator: TBD

This Processing and Composites session will be composed of presentations with information on the latest advancements in the area of polymer composite technologies. This session will include discussions on composite equipment and designs with high strength-to-weight ratios that can be used in automotive floor boards, marine applications, and other applications requiring high strength properties. InterWet composite technology used on manhole covers and its potential benefits will also be presented. The final presentation will demonstrate an integrated design for multi-layer sports shoes.

9:00 AM Moderator Opening Remarks

9:05 AM PURe Structural Urethanes and Composites
Brent Gawne, FRIMO

Guido Bramante, Dow
Luigi Bertucelli, Dow
Andrea Benvenuti, Dow
Kevin Meyer, Dow

10:00 AM InterWet Provides The Solution To Replace Metal With Polyurethane Composite In Heavy-Duty Parts
Max Taverna, (Retired) Cannon S.p.A.
Maurizio Corti, Cannon Afros

10:30 AM BREAK

11:00 AM Integrated Footwear Design with Polyurethanes
Karsten Stoebener, KŁÓCKNER DESMA Schuhmaschinen GmbH
Bjorn Dormann, KŁÓCKNER DESMA Schuhmaschinen GmbH

Tuesday, September 23, 2014
9:00 AM – 12:00 PM
Forth Worth 3-4

Regulatory Roundtable

Session Organizers: Heather Palfrey, American Chemistry Council Center for the Polyurethanes Industry
Lee Salamone, American Chemistry Council Center for the Polyurethanes Industry

Moderator: Heather Palfrey, American Chemistry Council Center for the Polyurethanes Industry
Vice Moderator: Lee Salamone, American Chemistry Council Center for the Polyurethanes Industry

Polyurethanes and the raw materials that are used to manufacture them continue to be of interest to regulators at all levels within the U.S. and NAFTA. This session will highlight some of the authorities, programs and regulatory pressures facing the industry. Speakers will cover the progress of the U.S. Occupational Safety and Health Administration’s National Emphasis Program (NEP) on Isocyanates, topics of interest to the U.S. Consumer Product Safety Commission (CPSC), and new developments in California’s Safer Consumer Product regulations.

9:00 AM Moderator Opening Remarks

9:05 AM CPSC: Authorities and Issues of Interest to Polyurethanes Industry
Treye Thomas, U.S. Consumer Product Safety Commission

9:45 AM California’s Safer Consumer Product Regulation
Karl Palmer, Department of Toxic Substances, California EPA (invited)

10:30 AM BREAK

11:00 AM OSHA National Emphasis Program on Isocyanates: Year 1 Status
Sven Rundman, U.S. Occupational Safety and Health Administration
AFTERNOON TECHNICAL SESSIONS

Tuesday, September 23, 2014
2:00 – 5:00 PM
Grapevine 5-6

Environment, Health and Safety: Spray Polyurethane Foam

Sponsored by

Session Organizers: William Robert, BASF Corporation
Cynthia Graham, Huntsman International LLC

Moderator: William Robert, BASF Corporation

Vice Moderators: Stephanie Burt, Dow
Cynthia Graham, Huntsman International LLC

This Environment, Health and Safety (EHS) session will highlight key industry research on spray polyurethane foam (SPF). CPI’s ongoing research about the impact of ventilation rates on concentrations of SPF chemical vapor and particulates emitted during application of low pressure, half pound and two pound high pressure SPF will be discussed first. Next, the presenters will provide the results of a study on the safe re-entry time and emissions from open cell SPF after its application in new homes. The ongoing development of an ASTM standard to measure VOCs and SVOCs from cured foam samples will be highlighted as well as a comparison of emissions of closed cell SPF to the predicted ASTM measurements. Finally, an evaluation of the impact of process parameters on emissions from SPF will be presented.

2:00 PM Moderator Opening Remarks

2:05 PM CPI Ventilation Research Project for Estimating Re-Entry Times for Trade Workers Following Application of Three Generic Spray Polyurethane Foam Formulations
Rick Wood, Air Products and Chemicals, Inc.

2:30 PM Spray Polyurethane Foam Monitoring and Re-Occupancy of High Pressure Open Cell Applications to New Residential Constructions
William Robert, BASF Corporation
Rick Wood, Air Products and Chemicals, Inc.
Jim Anderson, BASF Corporation

3:00 PM Impact of Process Parameters on Emissions From SPF
Manfred Genz, BASF Polyurethanes GmbH
Udo Schilling, BASF Polyurethanes GmbH
Jurij Krasnow, BASF Polyurethanes GmbH
Mark Bockhoff, BASF Polyurethanes GmbH
Rene Jansen, BASF Polyurethanes Benelux B.V.

3:30 PM BREAK

4:00 PM Development of ASTM Standards for Measuring Emissions of Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs) from Spray Polyurethane Foam (SPF) Insulation Products
John Sebroski, Bayer MaterialScience LLC

4:30 PM Spray Polyurethane Foam (SPF) Chemical Emissions Study: Analysis of Post Spray Airborne Concentrations
Scott Ecoff, Bayer MaterialScience LLC
John Sebroski, Bayer MaterialScience LLC
Carl Thompson, Bayer MaterialScience LLC

Tuesday, September 23, 2014
2:00 – 5:00 PM
Grapevine 1-2

Elastomers

Sponsored by

Session Organizers: Christian Decker, DESMA GmbH
Juan Carlos Medina, Dow
Jason Stengel, Momentive Performance Materials Holdings LLC

Moderator: Beth Nichols, Dow

Vice Moderator: Huzeir Lekovic, Huntsman International LLC

This session will cover polyurethane-based elastomers with a focus on thermoplastic PU for consumer and industrial use such as high performance applications, automotive, textile, footwear and other uses. The presentations will focus on new designs of TPU materials with unique characteristics manufactured by novel processes. The use of specially selected or generated additives brings the TPU to the next level of performance. The discussion will focus on improvements in static and dynamic properties; flexibility and shore hardness; strength; increased temperature stability; rebound; UV stability oil and chemical resistance; and hydrolysis resistance.

2:00 PM Moderator Opening Remarks

2:05 PM Micronized PPE in Thermoplastic Polyurethanes
Edward Peters, SABIC

2:30 PM Development of a Novel Thermoplastic Polyurethane Via Low Free Monomer Technology
Zhenya Zhu, Chemtura
George Brereton, Chemtura
Ronald Emanuel, Chemtura
Kevin Jackson, Chemtura
Cyril Migdal, Chemtura

3:00 PM Development of High Performance Polyether Based Elastomers
Rui Xie, Dow
Laura Grier, Dow
Ben Buckley, Dow
Nita Xu, Dow
Gareth Faulkner, Dow
Andrew Davies, Dow
Rajat Duggal, Dow

3:30 PM BREAK

4:00 PM Investigation of Hydrolytic Stability of Thermoplastic Polyurethanes Based on Biosuccinium™ Sustainable Succinic Acid Containing Polyester Polyols
Lawrence Theunissen, Reverdia
Richard Janssen, Reverdia

4:30 PM Thermoplastic Polyurethanes from Renewable Long Chain Diacids
Allyson Beuhler, Elevance Renewable Sciences, Inc.
Tuesday, September 23, 2014

Processing and Composites II

Session Organizers: Bob Pierce, Cannon USA
Rich Rossio, Chem-Trend L.P.
Barry Metzler, Graco Inc.
John Tolley, Hennecke Inc.

Moderator: John Tolley, Hennecke Inc.
Vice Moderator: Rich Rossio, Chem-Trend L.P.

This session will start by showcasing updated technology on slab stock foaming systems that allow manufacturers to produce “short runs” while maintaining economic feasibility. This will be followed with information on an automated system for molding that offers flexible solutions in processing equipment and mold changes utilizing individually driven mold carriers. Presenters will then showcase new technologies related to various storage systems for blowing agents, which include the latest in safety standards. After the break, attendees will learn about advances in the production of discontinuous insulated panels, namely a retrofit kit that will allow the use of a vacuum in the foaming process. The session will conclude with an update on the latest technology that adds flexibility in footwear molding to process individual and customized parts in a standard high speed production line.

2:00 PM Moderator Opening Remarks

2:05 PM JFlex: New Slabstock Foaming Technology
James Shoup, Hennecke Inc.

2:30 PM Different Storage Systems for Blowing Agents
Daniel Busse, PURPLAN Inc.

3:00 PM Manni 2.0, A Retrofitting Kit For The Production Of Discontinuous Insulated Panels With Vacuum-Assisted Technology
Cristiano Ligabo, Manni Presse
Max Taverna, (Retired) Cannon S.p.A.
Piero Corradi, Cannon Afros

3:30 PM BREAK

4:00 PM Individual and Customized Polyurethane Processing of Modern Footwear
Bjoern Dormann, KÖCKNER DESMA Schuhmaschinen GmbH
Karsten Stoebener, KÖCKNER DESMA Schuhmaschinen GmbH

Tuesday, September 23, 2014

Best Practices for Transporting and Unloading MDI

2:00 PM Moderator Opening Remarks

2:05 PM Bulk Trucking Process Optimization
Organizers: David Bazzetta, BASF Corporation
Bill Wehrle, BASF Corporation
Moderator: Bill Wehrle, BASF Corporation
Vice Moderator: David Bazzetta, BASF Corporation

The BASF Polyurethanes Supply Chain team has developed and implemented a collaborative process optimization methodology with its bulk trucking partners. The discussion will advance continuous improvement focusing on sustainability and information technology.

3:00 PM BREAK

4:00 PM Customer-Focused Safe Handling Considerations
Organizers: Dave Kobe, Huntsman International LLC
Greg Richard, Transport Service Co.
Moderator: Dave Kobe, Huntsman International LLC
Vice Moderator: Greg Richard, Transport Service Co.

The Huntsman presentation summarizes regulatory requirements and industry best practices regarding the loading, transport and unloading of MDI in bulk quantities. It will also address key safety procedures to follow in the event of an incident during transportation, loading or unloading.
Chemistry and Renewables

Session Organizers: Rick Adkins, Bayer MaterialScience LLC
Robert Grigsby, Huntsman International LLC
Ladislau Heisler, Momentive Performance Materials Holdings LLC
Hamdy Khalil, Woodbridge Foam Corporation

Moderator: Hamdy Khalil, Woodbridge Foam Corporation
Vice Moderator: Robert Grigsby, Huntsman International LLC

The session introduces several new building blocks for polyurethanes with particular emphasis on bio-based materials. New routes to lignin-based polyols, thermoset polymerization simulations, and computational isocyanurate mechanisms will be examined. In addition, analytical methods for aldehydes in amine catalysts will be presented. These materials find uses in a broad range of polyurethane applications including rigid and flexible foams.

8:00 AM  Moderator Opening Remarks

8:05 AM  Biopolyols Containing Lignin for PU Applications
Minh Tan Ton-That, National Research Council Canada
Tri-Dung Ngo, National Research Council Canada
Damien Maillard, National Research Council Canada

8:30 AM  Performance of EMEROX® Renewable Polyols and INFIGREEN® Recycled Polyols in Resilient MDI Molded Flexible Polyurethane Foams
Michael Brooks, Emery Oleochemicals, LLC
Ashley Maloney, Emery Oleochemicals, LLC
Steve Turner, Emery Oleochemicals, LLC
Jeff Barnhorst, Emery Oleochemicals, LLC
Bryan King, Emery Oleochemicals, LLC
Ibrahim Sendijarevic, Troy Polymers, Inc.

9:00 AM  Simulation of Urethane Thermoset Polymerization - Redefining Rigid Foam Formulations
Galen Suppes, University of Missouri
Yingyue Li, University of Missouri
Rima Ghoreishi, University of Missouri
Yusheng Zhao, University of Missouri

9:30 AM  BREAK

10:00 AM  The Catalytic Reaction Mechanisms of Isocyanurate Formation Catalyzed by Potassium Catalyst Elucidated by Computational Chemistry
Satoshi Murayama, Nippon Polyurethane Industry Co., Ltd.

10:30 AM  Determination of Aldehydes in Amine Catalysts
Bhajendra Barman, Huntsman International LLC

Wednesday, September 24, 2014
8:00 – 11:00 AM
Grapevine 3-4

Flexible Foams

Sponsored by

Chromaflo Technologies
Where Art Meets Technology

Session Organizers: Susan McVey, Bayer MaterialScience LLC
Dale Hunter, Dow

Moderator: Robert Dawe, Lear
Vice Moderator: Mark Ragsdale, Milliken Chemical, A Division of Milliken & Company

The session begins with a paper on an aliphatic polyester polyol with recycled and renewable content for use in conventional and viscoelastic foams. Presentations introduce a non-silicone additive for producing coarse and fine foam cell structure and discuss the impact of the formulation water source on foam physical properties. The third presentation will discuss industry concerns regarding total VOCs in flexible foams. Technology that may reduce emissions and improve foam durability using a reactive gel amine will be presented. The session will conclude with a discussion on low density and low-VOC MDI-based high resilience foams for thin automotive seating.

8:00 AM  Moderator Opening Remarks

8:05 AM  Aliphatic Polyester Polyols with Recycled Content for Viscoelastic Foam
Richard Beatty, INVISTA Terate® Polysols
Vahid Sendijarevic, Troy Polymers, Inc.

8:30 AM  Influencing the Cell Structure of Flexible Polyurethane Foams by Additives
Ruediger Landers, Evonik Industries AG
Harald Modro, Evonik Industries AG
Roland Hubel, Evonik Industries AG

9:00 AM  Impact of Water Source on Performance of Flexible Polyurethane Foam
Robert Bondar, BASF Corporation

9:30 AM  BREAK

10:00 AM  Novel Reactive Catalyst System for Polyurethane Foams with Improved Durability and Reduced Amine Emission
Hiroshi Fujiwara, TOSOH Corporation
Yoshinori Shirakura, TOSOH Corporation
Yoshihiro Takahashi, TOSOH Corporation
Takao Suzuki, TOSOH Corporation
Hiroyuki Kiso, TOSOH Corporation

10:30 AM  Investigation of Low Density All-MDI HR Foams for Thin Designed Automobile Seating
Keita Ishibashi, Nippon Polyurethane Industry Co., Ltd.
Hiroyuki Orito, Nippon Polyurethane Industry Co., Ltd.
Yoshihisa Okiyama, Nippon Polyurethane Industry Co., Ltd.
Naoya Yoshii, Nippon Polyurethane Industry Co., Ltd.
Toshihide Yamamoto, TOSOH Corporation
Yoshiaki Inoue, TOSOH Corporation
Wednesday, September 24, 2014
8:00 – 11:00 AM
Grapevine 1-2

Sprayed Polyurethanes
Sponsored by

Session Organizers: James Tobias, Air Products and Chemicals, Inc.
William Nicola, Bayer MaterialScience LLC
Moderator: Richard Romero, Bayer MaterialScience LLC
Vice Moderator: Kenneth Willoughby, Momentive Performance Materials Holdings LLC

The presentations in this session will showcase continued research efforts and development activities to explore and understand the key variables that can provide optimum performance for various spray polyurethane applications. The session includes a discussion on two papers that address the next generation HFOs for foam quality improvements in the latest applications for commercial and residential roofing and wall construction. Presentations will also include the importance of building designs with regards to spray foam, Environmental Product Declaration (EPD) and important updates on the Spray Polyurethane Foam Association (SPFA) Professional Certification Program (PCP) for spray foam installers. The final presentation will review ongoing research efforts to improve the overall economics and physical properties of structural polyurethane spray systems with reduced VOC emissions.

8:00 AM  Moderator Opening Remarks

8:05 AM  Formacel® 1100: Spray Polyurethane Foam Application Development
Ernest Wysong, DuPont
Vaneeta Grover, DuPont
Alexander Marchione, DuPont
Pavan Naicker, DuPont

8:30 AM  Use of Simulation to Engineer Rigid Foams with Reduced Residual Isocyanates
Galen Suppes, University of Missouri
Harith Al-Moamari, University of Missouri
Rima Ghoreishi, University of Missouri
Yusheng Zhao, University of Missouri

9:00 AM  Meeting the Need for Sustainable Building Design: Final Results from SPFA’s Industry-Wide LCA and EPD Project for Spray Polyurethane Foam Insulation and Roofing
Richard Duncan, Spray Polyurethane Foam Alliance
George Pavlovich, Safety Environmental Consultant
Shen Tian, Bayer MaterialScience LLC

9:30 AM  BREAK

10:00 AM  Results of Latest Field Evaluations of Solstice® Liquid Blowing Agent Spray Foam
Mary Bogdan, Honeywell
David Williams, Honeywell

10:30 AM  Update on the SPFA Professional Certification Program for Spray Foam Installers and Companies
Kurt Riesenber, Spray Polyurethane Foam Alliance

POSTER SESSION
Grapevine Ballroom A-C

CASE
Development of a Novel Thermoplastic Polyurethane Via Low Free Monomer Technology
Zhenya Zhu, Chemtura Corporation
George Brereton, Chemtura Corporation
Ronald Emanuel, Chemtura Corporation
Kevin Jackson, Chemtura Corporation
Cyril Migdal, Chemtura Corporation

Development of Water-Soluble, Metal-Based Catalysts for Polyurethane Coating Applications
Brandon Parks, Reaxis Inc.

Effect of Bicyclic Carbonates on Soybean Oil-Based Non-Isocyanate Polyurethane Adhesives
Oliera Bilic, Pittsburg State University
Ivan Javni, Pittsburg State University
Zoran Petrovic, Pittsburg State University

Hydroxyl-terminated Polybutadienes in 2K PU Sealants for Electrical Insulation
Niko Haberkorn, Evonik Industries AG
Andreas Berlineau, Evonik Industries AG

Chemistry & Fundamentals
Development of Viscoelastic Foam Having Excellent Low Temperature Properties
Seulgi Kim, Kumho Petrochemica

Effect of Montmorillonite Based Organoclay Addition on the Microstructure of Rigid Polyurethane
Oktay Uysal, Anadolu University
Kubra Ortac, Anadolu University
Bilge Erdem, Anadolu University
Ender Suvaci, Anadolu University

Influencing the Cell Structure of Flexible Polyurethane Foams by Additives
Ruediger Landers, Evonik Industries AG
Harald Modro, Evonik Industries AG
Roland Hubel, Evonik Industries AG

The Impact of Polymer-Particle Interaction on the Mechanical Properties of Polyurethane Nanocomposites
Elizabeth Sims, Cabot Corporation
Elizabeth Burns, Cabot Corporation

Utilization of Polymer Stabilized Nanoscale Silver as an Effective Antimicrobial / Anti-Odor Agent in Polyurethane Foams
Matthew Henry, NanoHorizons Inc.
Chris Haupt, NanoHorizons Inc.

Emissions/Catalysts/Renewable Materials
Development of Bio based Polyurethane Foam from Coffee Ingredients
Fan-JengTsai, Industry Technology Research Institute
Yi-Che Su, Industry Technology Research Institute
Yuang-Ching Sheen, Industry Technology Research Institute
Jay Chiang, Industry Technology Research Institute
Lio Chang, SINGTEX Technical Fabric, Ltd.
Leon Wan, SINGTEX Technical Fabric, Ltd.

Continued
Molded Polyurethane Foam Containing High Levels of Renewably-sourced Carbon
Bob Dawe, Lear Corporation
Alex Konovalenko, Lear Corporation
Jason Demille Virgil Kowalski, Lear Corporation
Paul Fielding, Lear Corporation
Greg Carter, Lear Corporation
Ash Galbreath, Lear Corporation
Asad Ali, Lear Corporation

New Additive Active Polyol for Low Amine Emission Molded PU Foams
Michael Malanga, Dow
Esther Quintanilla, Dow
Adrian Birch, Dow

Polyurethane Foams Based on Olefin Modified Glycerin
Ivan Javni, Pittsburg State University
Geten Tegneg, Pittsburg State University
Olivera Bilic, Pittsburg State University
Jeanne Norton, Pittsburg State University
Mihail Ionescu, Pittsburg State University
Zoran Petrovic, Pittsburg State University

Modeling & Simulation
Modeling Epoxy Ring Opening of Epoxidized Soybean Oil by Oxide Addition Catalyzed by Toluene Sulfonic Acid
Rima Ghoreishi, University of Missouri, Columbia
Galen Suppes, University of Missouri, Columbia

Simulation of Catalyzed Urethane Polymerization--An Approach to Expedite Commercialization of Bio-Based Materials
Yusheng Zhao, University of Missouri, Columbia
Galen Suppes, University of Missouri, Columbia

Simulation of Polyurethane Height Profile Using Matlab
Harith Al-Moameri, University of Missouri
Galen Suppes, University of Missouri

Use of Simulation to Engineer Rigid Foams with Reduced Residual Isocyanates
Galen Suppes, University of Missouri, Columbia
Rima Ghoreishi, University of Missouri, Columbia
Harith Al-Moameri, University of Missouri, Columbia
Yusheng Zhao, University of Missouri, Columbia

Process & Equipment
Direct Injection of Blowing Agent into the Mixing Head as Third Stream
Eraldo Greco, Impianti OMS Spa

Integrated Footwear Design with Polyurethanes
Karsten Stoebener, KÖCKNER DESMA Schuhmaschinen GmbH
Bjorn Dormann, KÖCKNER DESMA Schuhmaschinen GmbH

InterWet Provides Solutions to Replace Metal in Heavy-Duty Parts with Polyurethane Composite
Max Taverna, (Retired) Cannon SpA
Maurizio Corti, Cannon Afros
Francesco Abba, Cannon Afros

JFlex: New Slabstock Foaming Technology
James Shoup, Hennecke Inc.
The Center for the Polyurethanes Industry (CPI) of the American Chemistry Council serves as the voice of the polyurethanes industry in North America, promoting its responsible development and coordinating with polyurethane trade associations across the globe. CPI members are companies that produce and sell the raw materials and additives that are used to make polyurethane products, equipment used in the manufacture of polyurethanes, and companies engaged in end-use applications and the manufacture of polyurethane products.

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