The Chemistry and Properties of Styrofoam

- Long chain of hydrocarbons with a phenol group attached to every other carbon group.
- Typically represented chemically as [CH2-CH(Ph)] n where Ph is a phenol and a C6H5 ring.
- The molecule itself is considered a polymer, which is a long chain of repeating atoms through the linkage of many monomer (molecules) that come from petroleum.
- Styrofoam can also be called vinlybenzene, ethenyl benzene, cinnamene, phenylethylene.
- Stryofoam is considered a thermoplastic, meaning that it softens with heat and hardens as it cools.
- Due to the aromatic hydrocarbon Polystyrene is flammable and typically burns with an orange flame and gives off soot.
- Extended Polystyrene is made of approximately 5% polystyrene and 95% air. EPS contains CFC, known to drastically deplete the ozone.
- There are two different types of Polystyrene: "general purpose" aka crystal and the other is called "high impact", and is referred to this when a blowing agent is added.
- It has a density of 1050kg/m3, for reference water has a density of 1,000kg/m3. With this property, polystyrene is slightly denser than water, but not dense enough to sink, so it sort of "floats" in the middle.
- Some polystyrene is now manufactured with HCFC-22, which is why some manufactures will claim its "ozone friendly". While it is less destructive than its chemical cousins CFC-11 and CFC-12, it still is considered a green house gas and harmful to the environment. "Study Finds CFC Alternatives More Damaging Than Believed," The Washington Post, December 10, 1989.
- Polystyrene can break down more readily when an acid is introduced, for example adding lemon to your ice tea!
- Styrene is a known human neurotoxin and a known animal carcinogen. It has been linked to increased levels of chromosomal damage, abnormal pulmonary function and cancer in workers in polystyrene and styrene plants. "Resources, "Environmental Action Magazine, Environmental Action, Takoma Park, MD July/August 1988, p. 19
- Styrene has been found in 100 percent of human tissue samples and 100 percent of human nursing milk samples tested "Styrene: Health Affects of Low-Level Exposure, " FASE Reports, Foundation for Advancement in Science and Education, Los Angelos, CA, Spring 1992.

- In 1986 out of a list of 20 chemicals whose production generated the most hazardous waste, polystyrene was #5. This is under the Right to Know act of 1986. http://www.epa.gov/TRI/guide_docs/pdf/2001/pest2001.pdf

- EPA says the short terms effect of styrene are mucus membrane/eye irritation and the chronic effects on the central nervous system and increased spontaneous abortions. http://www.epa.gov/ttn/atw/hlthef/styrene.html

- Several Epidemiological studies suggest that there may be an association between styrene exposure and increased leukemia and lymphoma. http://www.cleano2forkids.org/healthrisks.php

- Polystyrene recycling programs are heavily subsidized by polystyrene manufactures to improve the environmental image of their products. "Plastics Industry Grasps for Straws," Everyone's Backyard, January/Februalry 1990, Citizen's Clearinghouse for Hazardous Waste, p.6