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DEFECTS IN INDUSTRIAL EXTRUSION OPERATIONS

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The defects of sharkskin and melt fracture and some extrusion instabilities have received significant attention in the open literature, and hundreds of publications have appeared and continue to appear in refereed journals and presented in conferences. The extrusion industry is well aware of these, and although reduction or elimination continues to be a problem, there is at least the understanding on how, why and where they originate and which actions or additives are beneficial. There are some other extrusion defects which have received very little attention in the open literature, such as poor optical clarity in transparent films due to local degradation, flow lines and gels. Frequently, these defects are confused with sharkskin/melt fracture and it is difficult to identify them or explain where and why they appear. During the presentation, it will first be explained how such defects can be identified and differentiated from others. Secondly, it is argued that both the material and the equipment design might be responsible. Emphasis will be given to low shear regions where the residence times can be very long. The explanations will be supported by both experimental evidence obtained from industrial installations and computer simulations.