DEFECT DEFINITIONS AND CORRECTIONS

WHY EXAMINE A BOTTLE?

Before any product is released for sale, it must pass a rigid inspection. We would not trust an airplane or automobile to do any strenuous or difficult feats if we knew the equipment and materials had not been inspected.

The same fact governs Duraglas containers. When a purchaser buys our Duraglas containers, he does so with the understanding that these containers have been inspected. If a glass container fails because of a manufacturing defect, the reputation of Duraglas suffers, resulting in possible loss of this particular customer's faith and future business. Duraglas selectors are required to thoroughly inspect each and every glass container. Only in this way can Owens-Illinois maintain the uniform quality of Duraglas and supply the customer with a dependable container in which to pack and display his product.

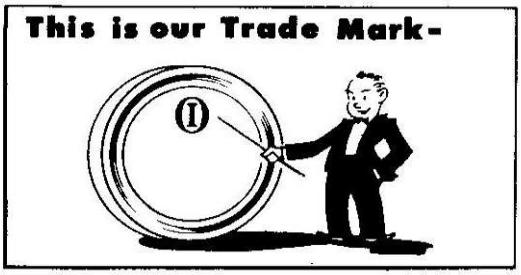
The first question that probably enters the mind, then, is what are these defects, and how can they be recognized?

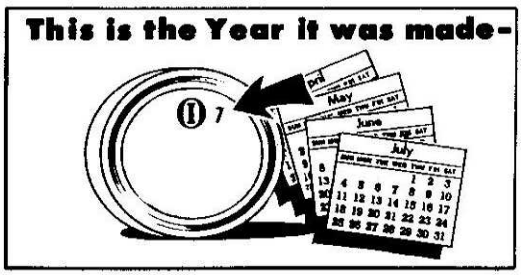
There are imperfections or flaws which sometimes appear in a glass container. Some which affect the strength or processing of the container should not be packed, while others may only affect the appearance and will be satisfactory to pack within certain specified limits depending on the ultimate use of the container.

Forming employees are required to learn both visible and specification defects. It is important that you can easily recognize all defects and understand what corrections to make to eliminate them.

DEFECT DEFINITIONS AND CORRECTIONS

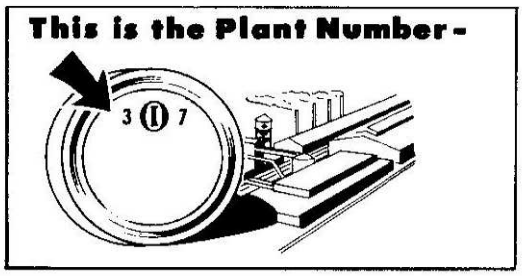
O-I BOTTLE IDENTIFICATION

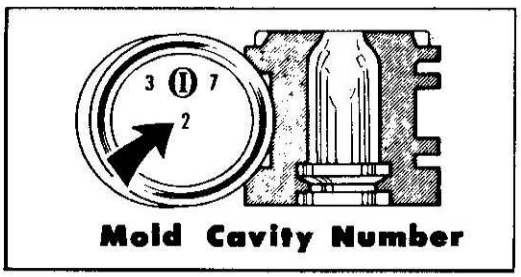




Trade Mark - Practically every product made is identified by a name or trade mark of the manufacturer. Owens-Illinois uses the O-I design as the trade mark for its glass containers.

Year Date - For statistical reasons it is important that the glass container be identified. The last digit of the year date is placed to the right of the trade mark.





Plant Number - Owens-Illinois has other plants making glass containers and each of these plants has a number which assists in its identity. This number is placed to the left of the trade mark and identifies the plant making the glass container.

Mold Cavity Number - This number is found below the trade mark and its purpose is to identify the mold from which it was made. This aids in locating a mold which is not producing good glass containers.

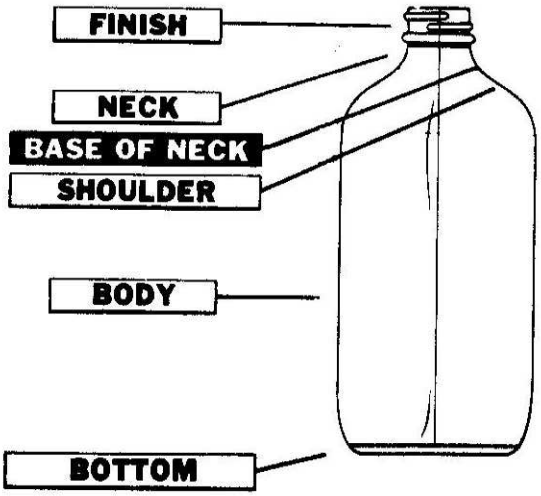
DEFECT DEFINITIONS AND CORRECTIONS

EXAMPLES OF GLASS CONTAINERS

narrow neck wide mouth

There are many types of glass containers....milk bottles, liquor bottles, food jars, etc., most of which we are familiar. Here are two examples....the wide mouth or food jar and the narrow neck or beverage bottle.

PARTS OF A BOTTLE



To better enable you to become a good operator it is important that you first understand the parts of a bottle. The bottle, like most other items, is divided into identified parts which are all related to each other.

The Finish - is that definite section located at the uppermost part of the bottle or container. It is that portion of the container where the cap or sealing device is placed and contains the opening or mouth for filling and emptying.

The Neck of the bottle is that portion which extends from the parting line of the Finish to the sharpest curve at the base of the neck.

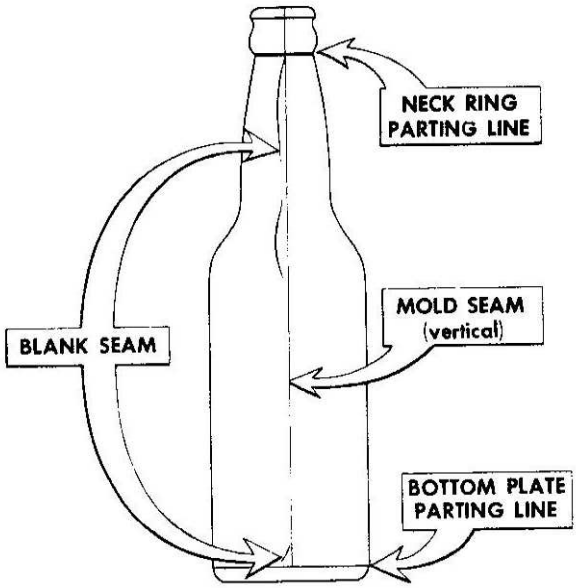
The Shoulder of the bottle extends from the base of the neck to the straight part or body of the bottle.

The Body is that portion of the bottle which holds the product for which it was made.

The Bottom is that portion of the bottle on which it rests when in an upright position.

DEFECT DEFINITIONS AND CORRECTIONS

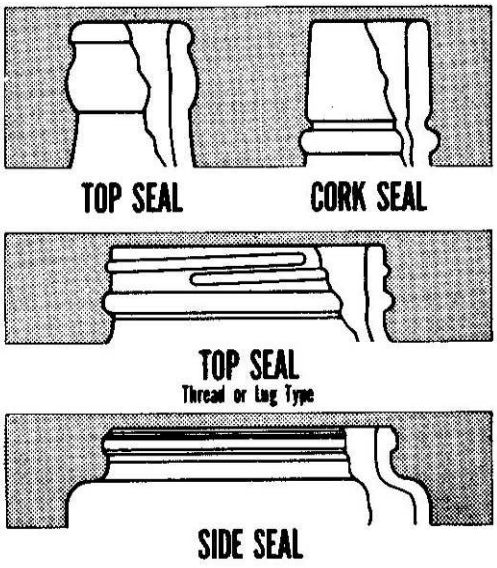
PARTING LINES & SEAMS



To produce or make a glass container we must use a blank mold, neck ring, body mold and bottom plate. Where the neck ring and body mold join we have the "neck ring parting line".
Where the body mold and the bottom plate join we have the "bottom plate parting line".
The body mold is made of two separate sections which open and close around the container as it is formed. Where the two sections join each other we have the "mold seam" which always runs vertical on the length of the container.

The blank mold operates similar to the body mold but preforms the hot glass for better distribution in the body mold. Where the two sections of the blank mold join we have the "blank seam" which is sometimes visible on the finished container.

TYPES OF FINISHES



The finish is the most important part of the glass container and must be free of serious defects in order to guarantee proper sealing or capping of the bottle by the customer. The most common types of finishes are:

1. Top Seal - Sealing surface is on top of finish and used mostly for beverage bottles.
2. Cork Seal - Sealing surface is inside the finish. It has a variety of uses such as wine bottles, prescription bottles, etc.
3. Top Seal - Thread or Lug - sealing surface is on top of finish and screw type closure or cap is used. It also has a variety of uses such as food containers, liquor bottles, etc.
4. Side Seal - Sealing surface is on the side of the finish and the cap or closure is pressed on to seal the product. This type finish is used for many food products, baby food, vegetables, fruits, etc.

DEFECT DEFINITIONS AND CORRECTIONS

SUGGESTED CORRECTIONS FOR WARE DEFECTS

To be a good operator, you must be able to identify bottle defects and know how to correct them. To help you do this, pictures and the definitions of the most common defects are shown on the following pages. Also, the possible causes of these defects are listed under machine setup; equipment; feeder and operation cause. These will help you spot the trouble and correct it.

CAUTION!!

Before you try to correct a defect, you should always keep in mind the following points:

1. How many of this defect are you losing?
2. If corrected, what other defects might appear by your adjustment?
3. Be sure you will make a better bottle after you make the adjustment.

For example, if you were running a few splits, you would not change the settle blow pressure or timing to correct it, if you know the adjustment would cause you to lose more ware from another defect that would appear.

DEFECT DEFINITIONS AND CORRECTIONS

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DEFECT DEFINITIONS AND CORRECTIONS

CORRECT AT ONCE

SPLIT FINISH

CHOKED NECKS

CHECKED BASE

LIGHT WARE

LOOSE OR STUCK GLASS

FREAKS

A commercially good bottle is a bottle that will go through the customer's line and carry his product to the consumer.

Most of our ware is packed according to limit samples but some of it may have defects requiring immediate correction. These defects are known as: 1. Split Finish, 2. Choked Necks, 3. Checked Base, 4. Light or Thin Ware, 5. Loose or Stuck Glass, 6. Freaks.

Bottles with these defects should never reach the lehr.

DEFECT DEFINITIONS AND CORRECTIONS

FREAKS

CORRECT AT ONCE

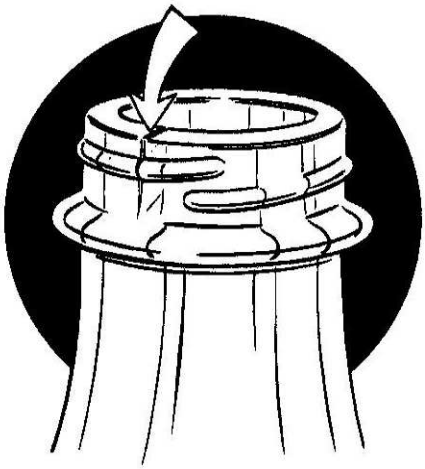
Freaks are just what the name implies. They are bottles so badly mis-shapen or un-formed that they could be seen 25 feet away. But surprisingly enough, we receive complaints on freaks.

Keep them out of the lehr and they will not be packed.

DEFECT DEFINITIONS AND CORRECTIONS

SPLIT FINISH

A vertical crack that runs from the top of the finish downward toward the neck. It can be found by catching the reflection of the light while turning the bottle. It may lead to spoilage on vacuum packed or processed foods and can cause leakers on other types of containers. CORRECT AT ONCE.



CAUSES

1. MACHINE SETUP

a Too much settle blow
b Final blow coming on before blow head is down
c Plunger contact time too long
d Plunger too cold

2. EQUIPMENT

a Blow head too shallow
b Plunger too cold
c Too much wind on nozzle over mold
d Takeouts need wrapping

3. FEEDER

a Cold glass
b Too much water on shears
c Poor shear cut

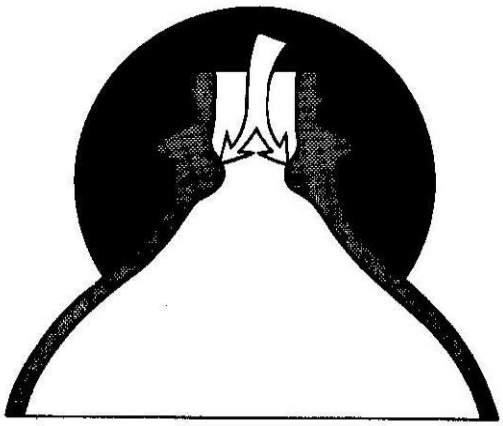
4. OPERATION

a Too much wind on nozzle
b Cold glass
c Dry ring
d Too much water on shears

DEFECT DEFINITIONS AND CORRECTIONS

CHOKED NECKS

A narrowed or obstructed neck opening. Our customers fill bottles mechanically with filling tubes entering through the neck of the bottle at a high rate of speed. If the opening is smaller than the filling tube, the tube or bottle may break. This will jam the filling machine and cause lost time. All narrow neck bottles should be checked with proper plug gauges. When bottles are found that will not allow the plug gauges to enter the bottle opening, they should be CORRECTED AT ONCE.



CAUSES

1. MACHINE SETUP

a Plunger in contact with glass too long
b Counter blow not coming on soon enough
c Too much oil on ring

2. EQUIPMENT

a Blanks hot or dry
b Incorrect plunger temperature
c Dirty plunger or ring
d Takeout tongs pinching
e Incorrect Plunger design
f Mold opening too small

3. FEEDER

a Hot glass
b Improper gob shape

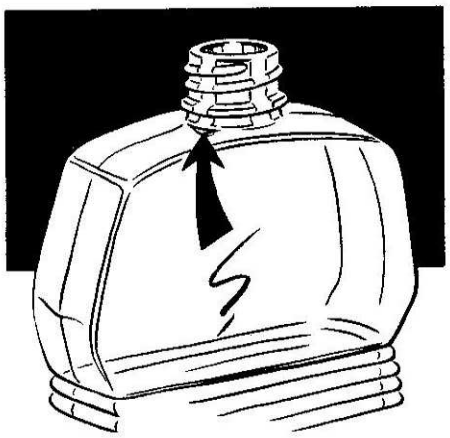
4. OPERATION

a Hot glass
b Blanks hot or dry
c Dirty plunger or ring

DEFECT DEFINITIONS AND CORRECTIONS

CHECKED BASE

A closed crack at the base of neck, where the neck joins the shoulder. This can be detected by catching the reflection of light while turning the bottle. A checked base is usually found on the seam and whether it is the size of a pin head or extends around a large part of the neck, it should be CORRECTED AT ONCE.



CAUSES

1. MACHINE SETUP

a Mold opening too hard
b Bottom plate too high or too low
c Worn mold arms
d Too much wind on molds
e Molds too hot
f Too much final blow pressure
g Blow head too tight
h Wrong internal cooling valve adjustment

2. EQUIPMENT

a Molds too cold or too hot
b Shoulder radius too sharp
c Bottom plates too tight in mold register

3. FEEDER

a Cold glass

4. OPERATION

a Irregular swabbing

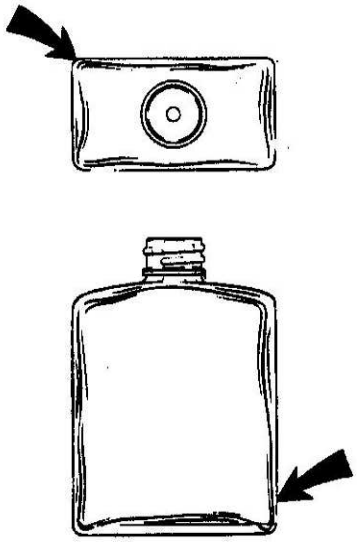
DEFECT DEFINITIONS AND CORRECTIONS

LIGHT OR THIN WARE

These are below standard thin spots. Below standard thin spots can be detected by the following methods:

1. Difference in color
2. Heavy bottom
3. Dull sound
4. Swung blank seams
5. Heavy ware
6. Shifted baffle

CORRECT AT ONCE



CAUSES

1. MACHINE SETUP

a Parison too soft, running in mold
b Final blow too late
c Not enough counter blow
d Glass not loading correctly
e Settle blow too late
f Counter blow too late

2. EQUIPMENT

a Shoulder of blank too small
b Improper wind adjustment on equipment
c Dirty equipment

3. FEEDER

a Hot or cold glass
b Uneven glass temperature

4. OPERATION

a Hot or cold glass
b Improper wind adjustment
c Dirty equipment
d Glass not loading correctly
e Uneven glass temperature

DEFECT DEFINITIONS AND CORRECTIONS

STUCK GLASS

Stuck glass is a particle or particles of glass stuck to the inside of bottle. It can be found by rolling the bottles and may be located in any part of the bottle. It is most common to wide mouth ware (baby food), but is also found in other type ware. It is most serious for obvious reasons and should be CORRECTED AT ONCE.

CAUSES

1. MACHINE SETUP

a Bad baffle match
b Glass loading too deep
c Mismatched mold equipment
d Neck ring arms not adjusted properly

2. EQUIPMENT

a Shears not cutting properly
b Takeouts not adjusted properly

3. FEEDER

a Shears not cutting properly

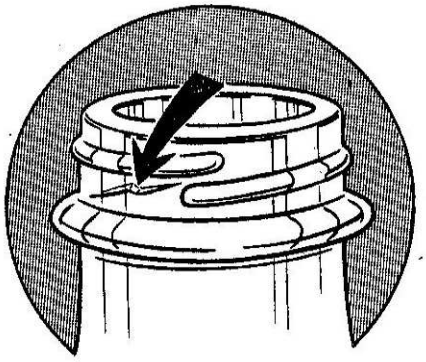
4. OPERATION

a Excessive swabbing
b Glass not loading properly in blank

DEFECT DEFINITIONS AND CORRECTIONS

CHECKED FINISH

A checked finish is a closed crack in the finish of the bottle. To find this catch the reflection of the light while rolling the bottle.



CAUSES

1. MACHINE SETUP

a Wrong plunger cylinder adjustment
b Neck ring out of alignment
c Too much settle blow
d Improper ring arm cushioning
e Baffle down too hard
f Blow head out of alignment

2. EQUIPMENT

a Neck ring not releasing (dry, cold, too slow or too fast)
b Neck ring radius too sharp

3. FEEDER

a Cold glass

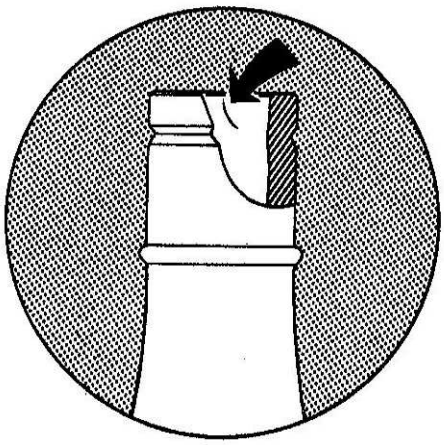
4. OPERATION

a Cold glass
b Dry ring
c Cold neck rings

DEFECT DEFINITIONS AND CORRECTIONS

CORKAGE CHECKS

A vertical check inside the finish which lets air go between cork and finish. This may cause spoilage of the product.



CAUSES

1. MACHINE SETUP
- a Too much settle blow
- b Plunger too cold
- c Plunger contact time too long or too short
- d Finish cooler in blow head rubbing against inside of finish

2. EQUIPMENT
- a Plunger dirty - sticking in thimble, false ring or collar

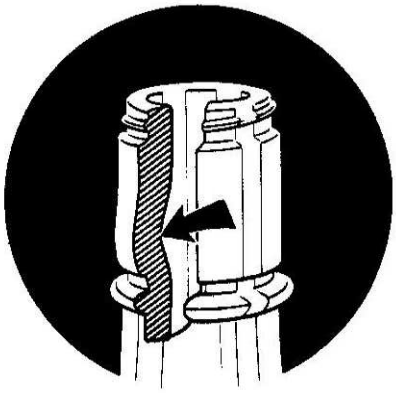
3. FEEDER
- a Glass too cold

4. OPERATION
- a Plunger sticking in thimble false ring or collar

DEFECT DEFINITIONS AND CORRECTIONS

BULGED FINISH

The finish is bulged or pushed out. This may prevent good capping which could permit product spoilage.



CAUSES

1. MACHINE SETUP

a Finish not set hard enough
b Not enough settle blow
c Too short plunger contact

2. EQUIPMENT

a Blow head too shallow
b Blow head out of alignment
c Plugged vents in blow head
d Hot rings
e Neck of mold too small for parison
f Take out too tight

3. FEEDER

a Hot glass

4. OPERATION

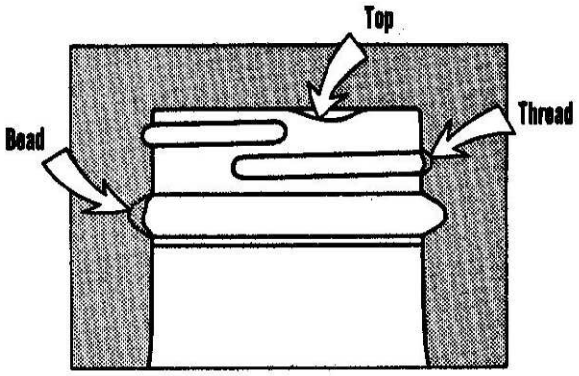
a Hot glass
b Blow head out of alignment
c Hot rings

DEFECT DEFINITIONS AND CORRECTIONS

UNFILLED FINISH

Top · Bead · Thread

The top of the finish, the lug or the thread not blown to full size.



CAUSES

1. MACHINE SETUP

a Drop hanging in delivery (oil on scoop and deflector)
b Poor deflector alignment
c Not enough settle blow
d Plunger too low
e Counter blow on too soon-blows finish away after it is set up

2. EQUIPMENT

a Not enough vent around plunger and neck rings
b Hot blanks - hang ups
c Baffle holes plugged
d Dirty neck ring or plunger and collar

3. FEEDER

a Cold glass
b Under weight
c Incorrect gob shape

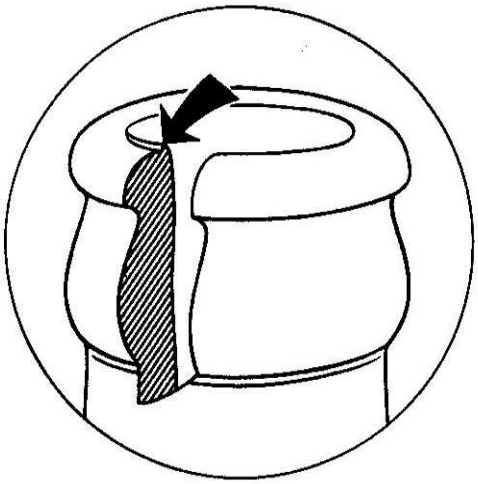
4. OPERATION

a Cold glass
b Under weight
c Hot blanks-hang ups
d Plugged baffle holes

DEFECT DEFINITIONS AND CORRECTIONS

OVERPRESS ON FINISH

A rim of glass extending up from the inside edge of the finish.



CAUSES

1. MACHINE SETUP

a Glass getting in blank before plunger is in position
b Worn plunger plate
c Plunger mechanism too low

2. EQUIPMENT

a Plunger diameter too small
b Plunger match with ring too loose

3. FEEDER

a Over weight

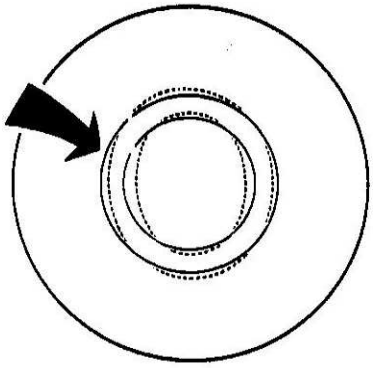
4. OPERATION

a Over weight
b Foreign particles on top of plunger cylinder
c. PLUNGER COMING OUT TOO SOON.

DEFECT DEFINITIONS AND CORRECTIONS

OUT OF ROUND FINISH

Finish that is not within specification limits. Gauges are furnished to check for this defect.



CAUSES

1. MACHINE SETUP

a Not set hard enough, more settle blow
b Blow head not centralized
c Plunger contact too short
d Neck ring too hot
e Improper takeout timing or setting
f Poor transfer

2. EQUIPMENT

a Takeout tongs too small or out of shape
b Weak neck ring springs
c Rings too hot

3. FEEDER

a Hot glass

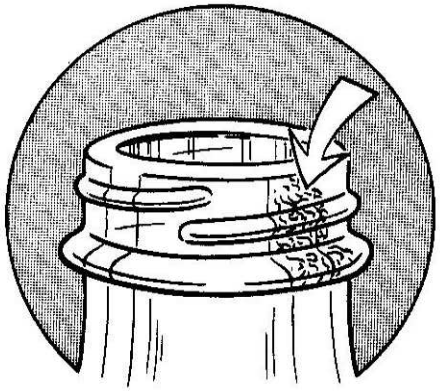
4. OPERATION

a Hot glass
b Takeout tongs too small or out of shape
c Neck rings too hot
d Blow head not centralized

DEFECT DEFINITIONS AND CORRECTIONS

DIRTY FINISH

A dirty finish looks scaley and may have black spots on it. We must look for two things, first, that it is o.k. in appearance and second, that it is not "pitted" too badly to interfere with the sealing surface.



CAUSES

1. MACHINE SETUP
- a Too much oil on blow down spray

2. EQUIPMENT
- a Dirty plunger and ring

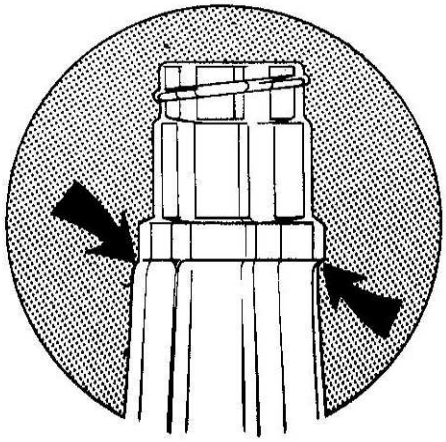
3. FEEDER
- a Shears not cutting off properly

4. OPERATION
- a Too much oil on blow down spray
- b Dirty plunger and ring
- c Excessive swabbing

DEFECT DEFINITIONS AND CORRECTIONS

OFFSET FINISH

This is a finish that is offset or shifted to one side.



CAUSES

1. MACHINE SETUP

a Mold neck too large
b Neck ring out of alignment over top of mold
c Neck rings too hot
d Finish not properly formed

2. EQUIPMENT

a Poor match of neck ring and blank
b Mold necks too large
c Neck rings too hot
d Improper wind setting
e Blow head out of alignment

3. FEEDER

a Hot glass

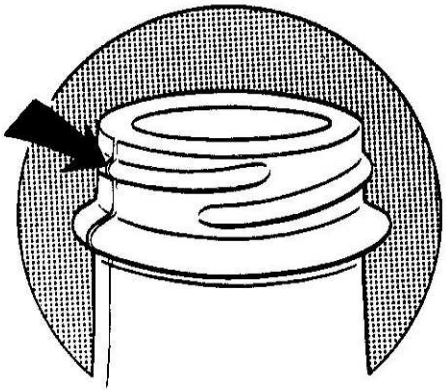
4. OPERATION

a Pattern not transferring to mold from neck ring properly
b Improper timing of transfer
c Finish equipment to hot

DEFECT DEFINITIONS AND CORRECTIONS

NECK RING SEAMS

This is a rim or edge of glass protruding outward from the neck ring halves.



CAUSES

1. MACHINE SETUP
a Improper timing

2. EQUIPMENT
a Rings not properly matched
b Dirty rings and plungers
c Ring diameter too small for blank mold
d Blank mold fit for rings too large

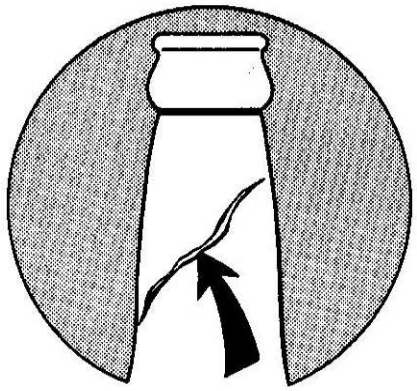
3. FEEDER
a Glass too hot

4. OPERATION
a Blanks or rings standing open due to carbon accumulation
b Dirty rings

DEFECT DEFINITIONS AND CORRECTIONS

TEARS ON NECK

This is an open mark on the neck of the bottle.



CAUSES

1. MACHINE SETUP

a Wrong plunger cylinder adjustment
b Improper transfer into mold
c Too long a settle blow
d Loose collar on plunger cylinder
e Too long a counter blow

2. EQUIPMENT

a Poor deflector alignment (loading)
b Poor blank and ring match
c Offset blank hinge

3. FEEDER

a Cold glass
b Improper gob shape
c Poor shear cut

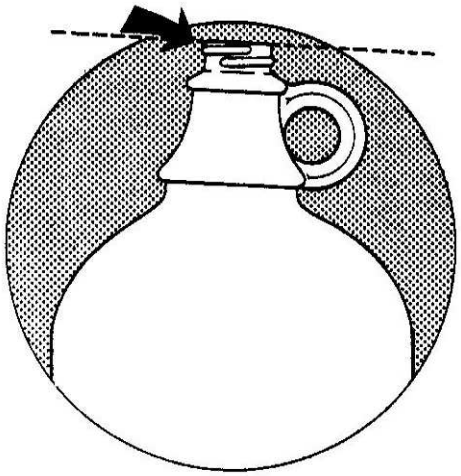
4. OPERATION

a Cold glass
b Improper loading
c Bad blank and ring match

DEFECT DEFINITIONS AND CORRECTIONS

BENT NECKS

This defect is one in which the neck is out of line or not straight. It may cause trouble in a filling or capping operation and should be CORRECTED AT ONCE.



CAUSES

1. MACHINE SETUP

a Takeout tongs out of alignment
b Neck rings not relieving properly
c Blow head out of alignment
d Not enough blowing time

2. EQUIPMENT

a Blow head not deep enough
b Takeout tongs out of shape

3. FEEDER

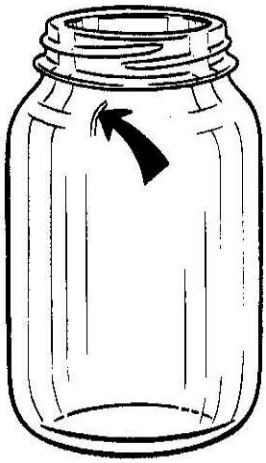
a Hot glass

4. OPERATION

a Bottle pressing against push-out while still in take-out.
b Not enough blowing time

DEFECT DEFINITIONS AND CORRECTIONS

CHECKED SHOULDERS



A deep closed crack in the shoulder.
This should be corrected at once.

CAUSES

1. MACHINE SETUP
- a Too much final blow air
- b Bottom plate too high or too low
- c Blow head off before mold cracks
- d Takeout tongs too low, hitting shoulder
- e Blow head too tight on mold

2. EQUIPMENT
- a Mold not properly vented
- b Molds not properly relieved
- c Molds too hot

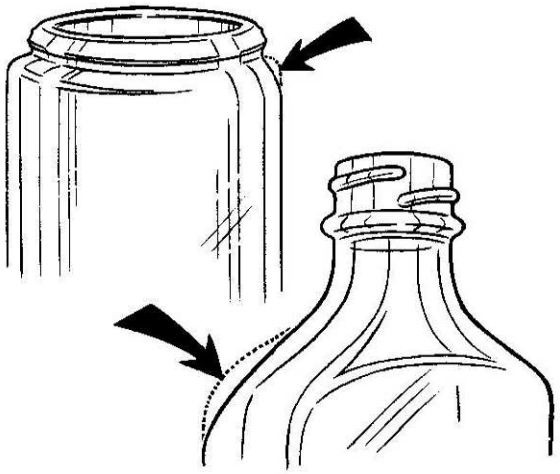
3. FEEDER
- a Cold or hot glass

4. OPERATION
- a Cold glass
- b Bottom plate too high
- c Improper wind setting
- d Blow head too tight on mold

DEFECT DEFINITIONS AND CORRECTIONS

DOWN SHOULDERS

Shoulders that are not fully formed and do not completely conform to the shape of the mold cavity. This is usually caused by temperature conditions or molds not being properly vented. It results in bad appearance of the containers and may cause trouble to the customer's processing equipment. It may also cause under capacity.



CAUSES

1. MACHINE SETUP

a Too much counter blow making parison too hard
b Too short reheat time (open blank sooner)
c Final blow on too soon
d Blow head not seating properly
e Not enough final blow pressure

2. EQUIPMENT

a Molds not properly vented
b Dirty molds
c Cold blanks or molds
d Blow head stopped up

3. FEEDER

a Hot or cold glass

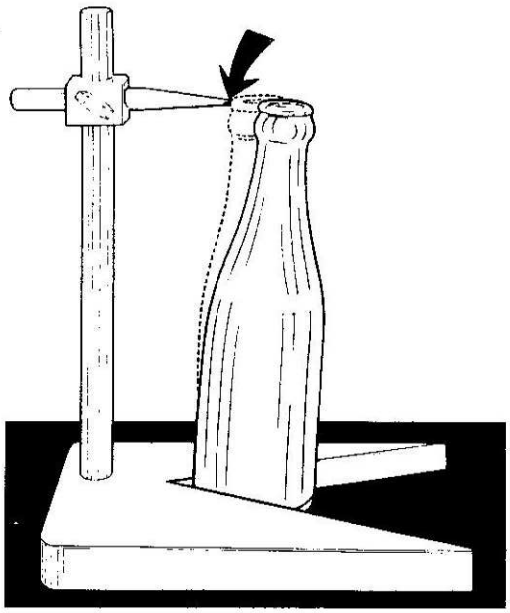
4. OPERATION

a Hot or cold glass
b Blow head stopped up

DEFECT DEFINITIONS AND CORRECTIONS

OUT OF SHAPE OR LEANER

This is where the bottom of the bottle is not level. It may slope from either side, or the bottom surface may have waves in it. When they are too bad, they may cause trouble in washing, filling and labeling in our customer's plants.



CAUSES

1. MACHINE SETUP

a Not enough wind on cooling pads
b Not enough blowing time in mold
c Bottle not hanging in takeout long enough
d Too little final blow pressure
e Pushout moving bottle to conveyor too soon

2. EQUIPMENT

a Molds too hot
b Blanks too hot

3. FEEDER

a Glass too hot
b Uneven glass temperature

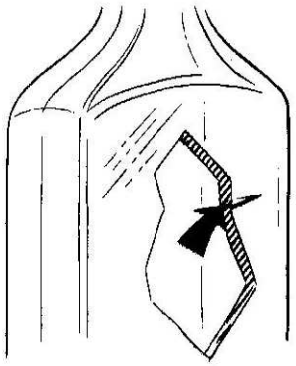
4. OPERATION

a Bottle rubbing against pushout or wire

DEFECT DEFINITIONS AND CORRECTIONS

PRESSURE OR HOT CHECKS

This is a fracture in the wall of the bottle running from inside surface to the outside surface.



CAUSES

1. MACHINE SETUP

a Too much final blow pressure
b Improper wind setup
c Final blow pressure on after mold cracks
d Gob not loading in Blank correctly

2. EQUIPMENT

a Molds too hot
b Molds not properly vented
c Rough seams

3. FEEDER

a Hot or cold glass

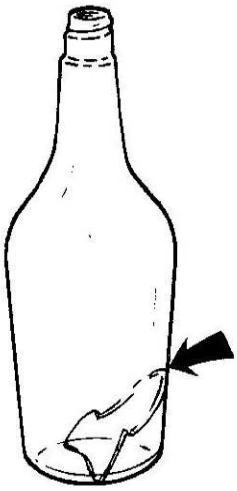
4. OPERATION

a Hot or cold glass
b Molds too hot
c Rough seams
d Final blow pressure on after mold cracks
e Too much final blow pressure

DEFECT DEFINITIONS AND CORRECTIONS

COLD CHECKS & LEHR BROKEN

The ware is completely broken on the lehr.



CAUSES

1. MACHINE SETUP
- a Machine speed too slow
- b Too many bottles on conveyor
- c Too much final blow pressure
- d Too much cooling wind
- e Cold conveyor belts

2. EQUIPMENT
- a Blanks and baffles not matched

3. FEEDER
- a Cold glass

4. OPERATION
- a Lehr condition not uniform
- b Baffles not seating properly on blank
- c Excessive swabbing
- d Cold conveyor belts
- e Ware setting on dead plate too long

DEFECT DEFINITIONS AND CORRECTIONS

UNEVEN DISTRIBUTION

While it is commercially impossible to manufacture glass containers with a completely uniform distribution of glass and from a strength standpoint unnecessary, distribution must be maintained so as to avoid abnormal or below standard thin spots or sections.

CAUSES

1. MACHINE SETUP
- a Too short corkage reheat time (release plunger earlier)
- b Uneven wind control
- c Improper timing of glass entering machine
- d Too much settle blow time
- e Too little counter blow

2. EQUIPMENT
- a Blank too cold or too hot
- b Plunger too cold
- c Improper blank design

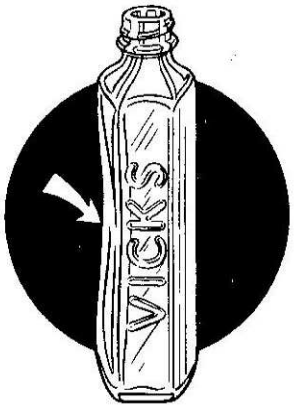
3. FEEDER
- a Uneven temperature
- b Hot or cold glass

4. OPERATION
- a Uneven temperature
- b Blank too cold
- c Uneven wind control

DEFECT DEFINITIONS AND CORRECTIONS

SUNKEN SIDES

The side of the bottle that is not fully blown up but sunken or dented. This may cause trouble in two ways. First, it may make the bottle under capacity and, second, it may cause trouble when our customers apply the label to the bottle.



CAUSES

1. MACHINE SETUP

a Too little wind on mold
b Too much wind on cooling pad
c Holding in takeout too long
d Not enough blow time in mold
e Incorrect wind setup on molds

2. EQUIPMENT

a Molds too hot

3. FEEDER

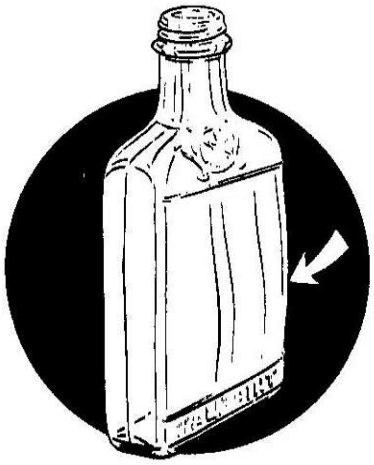
a Glass too hot

4. OPERATION

a Bottle rubbing against pushout or wire

DEFECT DEFINITIONS AND CORRECTIONS

BULGED SIDES



Bulged sides are when the sides of the bottle are bulged or pushed out. This may cause trouble on our customer's filling lines by causing the bottles to hang up in the guides. It can also cause trouble on labeling machines and can be over capacity.

CAUSES

1. MACHINE SETUP

a Too much wind on mold
b Too little wind on cooling pad
c Bottle not hanging in takeout long enough
d Mold cracking before final blow releases

2. EQUIPMENT

a Molds too hot

3. FEEDER

a Glass too hot

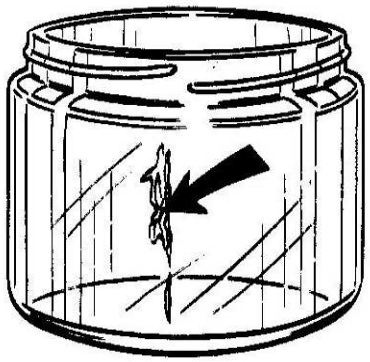
4. OPERATION

a Excessive swabbing of molds or blanks

DEFECT DEFINITIONS AND CORRECTIONS

"STUCK" WARE

This condition is a pronounced rough edge of glass on the outside of the bottle.



CAUSES

1. MACHINE SETUP

a Machine running too fast
b Ware set in lehr too hot
c Bottles pushed onto conveyor too soon

2. EQUIPMENT

3. FEEDER

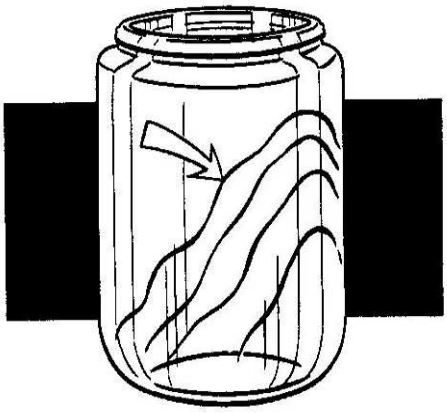
a Hot glass

4. OPERATION

a Bottles not spaced properly on conveyor or in lehr
b Lehr too hot

DEFECT DEFINITIONS AND CORRECTIONS

COLD MOLDS



This is a wavy and rough appearance in the body of the bottle.

CAUSES

1. MACHINE SETUP
- a Machine running too slow
- b Not enough final blow
- c Not enough reheat time
- d Molds too cold
- e Counter blow too long

2. EQUIPMENT
- a Blanks too heavy
- b Molds too heavy
- c Molds not properly vented
- d Dirty molds or blanks

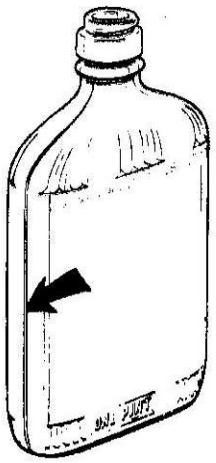
3. FEEDER
- a Glass too cold

4. OPERATION
- a Blow head not seating properly
- b Blow head stopped up

DEFECT DEFINITIONS AND CORRECTIONS

LARGE MOLD SEAMS

A pronounced rim or edge of glass standing out from the mold seam on the bottle.



CAUSES

1. MACHINE SETUP
a Mold closing too slow

2. EQUIPMENT
a Bottom plate holding mold open
b Warped molds
c Bottom plate and mold not matched
d Worn mold arms or linkage

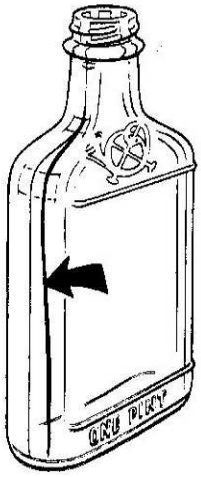
3. FEEDER

4. OPERATION
a Carbon deposit on face of mold halves
b Glass in interlocking parts

DEFECT DEFINITIONS AND CORRECTIONS

LARGE BLANK SEAM

An open scar on the bottle. It is easily seen and mostly an appearance defect. Mold seams are always straight, but blank seams (if they can be seen) tend to veer off from the mold seam.



CAUSES

1. MACHINE SETUP

a Plunger or counter blow pressure too hard
b Plunger cylinder too high

2. EQUIPMENT

a Neck ring diameter too large
b Blank fit for rings too small
c Warped blanks
d Worn blank arms or linkage

3. FEEDER

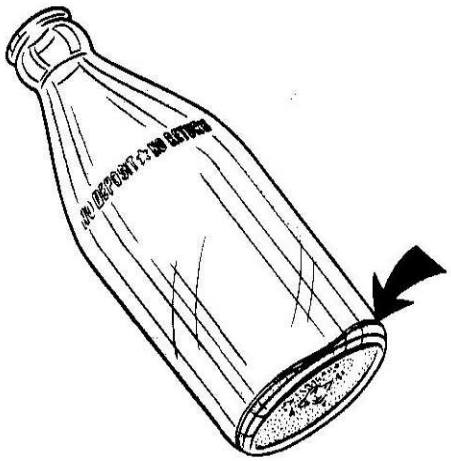
a Hot glass

4. OPERATION

a Carbon collection between blank mold halves and on neck ring
b Neck rings not set properly
c Glass in interlocking fits

DEFECT DEFINITIONS AND CORRECTIONS

LAP LINES



These are long lines in the bottle caused by the glass overlapping.

CAUSES

1. MACHINE SETUP

a Drop slowing up in delivery equipment (lack of oil)
b Drop hanging in funnel
c Deflector not centralized
d Settle blow on too long

2. EQUIPMENT

a Blanks hot or dry

3. FEEDER

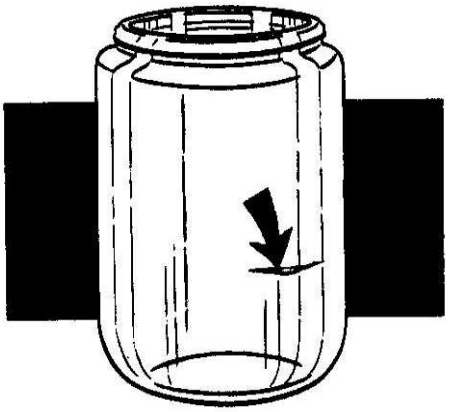
a Shears not cutting
b Drop too long
c Drop too small for blank opening
d Water in scoops from shear spray

4. OPERATION

a Blanks hot or dry
b Deflector not centralized
c Drop too long

DEFECT DEFINITIONS AND CORRECTIONS

BODY MARKS



An open mark on the outside wall of the body of the bottle caused mainly by cold blanks and cold glass.

CAUSES

1. MACHINE SETUP
- a Plungers too hot or cold
- b Blanks too hot or cold
- c Blanks not properly lubricated
- d Deflectors out of alignment

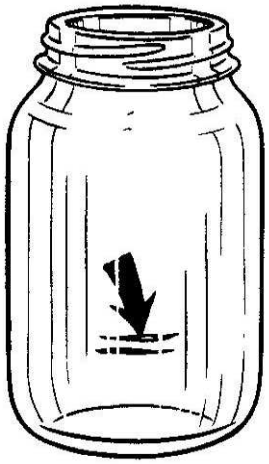
2. EQUIPMENT
- a Funnels too small
- b Blanks too small

3. FEEDER
- a Incorrect gob shape
- b Hot or cold glass

4. OPERATION
- a Plungers too hot or cold
- b Blanks too hot or cold
- c Blanks not properly lubricated

DEFECT DEFINITIONS AND CORRECTIONS

PLUNGER MARKS



An open mark on the inside wall of the body of the bottle on wide mouth ware. On narrow neck ware this mark is on the inside wall of the finish.

CAUSES

1. MACHINE SETUP
- a Plunger too hot
- b Incorrect plunger spacing

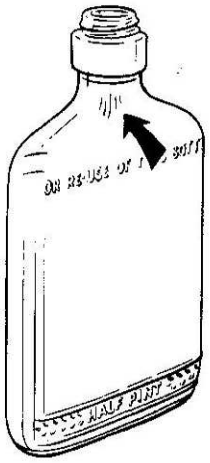
2. EQUIPMENT
- a Wrong design of cooling tubes
- b Dirty plunger

3. FEEDER
- a Cold glass

4. OPERATION
- a Plunger too hot
- b Incorrect plunger spacing

DEFECT DEFINITIONS AND CORRECTIONS

DRAG MARKS



These are rough appearing marks in the body or neck of the bottle.

CAUSES

1. MACHINE SETUP
a Scoops out of line
b Deflectors out of line

2. EQUIPMENT
a Incorrect blank shape
b Funnel too small

3. FEEDER
a Cold glass
b Glass chilling by slow delivery (troughs, scoops or deflectors)
c Plunger in feeder not pulling glass in orifice, chilling end of gob
d Gob too long or too small in diameter

4. OPERATION
a Insufficient swabbing
b Blanks too cold
c Scoops out of line
d Deflectors out of line

DEFECT DEFINITIONS AND CORRECTIONS

SHEAR MARKS

These are either oily marks due to the shear blades being dirty or V shaped marks due to dull blades or improper shear cam.

CAUSES

1. MACHINE SETUP

a Not enough or too much shear lap
b Shears not cutting centrally
c Loose shears
d Shears out of alignment
e Cutting shear cam too slow

2. EQUIPMENT

a Worn or defective shear blades

3. FEEDER

a Cold glass

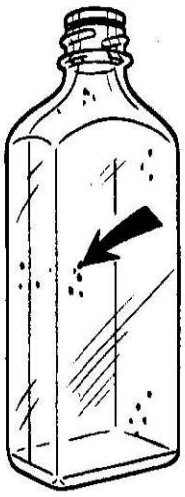
4. OPERATION

a Too much water on shear blades
b Not enough cutting oil in water
c Carbon or oil accumulation on shear blades

DEFECT DEFINITIONS AND CORRECTIONS

DOPE OR BLACK SPOTS

These are specks of oil, rust, graphite or furnace drippings.



CAUSES

1. MACHINE SETUP

a Not enough wind on molds, blanks, plungers, or neck rings
b Too much oil spraying on funnel, blanks and plungers

2. EQUIPMENT

a Scaley condition of scoop, troughs or deflectors
b Scaley condition of blanks, molds, plungers or neck rings

3. FEEDER

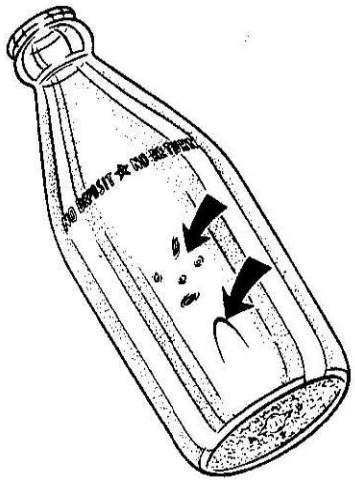
a Foreign matter in glass
b Oil accumulation on shears, funnels and troughs

4. OPERATION

a Improper swabbing material
b Excessive swabbing
c Too much oil spraying on funnels, blanks and plungers

DEFECT DEFINITIONS AND CORRECTIONS

BLISTERS



Blisters are small air bubbles in the glass wall and are undesirable solely because they mar the appearance of the bottle.

CAUSES

1. MACHINE SETUP

2. EQUIPMENT

a Hot blanks and plungers

3. FEEDER

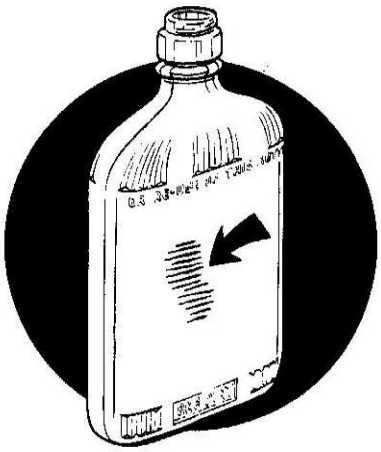
a Hot glass
b Plunger tube too low
c Too much stroke action on plunger
d Needle rubbing on side of orifice
e Foreign matter in feeder channel
f Glass level too low
g Incorrect gob shape

4. OPERATION

DEFECT DEFINITIONS AND CORRECTIONS

WASHBOARDS

These are horizontal marks on the bottle.



CAUSES

1. MACHINE SETUP
- a Drop slowing up in delivery equipment

2. EQUIPMENT
- a Deflector not centralized
- b Funnel too large for body of blank
- c Carboned or hot funnel
- d Blanks hot or cold
- e Dirty blanks

3. FEEDER
- a Uneven glass temperature of drop
- b Drop too small or improper shape
- c Drop too large in diameter
- d Drop too long

4. OPERATION
- a Uneven glass temperature
- b Deflector not centralized
- c Blank hot or cold
- d Dirty blanks

DEFECT DEFINITIONS AND CORRECTIONS

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CHECKED BOTTOM

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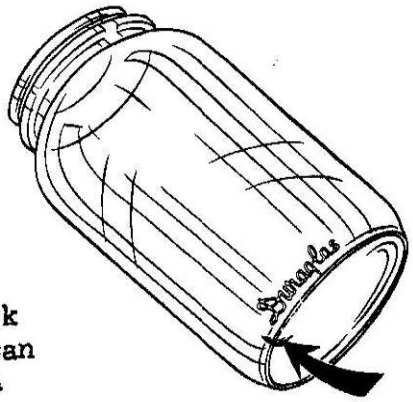


d bottom is a surface crack
ottom of the bottle. It can
by catching the reflection
ight.

or dry

CAUSES

NE SETUP
final blow

ate too
ow
l off before
ks
l set too
mold

IENT
ate hot or dry

b Mold not relieving
c Bad match of mold and bottom plate
d Bad match of blank and baffle

3. FEEDER
a Cold glass

4. OPERATION
a Bottom plate hot or dry
b Bottom plate too high or low

DEFINITIC

CHECK

DEFECT DEFINITIONS AND CORRECTIONS

LIGHT BOTTOM

Light bottoms are similar to below standard light or thin ware.

CAUSES

1. MACHINE SETUP
a Incorrect plunger time
b Pattern reheat too short
c Final blow too early
d Pattern not blowing up

2. EQUIPMENT
a Incorrect blank shape

3. FEEDER
a Cold glass
b Under weight

4. OPERATION
a Under weight
b Final blow too early
c Invert too fast or too slow

DEFECT DEFINITIONS AND CORRECTIONS

HEAVY BOTTOM

Heavy bottoms are the opposite of below standard light bottoms and are mainly an appearance defect; but they can indicate abnormal light spots in other parts of the bottle.

CAUSES

1. MACHINE SETUP
- a Too much reheat time
- b Final blow too late
- c Overweight

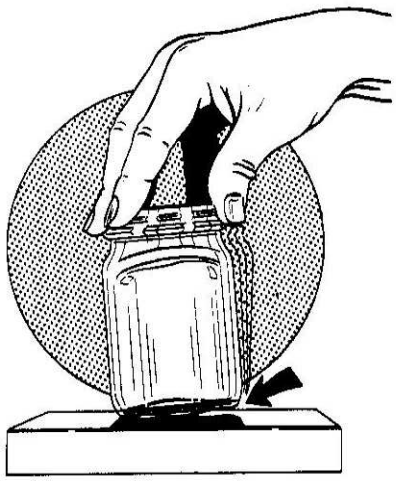
2. EQUIPMENT
- a Blank too large at bottom
- b Blank too hot

3. FEEDER
- a Hot glass

4. OPERATION
- a Overweight
- b Excessive swabbing of blank

DEFECT DEFINITIONS AND CORRECTIONS

ROCKER BOTTOM



This defect gets its name from the fact that the bottle will rock when it is placed on a level surface. It is a condition in which the center of the bottom is lower than the outside rim of the bottom.

CAUSES

1. MACHINE SETUP

a Not enough wind on cooling pads
b Push-outs pushing bottle on to conveyor too soon
c Bottle hanging in take-out tongs too long

2. EQUIPMENT

a Bottom plates too hot

3. FEEDER

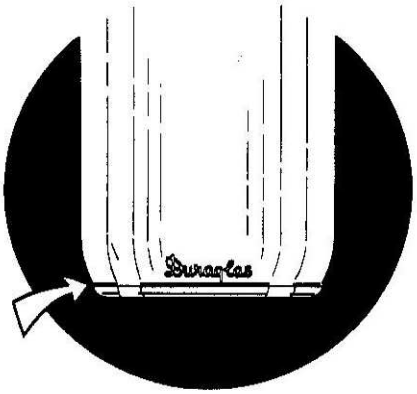
a Glass too hot

4. OPERATION

a Machine speed too fast

DEFECT DEFINITIONS AND CORRECTIONS

FLANGED BOTTOM



A flanged bottom is a flange or rim of glass running around the bottom of the parting line of the body and bottom molds. Flanges can be chipped or may cause the bottom to break.

CAUSES

1. MACHINE SETUP
- a Pattern not blowing up in blank

2. EQUIPMENT
- a Bottom plate pin out of alignment
- b Pin lost out of bottom plate
- c Mold and bottom plate not matched

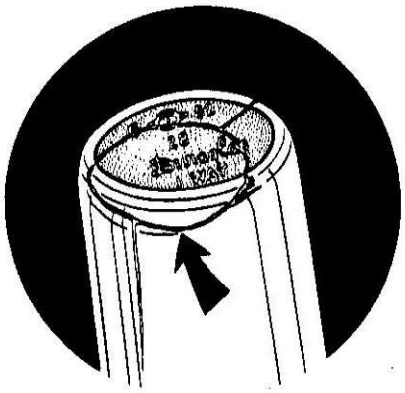
3. FEEDER
- a Glass too hot

4. OPERATION
- a Glass in interlocking fits between mold and bottom plate

DEFECT DEFINITIONS AND CORRECTIONS

SWUNG BAFFLE

Heavy baffle marks are scars on the bottom of the bottle. Swung baffle is when the baffle match is swung to one side and is not centered on the bottom.



CAUSES

1. MACHINE SETUP

a Baffle not set properly on blank
b Baffle arm sprung, will not seat properly

2. EQUIPMENT

a Baffle not matched with blank
b Baffle or blank knocked out around edges

3. FEEDER

a Hot glass
b Uneven glass temperature

4. OPERATION

a Pattern reheat too short
b Too much counter blow or plunger press
c Gob not loading deep enough
d Blank and baffle need swabbing
e Plunger press after blank cracks