

Economic and general analysis of quality defects and their solutions of pet gourmet bottles



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CERTIFICATE

It is to certify that this project report entitled, “**Economic and General Analysis of Quality Defects and their Solutions of PET Gourmet Bottles**” is based upon the results of experiments carried out by **ZAEEM NASEER, WAHEED AHMED** and **MUHAMMAD AWAIS** under my supervision. No material has been used in this report which is not their own work except where due acknowledgement has been made. They have fulfilled all the requirements and qualified to submit this report for the Degree of BS-Industrial Engineering

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DEDICATION

**We dedicate this Project to our parents,
Department and respectable teachers who
have encouraged and motivate us and
prayed for our success**

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There are a number of people without whom this thesis might not have been written, and to whom I am greatly indebted.

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Thank you, Allah for always being there for us.

The thesis is only a beginning of our journey.

ABSTRACT

Despite abundant evidence that there are some issues regarding bursting of bottles due to some major factors like quality defects before and after manufacturing, but unfortunately there is presently no major study that focuses on the theme. The main aim of the current thesis is to examine the product and the main reason of neck & base crack issue in the final product. This can be done by analyzing the reaction of different sections & plant of the factory. While focusing on the period between 2015 and 2016 the thesis traces the evolution of the neck & base crack issue dating back to 2010. The thesis also shows how the conditions will affect the quality of raw material & final product. In parallel, the thesis explores the quality defects on preforms & bottles after getting manufactured. This was strongly indicated from the 2010 that this problem will increase and definitely will target the market value and sales. To highlight the main reason of problem, humidity was concluded as the main reason for this issue. The central argument of the thesis, therefore, is effect of humidity on preforms & bottles and the after products. The thesis contends that by controlling the humidity we can control this issue of neck & base crack because it mostly occurs during the humid season from June to September. Getting data from all warehouses & by noticing all the parameters suggested by original equipment manufacturer the data was collected to investigate the reason behind this serious issue. Also, help from the technical team of the original equipment manufacturer was taken. The site visits were arranged so that they can have a brief and comprehensive visit of the plants and to find out the main reasons behind the fault. After all the investigation and more than 1 year of hard work, they were all able to come to a conclusion that this problem was occurred, more or less, due to the factor of humidity. Finally, this thesis observes that the main problems lie in controlling the environment on all the plants like injection molding plant where preforms are manufactured & blow mold where bottles and final products are being manufactured and also the warehouses where the final product is kept. Moreover, this thesis also observe the wrong parameters used in manufacturing. After all the investigation, completion of action plans and remedies taken the company was able to reduce the defect to 95% expectedly. This could be a big achievement.

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Abbreviations

PET

Polyethylene terephthalate

RSIMM

Reacting Screw Mixture Shaping Machine

TPA

Terephthalic Corrosive
EG
Ethylene Glycol
ISBM
Injection stretch blow molding
DMT
Dimethyl Terephthalate
CSDs
Carbonated Soft Drinks
TOF
Top of Finish
NSR
Neck Support Ring
PPR
Pilfer Proof Ring
QAM
Quality Assistant Manager
TOM
Technical Operation Manage
FLD
Fast Logistics & Distribution
QA
Quality Assurance
SCM
Supply Chain Manager
DLM
Distribution & Logistic Manager
PPM
Parts Per Million
IM
Injection Molding
BM
Blow Molding
QC
Quality Control
HVAC
Heating, Ventilating, and Air conditioning

GOURMET (AN INTRODUCTION TO ORGANIZATION)

In the area of Ich'chra, Lahore, GOURMET took start with a small shop. The concept of fresh, healthy and hygienic food in affordable prices achieved quick popularity among bakery customers. The bakery products for breakfast were provided in limited areas, but because of the over whelming support of our customers, GOURMET planned to expand. GOURMET took the challenge of making Pakistan's biggest in-house Beverages Industry and built under the supervision of International Team. The thirst-quenching drinks of GOURMET are available in Cola, Malta, Lemon up, Apple and Ice-cream Soda, in six different sizes from 300ml to 2.25 liter. The Company competes with The Coca-Cola Company and Pepsi.