

NPL Survey of Commonly Reported Assembly Defects

National Physical Laboratory (NPL) Electronics Interconnect Team is creating a Defect Database as part of their continuing support to the electronics industry. There is a strong belief that many of the component, printed circuit board, assembly, and solder joint failures are often common to many parts of the industry worldwide. Further details on the database and how it will work are covered in the attached document.

To further assist our project and aid a better understanding of industry problems from a supplier's prospective NPL are circulating surveys on components, printed boards, assembly and materials to different groups to establish the most common problems experienced or reported. The results of the survey will be published and sent to all the companies providing feedback to this project. No specific company responding will named in the published survey.

Our company is considered to be (Please tick one only)

Original Equipment Manufacturer (OEM)

Contract Electronics Manufacturer (CEM)

Our company assembles (Please tick one only)

Small volume (<100 PCBs per week)

Medium volume (100 – 2000 PCBs per week)

High volume (>2000 PCBs per week)

Please indicate as a percentage your customer sectors

Consumer/Commercial %

Telecommunications %

Automotive %

Military/Aerospace %

Medical %

Please indicate in order the most common process problems faced in assembly?

(Place in order 1 – 7 with 1 being the most common contributor and 7 being the least common)

Component Solderability

Heat Related Component Damage

Printed Board Solderability

Printed board delamination

Solder joint failures

Contamination or corrosion

Component Electrical Failure

Which assembly process contributes most to your defect levels?

(Place in order 1 – 9 with 1 being the most common contributor and 9 being the least common)

- Stencil printing
- Component placement
- Reflow soldering
- Manual component assembly
- Wave soldering
- Selective soldering
- Cleaning process
- Hand soldering
- Rework and repair

What do you feel contributes mostly to your defect levels in production?

(Place in order 1 – 5 with 1 being the most common and 5 being the least common)

- Components
- Printed circuit boards
- Printed board design & layout
- Assembly & soldering materials used
- Equipment and set-up of the process

Which assembly/soldering materials contribute most to your production defect levels

(Place in order 1 – 6 with 1 being the most common and 6 being the least common)

- Solder paste
- SMT adhesives
- Liquid flux
- Cored solder wire
- Solder alloy used
- Cleaning fluids

In the case of any field or service failures which contributes most to these in your company or customer?
(Place in order 1 – 7 with 1 being the most common and 7 being the least common)

- Product design & components
- Soldering materials used
- Cleanliness of product
- Printed circuit board type
- Assembly process used
- Production quality levels
- Limited environmental testing of product

Please indicate as a percentage your use of alternative alloys or not?

- Tin/lead %
- Lead-free alloy %
- Only Tin/lead

Please outline any other failures not highlighted that you would like the NPL Team to be aware of

Many thanks for taking the time to complete and return this survey. We will send you a copy of the results of the surveys when they are completed. Providing your details allows us to send you a copy of the survey results. NPL will only use the details provided to forward you a copy of the surveys and the Defect Database when they are complete.

Name: _____ Company: _____

Address: _____

Town/City: _____ County/State: _____ Post/ZIP Code: _____

Country: _____ Email: _____ @ _____

Telephone: _____ Fax: _____

You may return your completed survey by email, fax or post.

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