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NASA TECH BRIEF

Lewis Research Center



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Ultra Thin Gage Plastic Film

The problem:

To devise a means of producing ultra thin 1.56 micron (0.0614 mil) thick polyethylene film. Because conventional equipment is not designed for this application, the process of extruding extremely thin plastic films is time-consuming and laborious, and die blowouts are frequently encountered. Consequently, films of less than 8.4 microns (0.33 mil) are seldom made, particularly in polyethylene, and gage films produced commercially are generally only 8.9 to 10.2 microns (0.35 to 0.40 mils).

The solution:

A new process utilizing specially modified conventional equipment, with changes in process temperature, pressure, and cooling requirements.

How it's done:

An experimental resin and specially modified equipment are used to extrude layflat tubular polyethylene film in gages down to 1.56 microns (0.0614 mil). The ultimate tensile strength of the film is 52 MN/m² (7550 psi), an increase of almost 300% over conventional gage film from this same resin. The results, in general, are films with approximately the same strength in both directions (length and width), with good sealability and other physical properties.

Notes:

1. The following documentation may be obtained from:

National Technical Information Service
Springfield, Virginia 22151
Single copy price \$3.00
(or microfiche \$0.95)

References:

NASA-CR-274 (N65-30186), Ultra Thin Gauge Polymeric Films for Space Applications
NASA-CR-72051 (N67-13782), Development of Ultra Thin Gauge Polymeric Films

2. Technical questions may be directed to:

Technology Utilization Officer
Lewis Research Center
21000 Brookpark Road
Cleveland, Ohio 44135
Reference: B71-10135

Patent status:

No patent action is contemplated by NASA.

Source: D. W. Cox, Jr., and A. D. Struble of Sea-Space Systems, Inc. under contract to Lewis Research Center (LEW-11276)

Category 04,08



MASS TECH BRIEF

1994-1995

Massachusetts Technical Briefs are prepared by the Massachusetts Technical Briefing Committee, a group of experts in various technical fields. The briefs are intended to provide a concise summary of the current state of the art in a particular field, and to identify areas for further research and development. The briefs are available to the public at a nominal cost.

1. Introduction

The purpose of this brief is to provide a concise summary of the current state of the art in the field of [unclear]. The field has seen significant advances in the past few years, particularly in the areas of [unclear] and [unclear]. These advances have led to a number of new applications and products, and have opened up new areas for research and development. The brief will discuss the current state of the art, and will identify areas for further research and development.

2. Background

The field of [unclear] has a long history, and has been the subject of a great deal of research and development. The current state of the art is the result of a number of years of work by many researchers and engineers. The brief will provide a brief overview of the history of the field, and will discuss the current state of the art.