



## Troubleshooting Guide for INJECTION MOLDING Phenolic & Granular Polyester

CORRECTIONS	PROBLEM												
	Mold Temperature	Injection Pressure	Holding Pressure	Injection Speed	Barrel Temperature	Screw Speed	Screw Back Pressure	Clamp Pressure	Shot Size	Hold Time	Cure Time	Refer to Comment Sheet	
Ball & Socket	3D	2I	2I	1D								4A	
Bulge Opposite Insert	3I				4I		4I					1B & 2C	
Cure Blister	2I			4D	1I		1I				3I		
Dull Appearance	1I				2I		2I					3E & 4Y	
Flash - Excessive	4I	2D	2D		3I		3I	6I	1D			5F	
Flow Lines	4D	2I	2I	1I	5D		5D			3I		6A	
Hard Spots	4D	2D	2D	3D	1D		1D					5H	
Injection Too Slow		1I		2I	3I		3I					4K	
Mold Staining	4I	5D	5D	6D	3I		3I	7D				1U & 2Y	
Mottled Surface Appearance	3D				2D		2D		1I				
Nonfills or Short Shots	4D	3I	3I		2I		2I		1I			5U & 6G	
Nozzle Freezes Up	1D				2D		2D					3H	
Orange Peel	3I	1I	1I	4D	2I		2I						
Rubbery Parts or Runner	1I				2I		2I					3AA	
Screw Does Not Go "Home"		2I	2I		5D		5D		3D			1J, 4W & 6K	
Screw Pickup is Erratic					1I	2D	1I					3M & 4G	
Screw Pickup is Too Slow					2D	1I	2D					3T	
Part Shrinkage - Excessive	2I	1I	1I		3I		3I				5I	4U	
Part Shrinkage - Insufficient	1D		2D								4D	3V	
Sink Marks	2I	3I	3I	4D					1I			5U	
Skin Blisters	3D			1D					2D			4U	
Sprue Sticking		3D	2D									1N, 4H & 5X	
Sticking in Mold	3I		2D						4D		6I	1P & 5E	
Subgates Sticking in Mold												1BB, 2CC & 3DD	
Trapped Gas	6D	5D	5D	4D	3D		3D	7D				1EE 2U & 8Z	
Warpage When Ejected												1P, 2E, 3R & 4V	
Warpage After Cooling	1I			3D	2I		2I				5I	4U, 6S & 7A	
Wood Screwing					2D	3D	1I						

Legend: Number = Priority I = Increase D = Decrease Other Letters = Comment ID

# Plastic Injection Molding Troubleshooting Guide

**Hussin A.Rothana**



## **Plastic Injection Molding Troubleshooting Guide:**

**Injection Molding Advanced Troubleshooting Guide** Randy Kerkstra, Steve Brammer, 2021-04-06 This highly practical troubleshooting guide solves injection molding problems systematically and quickly The rigorous but user friendly approach employs the authors proven STOP methodology considering molding process mold machine and material 4M s as possible sources of part defects Importantly the interaction between tooling processing and material is emphasized allowing successful resolution of difficult problems where by the books approaches fail Starting from troubleshooting methodology and tools there is a focused discussion of key areas impacting troubleshooting in particular the 4M s followed by an in depth troubleshooting guide for various molding defects structured logically by type of problem solution Insightful case studies throughout show the strengths of the STOP method to get real processes to run smoothly and reliably producing quality parts with optimal cycle time and cost Drawing on a wealth of hands on experience this book serves as an ideal reference to be consulted at the machine or as a learning and training manual suitable for both beginners and experienced molders With valuable information on robust process windows cycle time evaluations scrap savings and runners gates with no existing standard in the industry no other book provides the unique insights found here The 2nd edition is updated with new discussion and case studies on topics including additive manufactured inserts unmelts buildup burns cycle time gloss variation and read through

*Troubleshooting Injection Moulding* Vannessa Goodship, 2004 Annotation Injection moulding is one of the most commonly used processing technologies for plastics materials Proper machine set up part and mould design and material selection can lead to high quality production This review outlines common factors to check when preparing to injection mould components so that costly mistakes can be avoided This review examines the different types of surface defects that can be identified in plastics parts and looks at ways of solving these problems Useful flow charts to illustrate possible ways forward are included Case studies and a large b257 of figures make this a very useful report

**Handbook of Plastic Processes** Charles A. Harper, 2006-08-28 An outstanding and thorough presentation of the complete field of plastics processing Handbook of Plastic Processes is the only comprehensive reference covering not just one but all major processes used to produce plastic products helping designers and manufacturers in selecting the best process for a given product while enabling users to better understand the performance characteristics of each process The authors all experts in their fields explain in clear concise and practical terms the advantages uses and limitations of each process as well as the most modern and up to date technologies available in their application Coverage includes chapters on Injection molding Compression and transfer molding Sheet extrusion Blow molding Calendering Foam processing Reinforced plastics processing Liquid resin processing Rotational molding Thermoforming Reaction injection molding Compounding mixing and blending Machining and mechanical fabrication Assembly finishing and decorating Each chapter details a particular process its variations the equipment used the range of materials utilized in the process and its advantages and limitations Because of

its increasing impact on the industry the editor has also added a chapter on nanotechnology in plastics processing

*Injection Molding Troubleshooting Guide*, 1996      **Handbook of Molded Part Shrinkage and Warpage** Jerry Fischer, 2012-12-31 How easy life would be if only moldings were the same size and shape as the mold But they never are as molders toolmakers designers and end users know only too well Shrinkage means that the size is always different warpage often changes the shape too The effects are worse for some plastics than others Why is that What can you do about it The Handbook of Molded Part Shrinkage and Warpage is the first and only book to deal specifically with this fundamental problem Jerry Fischer's Handbook explains in plain terms why moldings shrink and warp shows how additives and reinforcements change the picture sets out the effect of molding process conditions and explains why you never can have a single correct shrinkage value It goes on to demonstrate how to alleviate the problem through careful design of the molded part and the mold and by proper material selection It also examines computer aided methods of forecasting shrinkage and warpage And most important of all the Handbook gives you the data you need to work with Authoritative and rooted in extensive industrial experience the expert guidance contained in this handbook offers practical understanding to novices and new insights to readers already skilled in the art of injection molding and mold making Contains the answers to common problems and detailed advice on how to control mold and post mold shrinkage and warpage Case Studies illustrate and enrich the text Data tables provide the empirical data that is essential for success but hard to come by      **Injection Molding Advanced Troubleshooting Guide** Randy Kerkstra, Steve Brammer (Chemical engineer), 2018 This highly practical troubleshooting guide solves problems at the machine systematically and quickly Drawing on a wealth of hands on experience from the authors who have built strong reputations in the field the book is structured by type of problem solution Thus it is an ideal reference to be consulted at the machine Included is valuable information on robust process windows cycle time evaluations scrap savings and runners gates with no existing standard in the industry No other book provides the unique insights found here      Plastics Institute of America Plastics Engineering, Manufacturing & Data Handbook D.V. Rosato, Nick R. Schott, Marlene G. Rosato, 2001-11-30 This book provides a simplified practical and innovative approach to understanding the design and manufacture of plastic products in the World of Plastics The concise and comprehensive information defines and focuses on past current and future technical trends The handbook reviews over 20 000 different subjects and contains over 1 000 figures and more than 400 tables Various plastic materials and their behavior patterns are reviewed Examples are provided of different plastic products and relating to them critical factors that range from meeting performance requirements in different environments to reducing costs and targeting for zero defects This book provides the reader with useful pertinent information readily available as summarized in the Table of Contents List of References and the Index      **Injection Molding Handbook** D.V. Rosato, Marlene G. Rosato, 2012-12-06 This third edition has been written to thoroughly update the coverage of injection molding in the World of Plastics There have been changes including extensive

additions to over 50% of the content of the second edition Many examples are provided of processing different plastics and relating the results to critical factors which range from product design to meeting performance requirements to reducing costs to zero defect targets Changes have not been made that concern what is basic to injection molding However more basic information has been added concerning present and future developments resulting in the book being more useful for a long time to come Detailed explanations and interpretation of individual subjects more than 1500 are provided using a total of 914 figures and 209 tables Throughout the book there is extensive information on problems and solutions as well as extensive cross referencing on its many different subjects This book represents the ENCYCLOPEDIA on IM as is evident from its extensive and detailed text that follows from its lengthy Table of CONTENTS and INDEX with over 5200 entries The worldwide industry encompasses many hundreds of useful plastic related computer programs This book lists these programs ranging from operational training to product design to molding to marketing and explains them briefly but no program or series of programs can provide the details obtained and the extent of information contained in this single sourcebook

**Runner and Gating Design Handbook** John P. Beaumont, 2019-10-07 The first book to shed light on the critical role the melt delivery system plays in successful injection molding has received a major update in its 3rd edition This successful book will give you an immediate leg up by reducing mold commissioning times increasing productivity improving customer satisfaction and achieving quality goals such as Six Sigma How do you determine the optimum design of your runners and gates what type of runner system hot or cold variations do you use for a specific application how do you identify molding problems generated by the gate and runner vs those stemming from other molding issues what should you consider when selecting a gating location The Runner and Gate Design Handbook will give you the means to get to the bottom of these issues as well as provide specific guidelines for process optimization and troubleshooting Highlights among the numerous new updates include coverage and analyses of critical shear induced melt variations that are developed in the runners of all injection molds expanded content on hot runners and a new subchapter on injection molding process development

**Applied Plastics Engineering Handbook** Myer Kutz, 2011-07-20 A practical reference for all plastics engineers who are seeking to answer a question solve a problem reduce a cost improve a design or fabrication process or even venture into a new market Applied Plastics Engineering Handbook covers both polymer basics helpful to bring readers quickly up to speed if they are not familiar with a particular area of plastics processing and recent developments enabling practitioners to discover which options best fit their requirements Each chapter is an authoritative source of practical advice for engineers providing authoritative guidance from experts that will lead to cost savings and process improvements Throughout the book the focus is on the engineering aspects of producing and using plastics The properties of plastics are explained along with techniques for testing measuring enhancing and analyzing them Practical introductions to both core topics and new developments make this work equally valuable for newly qualified plastics engineers seeking the practical rules of thumb

they don't teach you in school and experienced practitioners evaluating new technologies or getting up to speed on a new field. The depth and detail of the coverage of new developments enables engineers and managers to gain knowledge of and evaluate new technologies and materials in key growth areas such as biomaterials and nanotechnology. This highly practical handbook is set apart from other references in the field, being written by engineers for an audience of engineers and providing a wealth of real world examples, best practice guidance and rules of thumb.

**Plastic Processes** Mr. Rohit Manglik, 2024-01-23. EduGorilla Publication is a trusted name in the education sector committed to empowering learners with high quality study materials and resources. Specializing in competitive exams and academic support, EduGorilla provides comprehensive and well structured content tailored to meet the needs of students across various streams and levels.

*User's Guide to Plastic* Ulf Bruder, 2019-07-08. Many technical books about plastics are too theoretical and difficult to read. The intention of this book is to offer something completely different; it is easy to read with many examples taken from everyday life. It is suitable for readers at secondary school and university levels and can be used for training activities in industry as well as for self studies. Included are over 600 color images to illustrate the wide variety of plastics and process workflows used today. The book also contains a number of computer based tools that can be downloaded from the author's website. With comprehensive coverage this is probably the most versatile plastics handbook ever written. New in the second edition are much expanded content, new chapter on extrusion, new color figures, a new layout and corrections throughout. A bonus download of working Excel tools is provided to supplement the book content.

**Plastic Part Technology** Edward A. Muccio, 1991-01-01. This book focuses on the technology involved in using plastics, explaining the key areas of plastic materials, plastic product design, plastic processing, plastic end use markets and issues within the plastics industry that are critical to working and communicating within the plastics industry.

**Plastics Engineering Handbook Of The Society Of The Plastics Industry** Society of the Plastics Industry, 1991-08-31. Comprehensive guide to plastics processing methods, equipment and materials.

*Concise Encyclopedia of Plastics* Marlene G. Rosato, D.V. Rosato, 2012-12-06. After over a century of worldwide production of all kinds of plastic products, cost estimators, buyers, vendors, consultants of products, the plastics industry is now the fourth largest and others industry in the United States. This brief, concise and practical. The bulk of the book is the alphabetical listing of technical book is a cutting edge compendium of the plastics industry. Preceding those entries is a Plastics Overview. Fig. industry's information and terminology ranging from uses and Tables which presents eight summary guides on design, materials and processes, testing, quality control, the subjects examined in the text and then the World of regulations, legal matters and profitability. New and use Plastics Reviews which presents 14 articles that provide full developments in plastic materials and processing. General introductory information, comprehensive updates continually are on the horizon and the examples of these developments and important networking avenues within the world of developments that are discussed in the book provide guides plastics. Following the alphabetical listing of entries at the top, past and future trends end.

of the encyclopedia seven appendices provide back This practical and comprehensive book reviews the ground and source guide information keyed to the text of the book The extensive and useful Appendix A List of plastics industry virtually from A to Z through its more than 25 000 entries Its concise entries cover the basic is Abbreviations lists all abbreviations used in the text

**Encyclopedia of Polymer Blends, Volume 2** Avraam I. Isayev, Sanjay Palsule, 2016-09-12 A complete and timely overview of the topic this volume imparts knowledge of fundamental principles and their applications for academicians scientists and researchers while informing engineers industrialists and entrepreneurs of the current state of the technology and its utilization Each article is uniformly structured for easy navigation containing the latest research development and its basic principles and applications examples of case studies laboratory and pilot plant experiments as well as due reference to the published and patented literature

*Troubleshooting Manufacturing Processes* LaRoux K. Gillespie, 1988

**Extruding Plastics** D.V. Rosato, 2013-11-27 Worldwide extrusion lines successfully process more plastics into products than other processes by consuming at least 36 wt% of all plastics They continue to find practical solutions for new products and or problems to meet new product performances This book with its practical industry reviews is a unique handbook the first of its kind that covers over a thousand of the potential combinations of basic variables or problems with solutions that can occur from up stream to down stream equipment Guidelines are provided for maximizing processing efficiency and operating at the lowest possible cost It has been prepared with an awareness that its usefulness will depend greatly upon its simplicity and provision of essential information It should be useful to

- 0 those already extruding and desiring to obtain additional information for their line and or provide a means of reviewing other lines that can provide their line with operating improvements
- 2 those processing or extruding plastics for the first time
- 3 those considering going into another extrusion process
- 4 those desiring additional information about employing the design of various products more efficiently with respect to both performance and cost
- 5 those contemplating entering the business of extrusion
- 6 those in new venture groups materials development and or market development
- 7 those in disciplines such as nonplastics manufacturers engineers designers quality control financial and management and
- 8 those requiring a textbook on extrusion in trade schools and high schools or colleges

*Injection Mold Design Handbook* Bruce Catoen, Herbert Rees, 2021-10-11 An injection mold is the heart of any plastics molding workcell Understanding the principles of an injection mold design and its importance to a successful plastic part is fundamental to the success of the product This book helps guide the designer engineer project manager and production manager in making sure that the injection mold to be designed will work as intended This book takes the reader through the process of conceptualizing and designing an injection mold that will produce the desired plastic part Since it all starts with the plastic part the book first focuses on key features and details of the plastic part which are necessary for good mold design The design of the main components of an injection mold are discussed and good design practices are shared Finally the process of testing and gaining customer acceptance of the mold for production is detailed A

comprehensive appendix and detailed drawings provide the required detail for completing a mold design. Additionally, more than 40 detailed examples of mold designs are provided in the book to illustrate the principles and design rules discussed.

**Fluoroplastics, Volume 2** Sina Ebnesajjad, 2015-07-30. Fluoroplastics Volume 2: Melt Processible Fluoropolymers. The Definitive User's Guide and Data Book compiles the working knowledge of the polymer chemistry and physics of melt processible fluoropolymers with detailed descriptions of commercial processing methods, material properties, fabrication and handling information, technologies and applications, also including history, market statistics and safety and recycling aspects. Both volumes of Fluoroplastics contain a large amount of specific property data useful for users to readily compare different materials and align material structure with end use applications. Volume Two concentrates on melt processible fluoropolymers used across a broad range of industries including automotive, aerospace, electronic, food, beverage, oil, gas and medical devices. This new edition is a thoroughly updated and significantly expanded revision covering new technologies and applications and addressing the changes that have taken place in the fluoropolymer markets. Exceptionally broad and comprehensive coverage of melt processible fluoropolymers processing and applications. Provides a practical approach written by long standing authorities in the fluoropolymers industry. Thoroughly updated and significantly expanded revision covering new technologies and applications and addressing the changes that have taken place in the fluoropolymer markets.



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