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DEVELOPMENT OF A POROUS PIPE USING  
RECYCLING RUBBER/POLYETHYLENE, TO  
IMPROVE MICRO-IRRIGATION SYSTEM IN  
SRI LANKA.

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## ABSTRACT

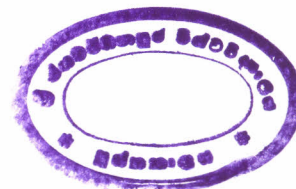
The porous pipe is a one of the emitter type utilizing in the agricultural field which is used in the micro - irrigation system to maintain under ground moisture content. The product is along flexible hose made out from recycle rubber and plastic binder. As per the end -use requirements product should consist of both technical and agricultural nature. Hence product should satisfy technical requirements that are needed to improve product quality and properties as well as needs of the agricultural field requirements (eg: excellent water discharge rate).

The project study was aimed to developing a porous pipe at a price very much competitive to similar products that are available in the market such as drip ,trickle, spray.

The project works mainly based on the formula developments and process developments. The formula development was carried out working on number of formulations based on the plastic binder and vulcanized rubber powder (crumb) and their blends. Process development was carried out based on the temperature settings of the extruder barrel and the mixing characteristics of the blends.

The finished product was tested on range of application requirements such as strength properties (Tensile strength & tear strength), resistance properties (UV, ESCR, Chemical resistance) ability of water dischargeability through a wall, pressure existence, durability, density of the product.

The appropriate tensile and other physical properties and measurement of water discharge rate



were carried out on all samples. UV, ESCR chemical resistance properties were tested on selected samples to make sure the developed sample properties. Field tests were carried out on selected finished product samples to conform field compatibility. Obtained results were evaluated to identify the most suitable compound composition that has yielded the best compromise of process ability parameters and performance characteristic.

After careful examination of performance application and quality aspects of the product, a process was developed for commercial implementation with a competitive price. Because of the use of recycling rubber as a major component the product should be rather price competitive and also it is as a major solution for a growth of the disposable tire amount in the environment.

The project is fully implemented in a company of D. Samson industries and expecting to continue this to spread and growth specially in local market and also foreign market.



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