



international plastics design competition



UHMW Polyethylene Tubing



Molder: Crown Plastics

Material Supplier: Ticona

Designer: Frank M Chapman, Fluoron Inc.

OEM: Frank M Chapman, Fluoron Inc.

Product Description



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The purpose of our invention is to design a corrosion-resistant cover for steel and wooden pilings to accomplish the following:

- prevent the deterioration of wood or corrosion of steel
- release properties to prevent ice adhesion and the buildup of barnacles
- would not poison the environment
- could be readily installed

Why is the product innovative?

The ideal piling cover would be tougher than steel and would provide protection against ice adhesion, barnacles, and the degradation of wooden pilings or the corrosion of steel pilings. A piling cover made of heat-shrinkable UHMW-PE accomplishes all of these objectives.

Our heat-shrinkable piling covers are manufactured from UHMW-PE, the world's toughest plastic (even tougher than steel!). This polymer does not melt and flow but remains solid when the crystalline structure melts. To fabricate the piling covers, first the resin is molded continuously under pressure above the melting point and then cooled under pressure. We buy this sheet from Crown Plastics. Here at Fluoron, we then utilize our process for heat-sealing the sheet into tubing and orient the tubing using the memory that only plastics have to make the sleeve heat-shrinkable.

Our product invention shrinks at 250°F, which makes practical shrinking onto large parts, like pilings made of wood or steel. Once shrunk onto a piling, the UHMW-PE cover has many advantages. The unique release properties of UHMW-PE help to prevent ice adhesion and the buildup of barnacles. Since UHMW-PE is completely inert to the corrosion of saltwater, the UHMW-PE cover prevents the deterioration of wood or corrosion of metal pilings as well. Our heat-shrinkable technology forms a watertight seal, therefore eliminating the ecological harm of CCA (Chromated Copper Arsenate), the treatment used on wood pilings to preserve the wood.

Altogether, a piling cover made of heat-shrinkable UHMW-PE tubing offers the ultimate piling protection.