



## How to test bonds » Cold Bump Pull (CBP) » objectives, jaw size

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### 4. Objectives

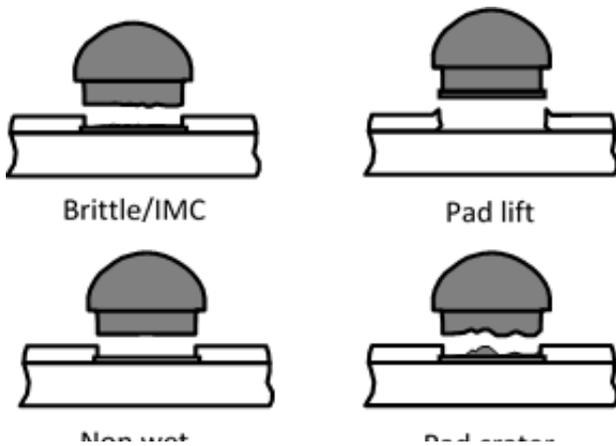
As is always the case XYZTEC's Golden Rules of Bond Testing apply;

Golden rule #1: Choose the test type and settings that gives the most failure modes of interest.

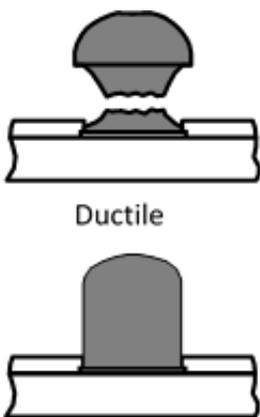
Golden rule #2: If you cannot get the failure mode of interest choose a test type that tests the bond with a load most similar to the true loading condition.

Golden rule #3: Choose the test settings that produce the highest force.

For more information on the Golden Rules refer to XYZTEC's [Science of bond testing module BTM1.1](#).



Apply golden rule 1 to CBP testing. These are the failure modes of interest.



Apply golden rule 3 to CBP testing. These are not the failure modes of interest. In this case we want to

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- Germany
- Taiwan
- Thailand
- United Kingdom
- USA: California
- USA: Massachusetts
- [Distributors](#)

#### Bond testers

- Condor *Sigma*
- Condor *Sigma Lite*
- Condor *Sigma W12*
- Condor *150HF*

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setup the test to get the highest force possible.

Rule #1: In the case of CBP testing we are interested in the strength of the bump to the pad and/or the pad to the substrate. This is the "bond".

The construction of the bond varies depending on the application. There can be a few or many layers in the bond but in any case we want to know how it fails and at what force.

Rule #2: We have already decided that Pull Testing is more like the true loading condition. That is to say it is not shear.

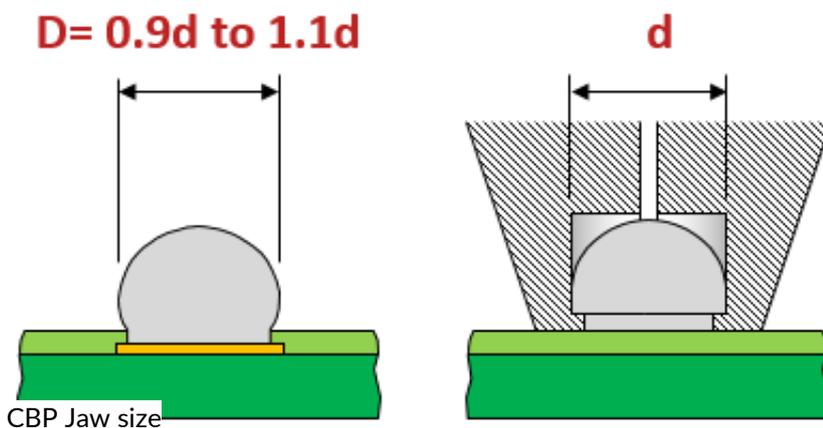
Rule #3: If the bond is stronger than the bump we can get one of the following failure modes: ductile or extrusion. In this case we want to setup the test to get the highest force possible.

Note, if the force of an extrusion is only slightly higher than a ductile failure it may be better to set the test to get ductile failures. This is because extrusions can contaminate the jaws with debris much more rapidly, making cleaning more difficult. See also: [paragraph 11: Cleaning the jaws](#).

To recap: we always want the failure mode of interest and if that is not possible, we want the highest force.

## 5. Jaw size

**D= 0.9d to 1.1d**



CBP Jaw size

The cavity in each jaw consists of two semi cylindrical cutouts. The diameter of the larger cutout is used to define the jaw size. The size of the jaws is ideally the same as the bump diameter. It is though acceptable to test bumps that are within  $\pm 10\%$  of the jaw size. Larger differences will result in lower maximum test forces. It is always best to use jaws as close to the bump sizes possible.

## Continue to read:

[Previous page: Introduction / What is CBP? / What types of balls can be tested?](#)

[Next page: Jaw quality](#)

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