"GLASS FAULTS"

Reviewed by Professor Dr. Tech. Sci. M. A. Matveev
and Dosent Cand. Tech. Sci. G. M. Matveev

Translated from Steklo i Keramika, Vol. 20, No. 9,
p. 47, September, 1963

A book written by Professor Miloty Fanderlika, entitled "Glass Faults," was recently published in Czechoslovakia, dealing with the many years of experience of the author and the State Glass Research Institute in Gradets Kralov on the study of the causes, diagnosis, and prevention of faults in glass.

The author examines in detail faults in glass which develop when glass is being made, formed, annealed, worked, and used. He describes the causes of faults and diagnostic methods of detecting them, and also gives a very interesting and valuable scheme of fault analysis.

The book by Professor Fanderlik is intended for a wide circle of scientific and technical workers of glass plants, and also those who work on the processing and use of glass in electrovacuum techniques, chemistry, building, the food industry, etc. The book is also a good manual for scientific workers and students specializing in the technology of glass and glass products.

Chapter I, "Faults in the manufacture of glass," analyzes the general causes of faults in glass connected with the quality of the raw materials, methods of preparing them, the preparation and transport of batch, the type and quality of the refractories.

Later the author examines questions of the development of stones and cords, the causes of vitrification, and their connection with phase equilibria diagrams. Questions connected with the equilibrium between glass and gases and the appearance of bubbles are dealt with in detail. Much attention is given also to processes of fining. In all the concrete cases, the author gives recommendations on preventing the various faults.

Faults arising during glass forming are fully dealt with in Chapter II. Special attention is given here to the connection between the properties of glass and forming. A review of faults in forming sheet, container, and pressed glass is very valuable.

In Chapter III, faults connected with bad annealing are dealt with. The author in the main examines the following: strains due to incorrect annealing, and also the formation of these strains when producing overlaid glass and when joining glass to metals; faults of chemical resistance due to annealing; transformation changes in the glass; faults of hardened goods and optical glass.

Chapter IV deals with the so-called "fault properties." This term is introduced for the first time by M. Fanderlik to characterize the faults of mechanical resistance and chemical resistance of glass.

Chapter V describes various methods of determining glass faults. Together with the simple and more common methods, this chapter gives more accurate and complex methods, requiring special equipment, and therefore are admissible only for extremely well-equipped laboratories. A detailed examination is given of the tentative methods most often used in practice.

A review of carefully selected specialist literature is of special value in the book.

In conclusion, it should be noted that the book by M. Fanderlik contains a great deal of original and factual material laid out on a high scientific level; it undoubtedly will be useful for Soviet specialists in glass technology.