ANTISTATIC AND UL IBCS

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AGENDA

- Background
- EX Antistatic/Static Dissipative IBCs
- UL or FM Certified and NFPA Compliant IBC
- Reprocessing and Reuse

RIPA TECHNICAL CONFERENCE: 2019

- Schuetz has proposed a new international standard to establish tests to determine the electrostatic properties of composite IBCs

- Company is concerned that because composite IBCs are used for the transportation of increasing amounts of flammable (ignitable) liquids, tests are needed to ensure safety

- New tests would apply to both new and reconditioned composite IBCs.

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- Proposal has been submitted to the International Electronics Commission (IEC)

- Includes new definitions for
  - Reconditioning
  - Rebottling
  - Periodic retesting
  - Conductively encased IBCs
  - RIBCs

INTERNATIONAL REGULATIONS—USE AND STORAGE

- IEC, International Electrotechnical Commission produces standards
- These standards are aimed at protecting workers and property from electrical hazards
- IEC has grouped explosion hazards into levels from 0 to 2 with 0 being the worst
- Flammable liquids in IBCs must be in units that protect from electrostatic discharge in explosion Zones 1 and 2.
- CENELEC is the EU specific standards organization to which the IBC must be tested

DOMESTIC REGULATIONS—USE AND STORAGE

- In the US NFPA establishes requirements for IBCs used for flammable liquids. NFPA Flammable Material is not permitted in a composite IBC in inside unprotected storage. NFPA Combustible must be in the UL 2368 or FM 6020 compliant.
  - Anything over a 37.8C flash point
  - NFPA II, IIIA, and IIIB from SDS
- NFPA 30 more stringent=more testing = maybe more UL IBCs
  - UL 2368 Used to be w IBC filled w Water
  - Then filled with NFPA IIIB Mineral Seal Oil
  - Now, in order to be used with NFPA II or IIIA it must be tested w those chemicals.
  - No history of problems with either UL IBC.
- NFPA writes Codes. The state or local jurisdiction must make it a law.

TRANSPORT REGULATIONS

- UN Regulation: any flammable liquid with a flash point < 60C (or a dust liable to explode) must be electrostatic discharge protected
  - Not in 49 CFR except for fuel filling in the field—IBC from pickup to use.
  - 49 CFR mandates static protection when discharging
  - UN <60C is any Class 3 PHII or PGIII liquid
  - If the shipper is fully compliant the IBCs received into the reco stream from EU with Class 3 flammable, PGII or PGIII may have an EX layer
- UN Writes Model Regulations. It is up to each country to accept it verbatim into their laws or modify.
  - US Modifies
  - Canada, Mexico, less modification to comply w US joint agreements
  - EU very close to UN

WHAT LADINGS ARE MORE LIKELY TO BE IN EX OR UL?

- Paints
- Silicones
- Hydrocarbons
- Alcohols
- Flavors & Fragrances
- Petrochemicals
- Fuels
- Solvents
- Any Class 3, PGII or PGIII
- NFPA II, IIIA, IIIB

- Acids
- Salt solutions
- Alkalis
- Aqueous materials

SOURCES OF STATIC – SPECIFIC TO PLASTIC DRUMS AND IBCS

- Filling drums or IBC-splashing fill is the worst
- People—people hold more static than an IBC or drum and can discharge to the container –10-100 millijoules versus a plastic bucket at 10% of that value
- Agitation-mixing in the drum or IBC
- Wiping down equipment or tops of IBC or drum. Blot don't rub ! Static free wipes are best.
- Induction—a charged object put closed to non-charged object
- Dry air

STATIC PROVIDES IGNITION ENERGY

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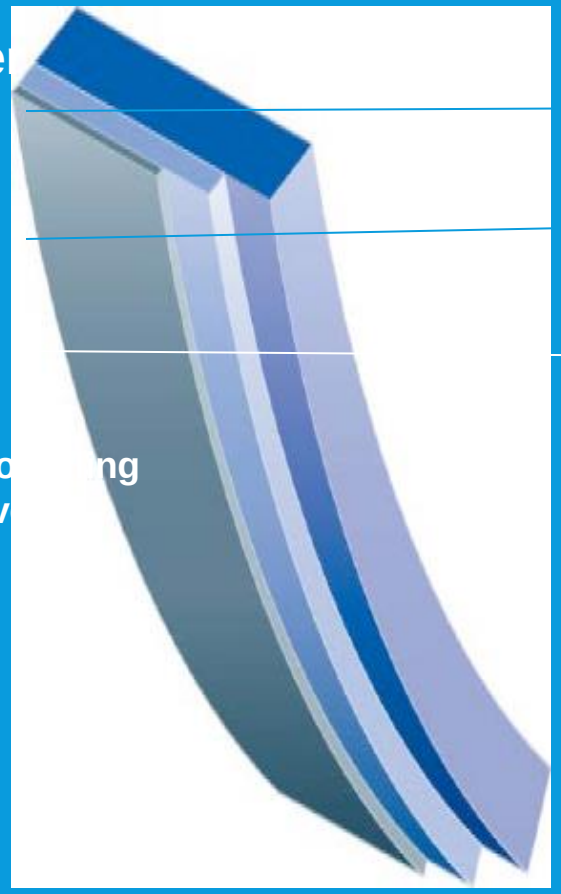
WHAT MAKES AN EX IBC?

- 2, 3, 5, 6 layers. Single layer IBC would be too expensive to make the bottle 100% EX
- An additive to the outer layer of polyethylene, (PE), dissipates the static charge that accumulates
  - This additive does not impair the recycle and reuse of the plastic
- The pallet must either be steel, have conductive plastic components, or a grounding strap from cage to ground
  - The conductive plastic pallet merely has a special carbon black—no effect on reuse
  - There are wood pallet approved EX units with grounding straps completing the circuit to ground
- The valve must be grounded to the cage or pallet

COEXTRUSION (3 LAYERS)

- 3 Layers
  Additional outer laye
  - New HDPE layer
  - PE regrind
  - Outer HDPE layer
    - **additional UV-Protection fo ng good, conductiv anti-static, etc**.



Cenelec EX certification

ANTISTATIC IBC

- Multilayer inner receptacle, which incorporates an external layer of permanent antistatic plastics compound.
- Conductive pallet.
- Ground strap/rod on valve.
- Grounding wire/strip from lading to steel cage or pallet.
- Approved for use in explosives Zones 1 and 2.
- Not flame resistant.
- Meets UN model regulations. Not UL

UL IBCS– EX PROTECTION AND UL 2368 COMPLIANCE

- EX Compliant IBC
- UL 2368 tested and compliance for fire resistance
  - 20 minutes conflagration with 2 L/min heptane fire.
  - Double stack can't tip > 6 degrees
  - No leakage
- **Reduces potential for pool fires spreading to other containers**
- **UL 2368 compliance required in 36 states and many regional districts**

UL IBC FIRE TEST

EVOLUTION OF UL IBC—POSSIBLE OLDER UNITS AROUND

EVOLUTION OF UL IBC—THE OLD TC SHOULD BE ALL GONE

SPECIFIC CONSIDERATIONS FOR PROCESSING AND REUSE EX

1. These likely had solvents and flammable materials—check that the plastic has not softened
2. In older units, the Antistat layer may be abraded off, or if left in harsh sunlight—get pressure washed off
3. The CENELEC certification does not prohibit reuse—HOWEVER
    1. If sold as an EX you must be able to verify it is still static dissipative
    2. It must be sold with a conductive pallet—no switching
    3. The valve must be a grounded valve—no switching
    4. Need Yellow sticker w warnings
4. The potential liability is very high on these. It may be best to use as a "regular" IBC or even non-UN.

SPECIFIC CONSIDERATIONS FOR PROCESSING AND REUSE EX—IEC WORK ITEM

- There is a work item proposed to standardize and codify the testing and inspection procedures for EX IBCs
  - Require verification by authorize procedure that the IBC – used or new – is indeed static dissipative to the limits specified
  - Require verification the valve is earthed
  - Require the valve has a positive connection between the liquid and grounding wire/strap/rod
  - Require verification the pallet and all components are earthed
  - Require 30 month inspection …May require every reuse inspection…
  - Require yellow sticker on plate and TE Cap
  - Must verify conductance "meterologically" ..i.e. surface ohmmeter
- More work and more expense for a Reconditioner

SPECIFIC CONSIDERATIONS FOR PROCESSING AND REUSE UL IBC

1. These likely had solvents and flammable materials—check that the plastic has not softened
2. The unit, once opened/used, is no longer NFPA compliant. It can't be sold as UL. Very high potential liability to resell as UL/FM.
3. Bottle and cage may be acceptable as UN or non-UN unit.
4. You may be able to return clean parts to the OEM for their disposition
5. If the bottle and valve were antistat, it would be best to avoid guaranteeing the reco unit is still antistat.
6. UL Sticker has to come off the cage/plate. Just the UL, not UN string and stacking marks if processed and sold as UN.

RIPA TECHNICAL CONFERENCE: 2019

- ICCR has asked to participate in a joint ISO/IEC standards workgroup for the proposed standard.
- ICCR is concerned about:
  - Definitions (must comport with existing national and international regs)
  - Possible excessive testing requirements
  - Limitations on reuse (proposed standard would require the use of an "authorized appropriate" replacement inner receptacle
  - Excessive recordkeeping requirements

THANK YOU FOR YOUR ATTENTION
QUESTIONS??