



... simply better protection!

www.LibertyPackaging.com

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NDIA 6TH ANNUAL DISRUPTIVE TECHNOLOGIES CONFERENCE

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**Title: NEW PACKAGING AS A
CLUTTER REDUCTION METHOD**

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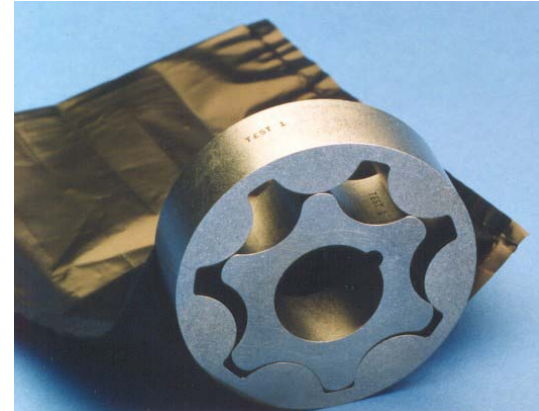
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Clutter comes in many forms

How to get it safely across the ocean?



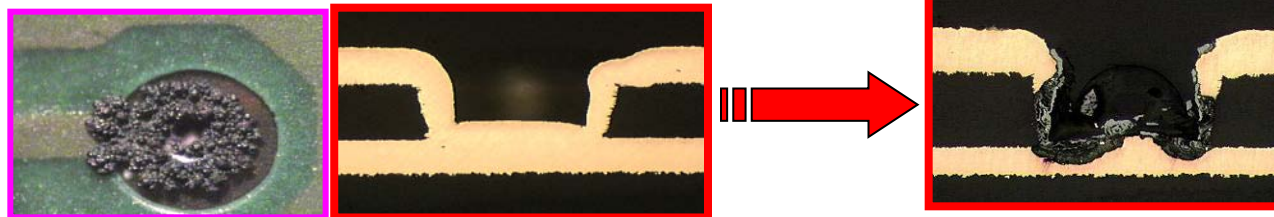
How to protect without oil?



How to locate something packed in a barrier material?



Obsolete but not driven?



How to prevent failure in a circuit in traditional ESD packaging after 6 weeks in India...

Clutter

- Caused by dis-organizational issues
- Caused by excessive packaging
- Caused by the use of non-recyclable packaging
- Caused by the use of packaging that cannot be opened and re-sealed in the field, resulting in waste, in-efficiencies and creation of lost parts and debris (scrap)
- Caused by obsolete parts and field failures
- Caused by thick layers of regulations that have not allowed for flexibility, change or streamlining

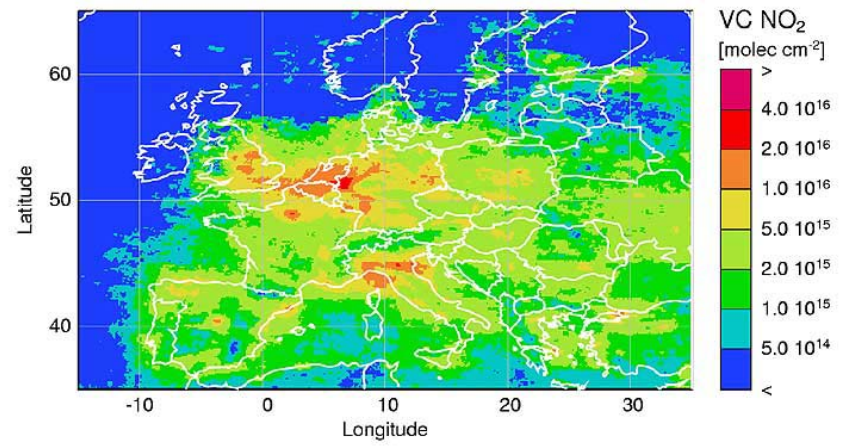
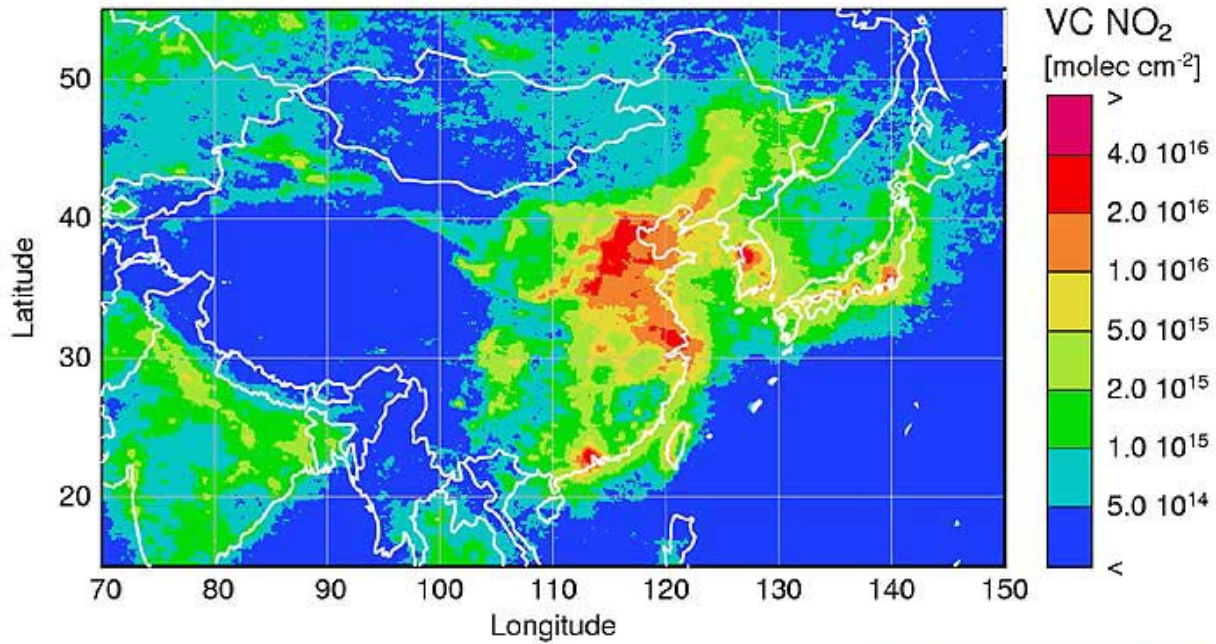
Packaging and De-Cluttering

- Environmental Concerns
- Minimization of Packaging
- Effectiveness of Packaging
- Impact of RoHS and other legislation
 - Restriction of Hazardous Substances (RoHS)
 - TRGS Legislation in Germany / Europe
- Need for more robust Packaging
 - i.e. Active barriers instead of passive ones
- Need to look for new technologies, new developments

Environmental Impacts

- 3 R's
 - Reduce / Re-Use / Re-Cycle
- Carbon Footprint
- RoHS and environmental legislation in Europe
- Increase in air pollution worldwide putting more stress on products, many already compromised by RoHS restrictions
- Recycability versus landfills
 - Equally important is to develop / push re-usable packaging to reduce overall packaging needs

An aerial view of the Worsening Worldwide Corrosion Issue



Global Economy - Atmosphere



“If one visits Mount Hood in Oregon one can see that the snow on the side of the mountain facing China has grey shade while the east side is bright white”
 James Brenzel
 The Economists
 Sept 30th, 2006



Industrial Economies make it difficult to ship or store electronics or equipment

A better alternative?



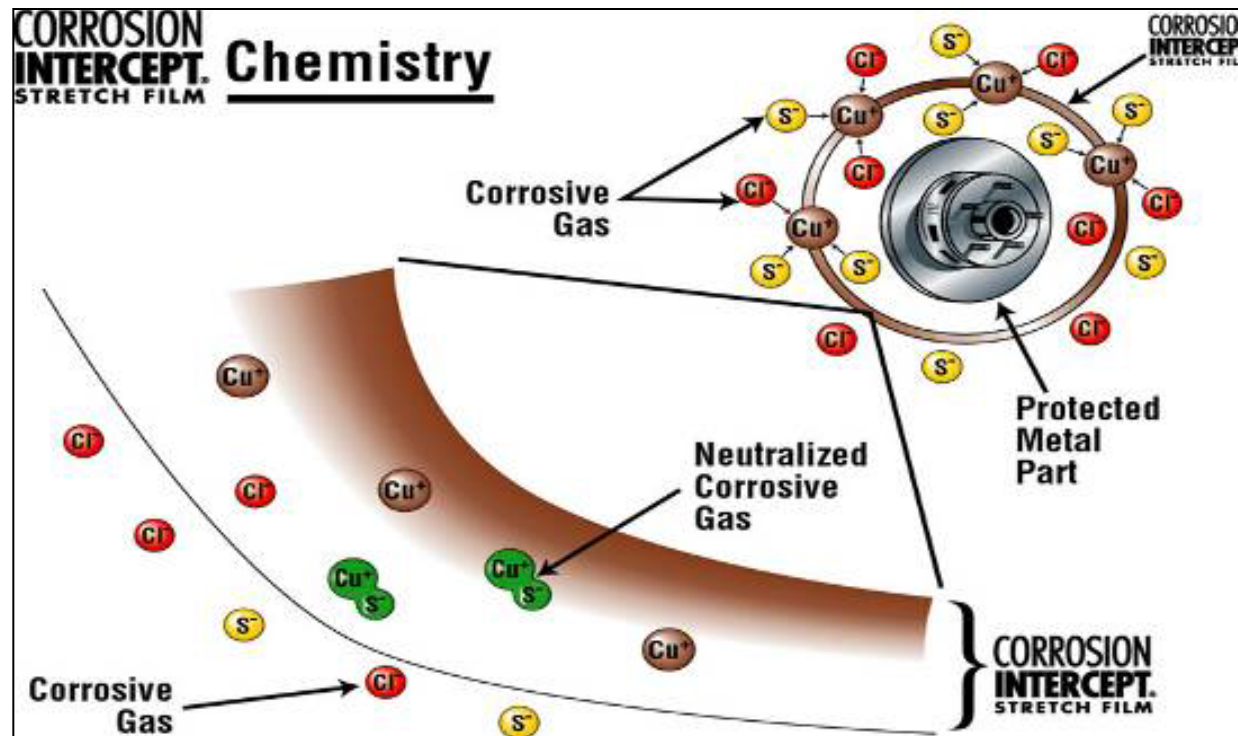
Environmental Impacts

- Reactive versus Passive Barrier
 - We need to demand more from our packaging
 - Current Mil B-131 bags are passive barriers
 - Changes in packaging, such as the Intercept Technology, provide reactive barriers, actively providing protection
 - Intercept Technology goes even farther, providing more than a 50% reduction in carbon footprint over a mil 131 bag
 - Additionally, Mil-131 bags are not recyclable, leading to increased landfill usage and more clutter in military settings

INTERCEPT

INTERCEPT TECHNOLOGY™

INTERCEPT was developed and patented by Lucent Technologies and Bell Laboratories in 1987. Highly surface area copper particles are permanently reacted into a plastic matrix and then allowed to react with all corrosive gases as they try to penetrate the film or bag. The Technology was designed to protect all materials under all environmental conditions equally. The material is volatile free so no increase in VOC loading and is not a VCI.





US Army TACOM (Tank Command) EVALUATION OF INTERCEPT BARRIER MATERIAL FOR MILITARY PACKAGING

SALT-FOG Test Data Comparison

<<<<< Days of protection against corrosion >>>>>>

Metal coupon	Intercept Poly 4-mil	VCI Poly 4-mil	MIL-PRF-131 Foil / Poly 5-mil
Steel	102	28	62
Aluminum	130	59	91
Brass	130	28	91
Zinc	97	59	77

Sam Sakar - 8th Annual Government/Industry Shelf-life Symposium, October 29-31, 2002
Kansas City, Missouri

Re-Usability

- Equally, if not more important than recycling is to be able to reuse a packaging material and/or be able to re-seal it (close it) in the field.
 - Foil bags (mil 131) require RH below 37%, so they cannot be re-sealed easily in the field, it would require additional desiccant and vacuum sealing equipment
 - Also, cannot read RF signals through foil
 - Intercept can easily be re-taped in the field
- Re-using reduces the overall packaging material, while providing the ability to decrease clutter.
 - Intercept is designed for 5 to 10 years or more of protection / easily allowing for re-use applications

Examples of Re-Use

Small components to large dunnage systems can be re-used, reducing cost and clutter



Fuel injectors – small vacuum formed tray that took a corrosion critical part from 300% inspection to 200% and one way packaging to over 3 years use with no failures



Engine block bags for shipments between continents and storage

Examples of Re-Use



A NIPHLE Packaging Award winner

Intercept was used to line the crates to ship the armored plated cabs to the Middle East, the same crate was then used to return the old, non-plated cabs.

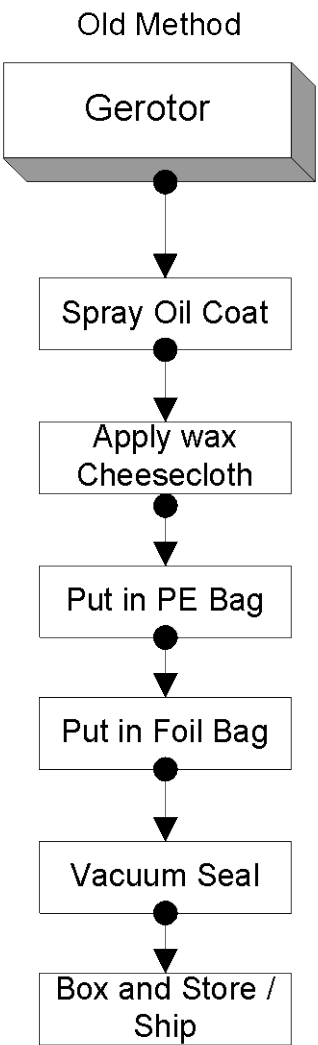
No Rust / No Failures

Reduce

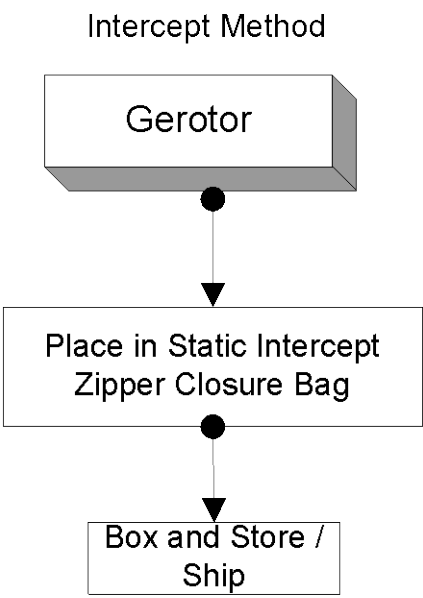
- The ultimate goal of packaging is to reduce the amount of it, or to reduce the amount of additional materials required to get our products / materials safely to their destination. Advanced shrink films can allow a reduction in crating required.



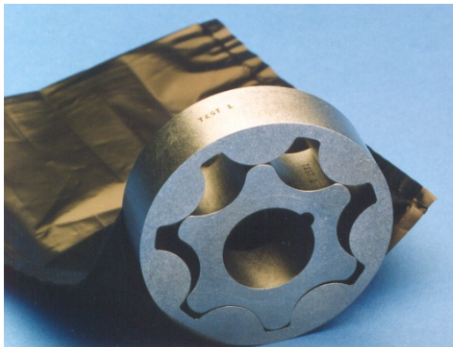
Effective shrinkwrap allowing safe deck top shipping



5 Processes (Steps)
 Air Handling Requirement
 4 Materials
 Total Pack Time - **25 Minutes**



1 Process Step (no air handling concern)
 1 Material (reduced inventory and cost)
 Total Pack Time - **5 Seconds**
No Rejections



**Over 120,000
 Parts packed
 "0" Rejects**

Weaving Machine traveling between Germany and Russia – sat outside for 3 months after 8 – 10 week sea shipment. Arrived in perfect condition.



Quick Pack Method:

- Place 4 mil oversize bottom sheet on pallet
- Place equipment on bottom sheet
- Place pre-made bag over equipment
- Bring up excess bottom sheet and securely tape around the whole item – overlap the bottom sheet and bag by 6 inches
- Can evacuate for better performance
- May add desiccant if going overseas

Intercept Technology™

1. Green Packaging – Recyclable / Re-usable / Sustainable
2. Permanent ESD protection – long term Corrosion protection
3. No contamination – no outgassing (ideal for aerospace)
4. Ease of use
5. Proven effective
6. Approved and used by key companies and militaries worldwide
7. Easier and more effective than foil packaging
8. RFID transparent – an active barrier that can have RFID transmission
9. Same packaging can be used for short term or long term storage
10. Flexibility and availability
11. Protects against Bio-Corrosion

Thank you for your time

Liberty Packaging Company

A member of the Intercept Technology™ Group

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