ISSN: 1391-8796
Proceedings of
4th Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 26, 2017

A novel device for bending PVC pipes for plumbing purposes

N.A.A.K.Sanjaya[1], W.G.D. Dharmaratna[1], S.S. Abeywickrama[1] and E. M. Ranatunga[1*]

[1]*Department of Physics, University of Ruhuna, Matara, Sri Lanka.*

PVC bends are commonly used by plumbers when laying PVC pipe lines in buildings. Many plumbers make bends by themselves by just heating and bending by hands, which is not the most successful method, especially for less experience plumbers. The quality of some of the bends available in the market is not up to the standard.

In order to address the above practical problem faced by plumbers, a suitable method to produce quality bends was developed under this study. Two sizes of uPVC (Unpasteurized Poly Vinyl Chloride) pipes, diameter ½ inch and ¾ inch, of gauge 1000, were studied. The optimum values of the two critical parameters, temperature and pressure, were determined to produce quality bends. The best temperature was found to be in the range 85^{o}C - 90^{o}C regardless of the diameter. The optimum values of the pressure for ½ inch and ¾ inch pipes were in the range 10-13 psi and 14-16 psi relative to ambient pressure, respectively.

Based on the results of the experiment, a device was designed and fabricated to produce quality bends conveniently. Heat resistant rubber tube passing through the pipe was used to apply uniform pressure on the pipe wall by pumping air in to the rubber tube. Pulleys of radii 2.4 cm and 3.4 cm were used in the device to bend ½ inch and¾ inch pipes, respectively. Pipes at the optimum pressure was heated to the required temperature uniformly and pressed around the pulley by hand to produce bends. The new device fabricated for bending pipes at 90 degrees could be easily modified to bend at different angles.

Keywords: *PVC bends, Fabrication of bends, Optimal parameters and Bending pipes*

*Corresponding Author: dharma@phy.ruh.ac.lk