

1. DESIGN STANDARD:

- 1.1 Insulation systems must be in strict accordance with the latest version of the International Energy Code and/or ASHRAE Standard 90.1.
- 1.2 Insulation for cold piping and equipment must have a water vapor permeability not to exceed 0.117 perm inch and must not deteriorate in the presence of water.
- 1.3 Insulation for hot piping systems must be rated for temperature equal to 110% of the design rated temperature of the system.
- 1.4 Insulation in tunnels must have aluminum jacket

2. PRODUCT STANDARD:

- 2.1 Acceptable products for cold piping and equipment: Koolphen K, Trymer, Pittsburg Corning (PC) Foam Glass. Fabricate with vapor barrier jacket applied.
- 2.2 Acceptable products for heating water systems (180EF max design temperature) Glass fiber insulation with All Service Jacket manufactured by Manville Knauf, Owens Corning and approved equals Koolphen K, Trymer and PC Foam glass and approved equal fabricated with ASJ.
- 2.3 Acceptable products for steam piping and equipment: Calcium Silicate, PC Foam glass with ASJ Jacket.
- 2.4 Acceptable products for ductwork and air handling systems: Glass fiber blanket insulation with vapor barrier jacket and adhesive manufactured by Manville, Knauf, Owens Corning and approved equals.
- 2.5 Acceptable products for grease exhaust duct: Calcium Silicate insulation and fire rated drywall barrier; Fire Master ceramic duct wrap (thickness and details as outlined in products U.L. listing for fire rated enclosure).

3. PERFORMANCE STANDARD:

- 3.1 Insulation systems must be applied to piping only after piping systems have been tested and approved by the Rice University's Project Manager. (Both pressure testing and cleaning/flushing tests).
- 3.2 Piping systems must be clean, dry and free of dirt, oils and debris before insulation is applied.
- 3.3 Insulation that is damaged by construction activities must be replaced. Patching is not acceptable.

- 3.4 Insulation systems that are not rigid by nature will require a “hard section” at each hanger. Sheet metal saddles should be applied at each hanger.
- 3.5 Joining of insulation sections and securing the insulation to the piping must be approved by the Rice University’s Project Manager. In general, self sealing lap joints and taped butt joints are not desirable. Mechanically jointed laps with sealant applied at laps and butts or floated fiber mesh joints are preferred.
- 3.6 The contract should include painting of all piping systems. Color coding of piping to the Rice University’s Standard must be included.
- 3.7 Pipe marking and flow arrows should be applied after color coating is complete and approved by the Rice University’s Project Manager.