

**REDUCTION OF REACTION TIME OF
PMMA SHEET CASTING PROCESS**



Mr. Parinya Wanwanichai

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By: Mr. Parinya Wanwanichai
Program: Polymer Science
Thesis Advisors: Dr. Pitt Supaphol
Mr. Yothin Vanichvarakij

Accepted by the Petroleum and Petrochemical College, Chulalongkorn University, in partial fulfillment of the requirements for the Degree of Master of Science.

K. Bunyakit
..... College Director
(Assoc. Prof. Kunchana Bunyakit)

Thesis Committee:

P. Supaphol
.....
(Dr. Pitt Supaphol)

Y. Vanichvarakij
.....
(Mr. Yothin Vanichvarakij)

Anuvat Sirivat
.....
(Assoc. Prof. Anuvat Sirivat)

M. Nithitanakul
.....
(Dr. Manit Nithitanakul)

บทคัดย่อ

นายปริญญา วรรณวานิชชัย: การลดเวลากระบวนการการผลิตขึ้นรูปแผ่นพอลิเมธิลเมธาไครเลต (Reduction of Reaction Time of PMMA Sheet Casting Process) อ.ที่ปรึกษา: อาจารย์ ดร.พิชญ์ สุภผล และ นายโยธิน วานิชวรากิจ 78 หน้า ISBN 974-03-1608-5

กระบวนการผลิตขึ้นรูปแผ่นพอลิเมธิลเมธาไครเลตประกอบด้วยกระบวนการผลิตแบบ 1 ขั้นตอนและ 2 ขั้นตอนการผลิต สามารถทำได้โดยใช้ระบบน้ำและอากาศร้อนเป็นแหล่งความร้อน กระบวนการผลิตทั้งสองกระบวนการผลิตถูกเปรียบเทียบโดย 1) ศึกษาสภาวะการตั้งเครื่องที่เหมาะสมที่สุดสำหรับการผลิตแผ่นเมธิลเมธาไครเลตขนาดความหนา 3 มิลลิเมตร โดยศึกษาสมบัติทางกายภาพ สมบัติเชิงกลของแผ่นเมธิลเมธาไครเลตที่ผลิตได้ พบว่าความแตกต่างของสมบัติทางกายภาพและเชิงกลไม่มีความแตกต่างและเป็นที่ยอมรับได้ในการใช้งานของทั้งสองระบบ และ 2) ศึกษาระยะเวลาการผลิตแผ่นเมธิลเมธาไครเลตในแต่ละการผลิต พบว่าสามารถระยะเวลาการผลิตได้เมื่อเปรียบเทียบกับกระบวนการผลิตของบริษัท แพนเอเชีย อุตสาหกรรม จำกัด เมื่อเปรียบเทียบสมบัติเชิงกลของกระบวนการผลิตแบบ 2 ขั้นตอนและ 1 ขั้นตอนพบว่าสมบัติเชิงกลของกระบวนการผลิตแบบ 2 ขั้นตอนมีค่าสูงกว่าสมบัติเชิงกลของการบวนการผลิตแบบ 1 ขั้นตอน อีกทั้ง พบว่าสำหรับกระบวนการผลิตแบบ 2 ขั้นตอน โดยใช้ระบบน้ำ-อากาศร้อนมีระยะเวลาการผลิตที่สั้นกว่ากระบวนการผลิตแบบ 2 ขั้นตอน โดยใช้เฉพาะอากาศร้อน

ABSTRACT

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One-step and two-step isothermal sheet casting processes, using water and hot air systems, were compared for the production of poly(methyl methacrylate) (PMMA) sheets. The main objectives were 1) to assess the optimal conditions suitable for producing 3-mm thick PMMA sheets having acceptable physical and mechanical properties between the two systems, and 2) to assess whether the overall production time for each process can be reduced when compared with the current process used at Pan Asia Industrial, Co.,Ltd. The mechanical properties of the PMMA sheets produced by the two-step isothermal process were found to be better than those produced by the one-step isothermal process. The two-step isothermal water-air process required shorter production time than the two-step isothermal hot air process.

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