# **Identifying a Rubber to Substrate Bond Failure**

### Get to know the types of failures and learn how to prevent them.

Regardless of your application, your rubber to substrate bond is likely critical. If your bond fails, troubleshooting allows you to fine-tune your process and improve bond quality.

There are many factors that can cause Cement to Substrate (CS), Cover Coat to Primer (CP), Rubber to Cover Coat (RC), or Rubber Retention (R) failures, so consulting technical support can help you investigate the cause of the failure.

## **RUBBER RETENTION**

#### **Identified by**

the rubber tearing without the adhesive system failing.

#### It happens

because of excessive stress on the rubber. This causes the rubber to tear, but the bond stays intact. This, while considered a failure in the part, is a sign of a strong adhesive system.

#### To promote this

be certain that you understand dry film thickness, cure conditions, and rubber ingredients because of the role they play in adhesion, as well as the amount of strength needed to tear the rubber.

#### Identified by

to bond the substrate.

#### It happens

dust, mold release, etc.).

#### To avoid it

compatible with the adhesive.

R

# RC

#### **Identified by**

a cured one-coat or cover coat that is bonded to the substrate or primer, but not to the rubber.

**RUBBER TO COVER COAT** 

#### It happens

because of an incompatible rubber or as a result of the adhesive being exposed to too much heat (prebake) - resulting in a partial or full cure of the adhesive and a reduction in free cross-linking agents to bond the rubber.

#### To avoid it

ensure that your process and storage does not expose the adhesive or adhesive film to too much heat. Before introducing the rubber, keep the time that coated inserts sit inside the heated mold within acceptable parameters.

## **COVER COAT TO PRIMER**

### Identified by

a failure of the cover coat (or top coat) to bond to the primer or vice versa.

#### It happens

as a result of an incompatible primer and cover coat combination, or an incompatible component of the rubber compound to the system.

### To avoid it

be sure that all materials are compatible and check that the materials are handled properly and free of contaminants. If you're not sure about the compatibility of your system, H.M. Royal, Inc. technical specialists are available to recommend compatible systems for your needs.

## **CEMENT TO SUBSTRATE**

any percentage of the coated area where the adhesive system failed

because of an incompatible substrate or a barrier that has formed on the substrate surface (i.e. contamination of the substrate with oil.

examine your processes and materials. Surface preparation is critical. Be sure all components are clean and

#### **REFERENCE KEY**



Substrate

**Cover Coat** 

Rubbei

Primer



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