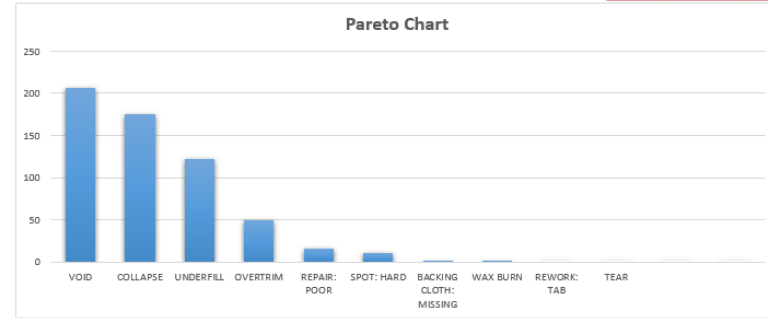
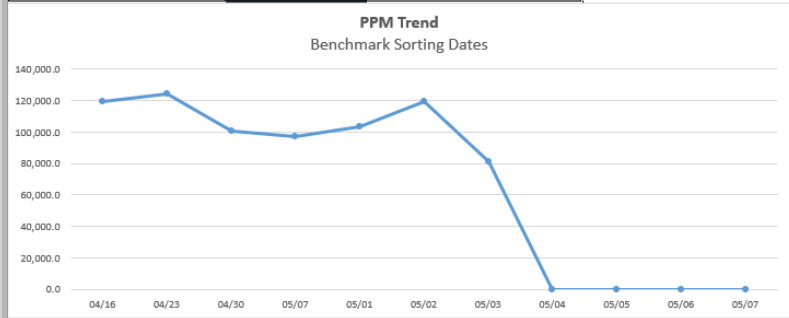


I-Chart

| | |
|-------------------------|----------------------------------|
| LOCATION | CUSTOMER: ARCHEM |
| ARCHEM | PROJECT #: 001-16323 |
| 245 COMMERCE WAY | PART #: 3046215 |
| UPPER SANDUSKY OH 43351 | PART NAME: LEFT REAR BACK |

BNC INSPECTION I-CHART



| PROBLEM DESCRIPTION | DATA FOR LAST 4 PERIODS | | | | | TOTAL | CURRENT PERIOD DATA | | | | | | | | TOTAL | PPM |
|-------------------------|-------------------------|-----------|-----------|----------|-----------|-----------|---------------------|----------|-------|-------|-------|-------|-------|----------|-------|-----|
| | 04/16 | 04/23 | 04/30 | 05/07 | 05/01 | | 05/01 | 05/02 | 05/03 | 05/04 | 05/05 | 05/06 | 05/07 | | | |
| VOID | 76 | 42 | 69 | 20 | 207 | 8 | 6 | 6 | 0 | 0 | 0 | 0 | 20 | 23,148.1 | | |
| COLLAPSE | 52 | 30 | 61 | 32 | 175 | 14 | 11 | 7 | 0 | 0 | 0 | 0 | 32 | 37,037.0 | | |
| UNDERFILL | 66 | 10 | 18 | 28 | 122 | 0 | 19 | 9 | 0 | 0 | 0 | 0 | 28 | 32,407.4 | | |
| OVERTRIM | 16 | 17 | 14 | 3 | 50 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3,472.2 | | |
| REPAIR: POOR | 6 | 0 | 10 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | | |
| SPOT: HARD | 7 | 1 | 2 | 1 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1,157.4 | | |
| BACKING CLOTH: MISSING | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | | |
| WAX BURN | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | | |
| REWORK: TAB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | | |
| TEAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | | |
| TOTAL REJECTED/REWORKED | 224 | 100 | 175 | 84 | 583 | 23 | 38 | 23 | 0 | 0 | 0 | 0 | 84 | 97,222.2 | | |
| TOTAL REVIEWED | 1,875 | 804 | 1,735 | 864 | 5,278 | 223 | 318 | 283 | 40 | 0 | 0 | 0 | 864 | | | |
| PPM | 119,466.7 | 124,378.1 | 100,864.6 | 97,222.2 | 110,458.5 | 103,139.0 | 119,496.9 | 81,272.1 | 0.0 | | | | | | | |



What is an I-Chart?

- ▶ “I” stands for “Individuals” (individual data points)
- ▶ It is a type of control chart used to monitor data over time
- ▶ Helps identify issues in a process
- ▶ Tends to be requested by General Motors suppliers or people that have worked with/for GM
- ▶ We can provide I-charts when requested as an addition to our standard customer reports

I-Chart Sections – Data

Defect types

Totals for last 4 time periods (usually weeks)

Daily totals for current week

| PROBLEM DESCRIPTION | DATA FOR LAST 4 PERIODS | | | | | CURRENT PERIOD DATA | | | | | | | TOTAL | PPM |
|--------------------------------|-------------------------|------------------|------------------|-----------------|------------------|---------------------|------------------|-----------------|------------|------------|------------|------------|-----------------|-----------------|
| | 04/16 | 04/23 | 04/30 | 05/07 | TOTAL | 05/01 | 05/02 | 05/03 | 05/04 | 05/05 | 05/06 | 05/07 | | |
| VOID | 76 | 42 | 69 | 20 | 207 | 8 | 6 | 6 | 0 | 0 | 0 | 0 | 20 | 20,148.1 |
| COLLAPSE | 53 | 50 | 61 | 52 | 175 | 14 | 11 | 7 | 0 | 0 | 0 | 0 | 32 | 37,057.0 |
| UNDERFILL | 66 | 10 | 18 | 28 | 122 | 0 | 19 | 9 | 0 | 0 | 0 | 0 | 28 | 32,407.4 |
| OVERTRIM | 16 | 17 | 14 | 3 | 50 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3,472.2 |
| REPAIR: POOR | 6 | 0 | 10 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| SPOT: HARD | 7 | 1 | 2 | 1 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1,157.4 |
| BACKING CLOTH: MISSING | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| WAX BURN | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| REWORK: TAB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| TEAR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| | | | | | 0 | | | | | | | | 0 | 0.0 |
| | | | | | 0 | | | | | | | | 0 | 0.0 |
| TOTAL REJECTED/REWORKED | 224 | 100 | 175 | 84 | 583 | 23 | 38 | 23 | 0 | 0 | 0 | 0 | 84 | 97,222.2 |
| TOTAL REVIEWED | 1,875 | 804 | 1,735 | 864 | 5,278 | 225 | 318 | 283 | 40 | 0 | 0 | 0 | 864 | |
| PPM | 119,466.7 | 124,378.1 | 100,864.6 | 97,222.2 | 110,458.5 | 103,139.0 | 119,496.9 | 81,272.1 | 0.0 | 0.0 | 0.0 | 0.0 | 97,222.2 | |

Total Rejected and Total Inspected for each time period

For each time period

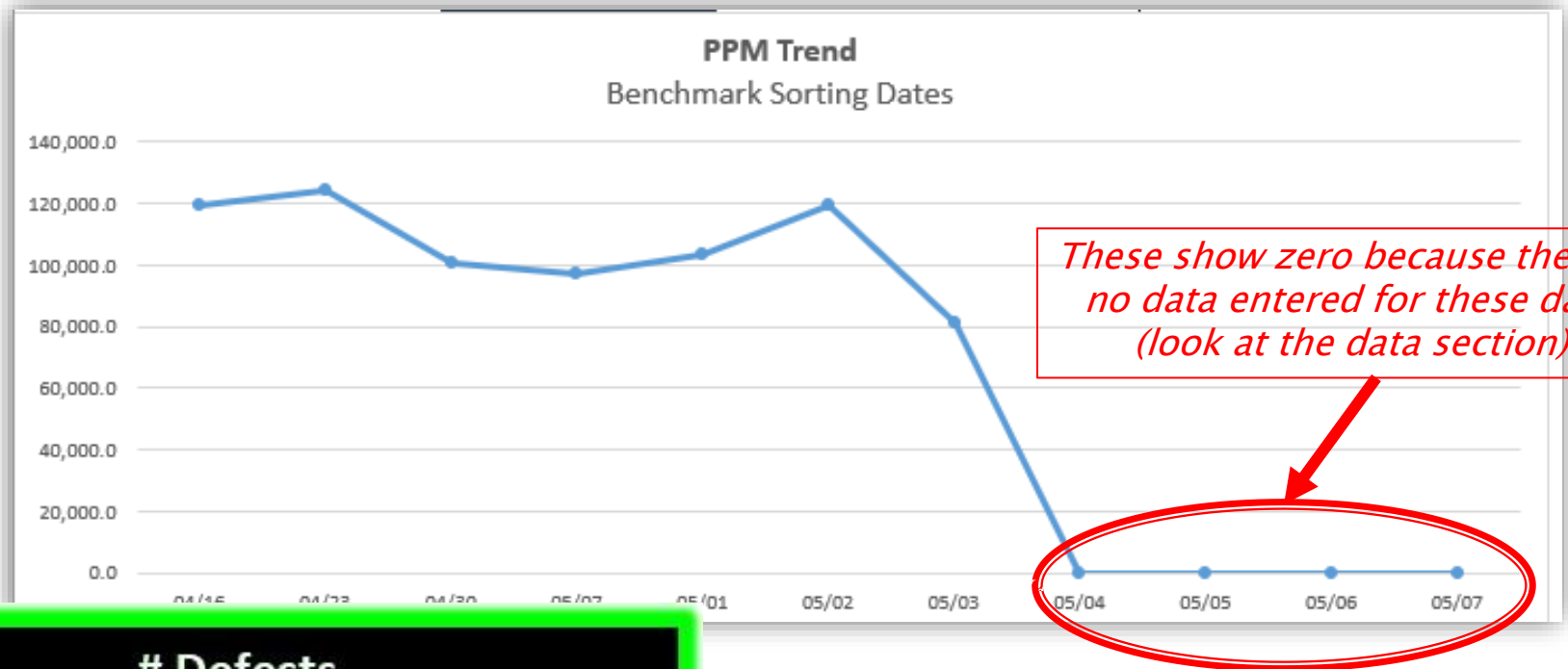
PPM Calculations (parts per million)

By defect type

I-Chart Sections – PPM Trend Chart

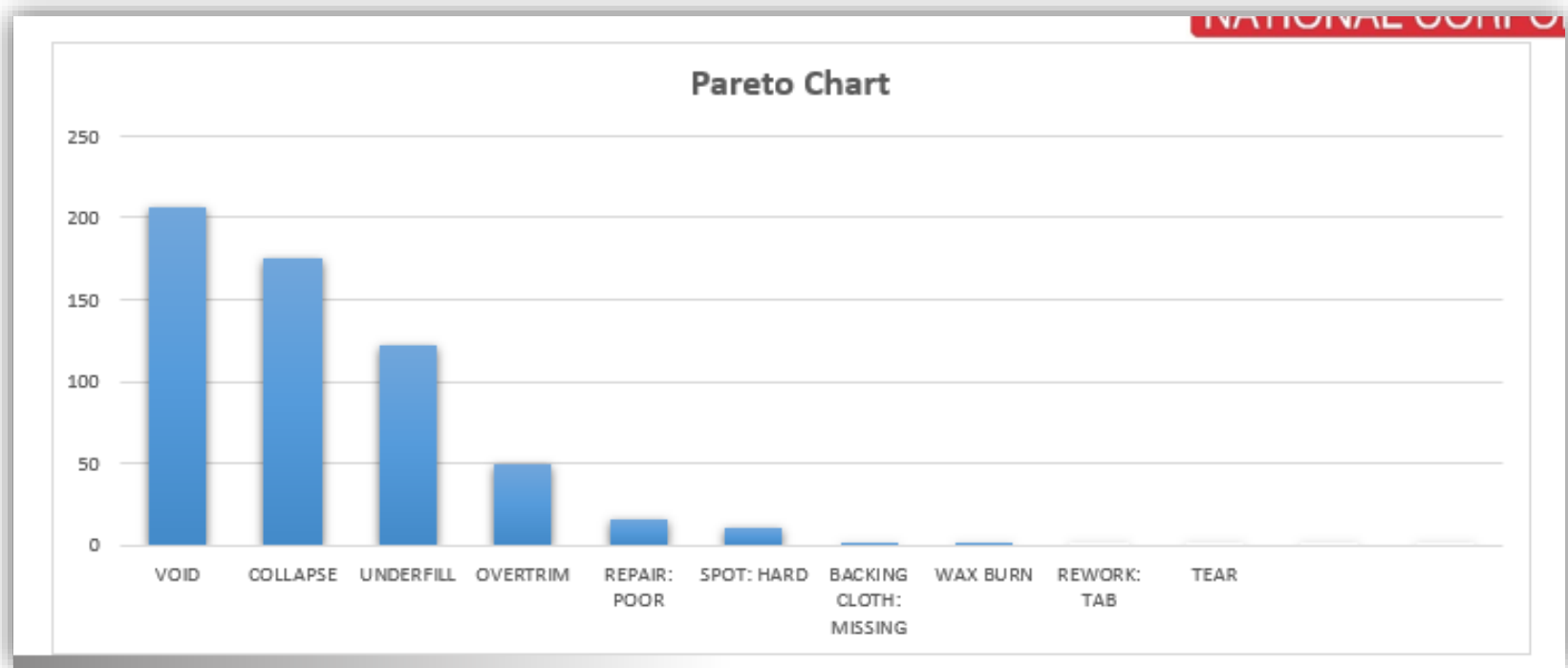
Graph of PPM over time

- First four points are weekly totals
- Last seven points are current week daily totals



$$\text{PPM} = \frac{\text{\# Defects}}{\text{\# Inspected}} \times 1,000,000$$

I-Chart Sections – Pareto Chart



Bar chart showing total of all defects from most to least

And, Finally...

- ▶ The I-Chart is an analysis tool to help monitor how a process changes over time
- ▶ The combination of data and charts leads to data driven decisions
- ▶ The Pareto Chart puts focus on the biggest issues
- ▶ The PPM Trend Chart monitors improvement over time
- ▶ As the causes of the defect are fixed, the PPM drops
- ▶ Most automotive OEMs expect suppliers to maintain a PPM of ZERO reaching their facilities

Click on the button below to take the quiz for this session.

QUIZ

