ITW Polymers Sealants:

ITW Polymers Sealants is a major manufacturer of high strength adhesives and is a subsidiary of Illinois Tool Works Inc., a Fortune 200 company. ITW Polymers Sealants local manufacturing facility is located in Rockland, Massachusetts. ITW Polymers Sealants contact adhesives are based upon polychloroprene (Neoprene) and block copolymers (i.e., blends of styrene-isoprene-styrene (SIS) and styrene-butadiene-styrene (SBS) rubber. A solvent blend consisting of toluene (40 – 50%), hexane (20 – 45%), and acetone (10 – 30%) is used to dissolve the rubber and resin.

The contact adhesives can be applied by brush, roller brush, or spray applied using air-assisted spray equipment. They can also be dispensed from either an aerosol can or from a canister that is self-contained and pressurized to affect a suitable spray pattern. Common substrates that are bonded using these adhesives include wood, particleboard, fiberboard, High Pressure Laminate (HPL), various rubber coverings, metals, leather, fabric, and some plastics. Major markets for their contact adhesives are woodworking for countertop construction, shelving, and office fixtures.

ITW Polymers Sealants is seeking assistance from UMass faculty to conduct research on alternative chemicals to the toluene/hexane/acetone solvent blend for use in their contact adhesives. The alternative to the current solvent blend would need to meet the following requirements:

- Raw material cost of approximately $0.57 – $0.65 pound
- Specific gravity ranges to be considered for this research: 0.70 – 1.0 (preferred specific gravity range: 0.70 – 0.80)
- No residual contaminants after evaporation
- Low to medium odor – not pungent or irritating in an open shop environment
- Hazardous Air Pollutants (HAPs) free (VOC exempt would be a plus)
- Compatible with wood, particleboard, fiberboard, laminate – HPL, rubber, foams, metals, leather, fabric, some plastics
- Colorless (“water-white”)
- Able to be stored in bulk tanks (outdoors) and conveyed using standard materials and equipment
- Non-corrosive
- Potential to be listed as acceptable for EPA Significant New Alternatives Policy (SNAP) Program
- Commercially available
- Fast to medium evaporation rate (dry time of 2-5 minutes at temperatures of 70 - 80°F)
- Produces a stable, uniform, and workable adhesive for application (brush, roller applied, and spray applied using air-assisted equipment and canisters)
- Must be compatible with common aerosol propellants (A-70, DME)
- Demonstrates good solvency for polychloroprene and SIS/SBS rubber resins
- Stable at low temperatures (freeze/thaw stable at 0 deg. F) – if it freezes then the adhesive needs to thaw uniformly and rapidly

The results of this research will be of value to other companies also using solvent blends for adhesive applications and other purposes. For further information about the research needs for this project, please contact Kate Ryan, Division Environmental, Health, and Safety Manager at: kater@itwsealants.com