



... simply better protection!

Qualipack Logistics P Ltd
www.qualipacklogistics.com

INTERCEPT®

Protection of components and systems in a variety of applications

Proven technology offers potentials of cost reduction in manufacturing.

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Contents



Causes for corrosion

Why materials corrode and protection is needed



Impact of conservation

Traditional procedures and cost for conservation in manufacturing



INTERCEPT Technology

How it works and where it comes from



Applications

References and application examples

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Details

Kinetics

The speed at which metals will corrode depends on the amount of present “acceleration agents” in the atmosphere such as salts and contaminations such as sulfur combinations.

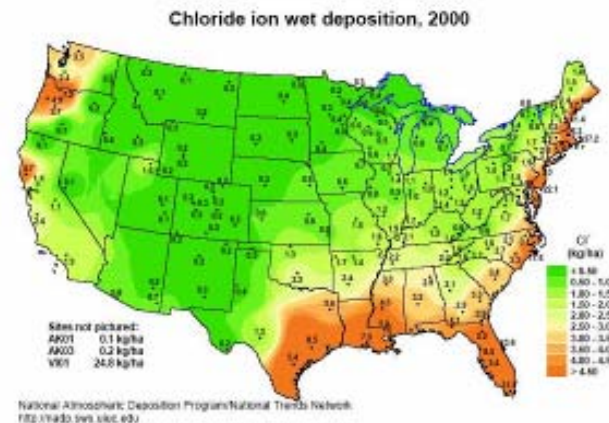
As everyone knows, things corrode faster closer to sea, than in mountain regions. The reason is that there is more salt closer to sea.

Certain regions show more corrosion than others (Asia, South America). Here next to humidity one can trace the accelerated ageing back to pollution.

These traces can be found in the air and in present humidity. Without these traces – which are also called “corrosive gases”, corrosion would not be of any concern.

Measurement of H₂S pollution (Jan 2007)

Europe - USA	~6-7 ppb
Brasil:	~640 ppb
PRC (Nov. 2005)	~1.050 ppb



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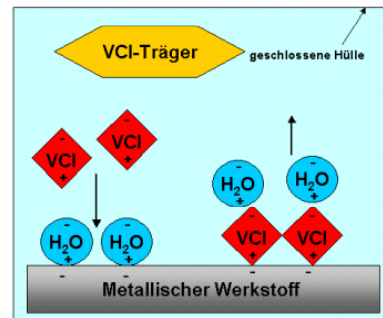


Methods

Protection Methods

Traditionally, next to coatings dry-packaging or VCI Packaging methods are used. Either individually or in a combination when needed.

Each of the methods has advantages and disadvantages depending on the materials to be stored and the regions to be shipped to. The user will have to select the appropriate technique.

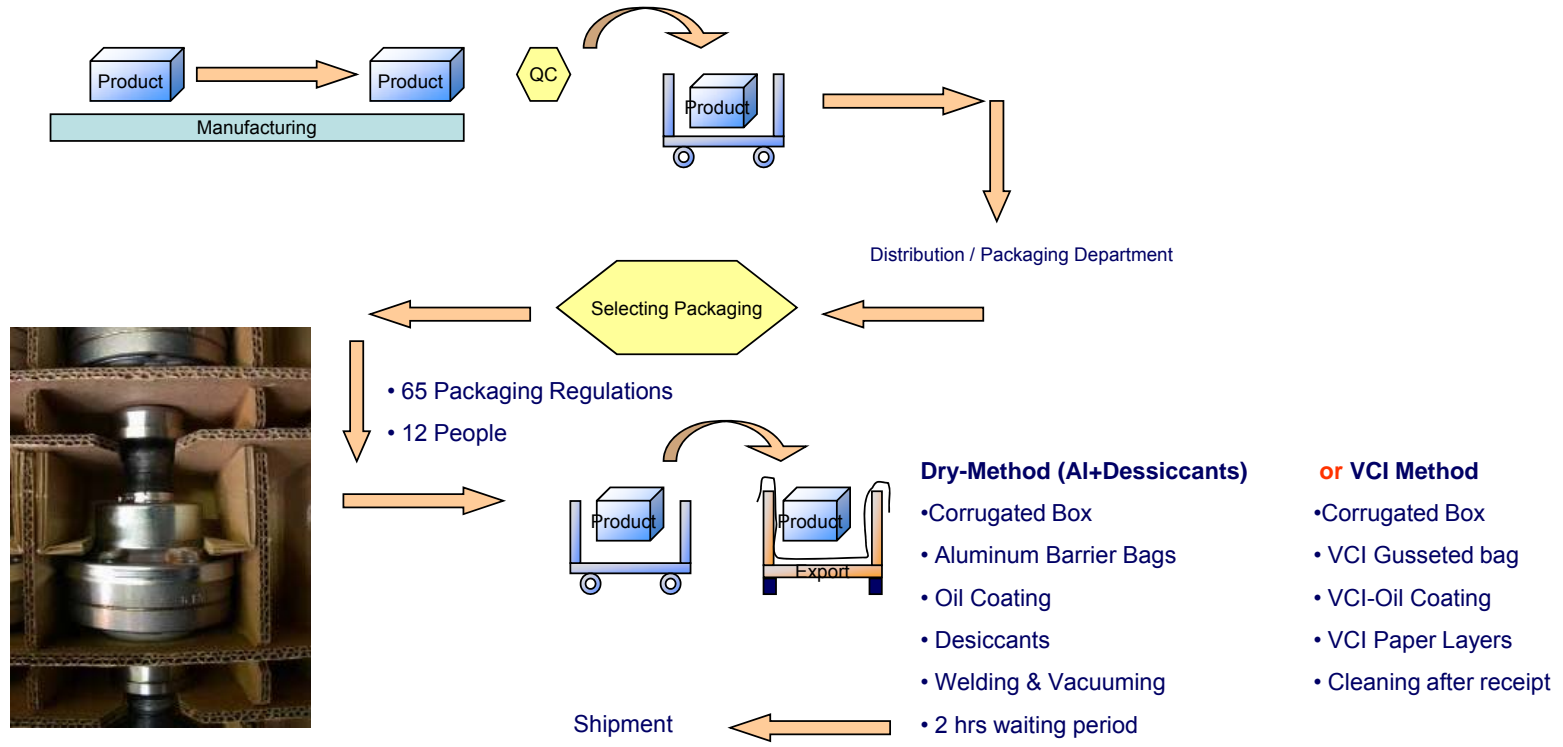




Methods

Work Flow

Using an actual application for the shipment of differentials from Germany to Australia as an example in order to show the steps and decisions associated with traditional conservation methods applied:



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Methods

Protection Methods

3. INTERCEPT® Technology

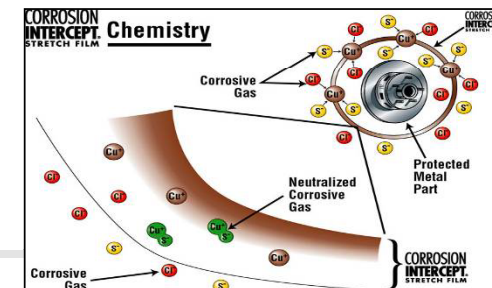
Developed and patented by Lucent technologies (USA) in 1984 the principal technology that protects the outer hull of the statue of liberty was further adopted and has since been used mainly in electronic applications. The technology was further advanced for industrial applications. It uses the principal to “clean” the present atmosphere from corrosive elements and neutralize the elements to create a natural non-corrosive environment.

Positive:

- Protects ferrous- and non-ferrous-metals, alloys, plastics, elastomers and some organic materials
- Easy to apply
- Functional from -35° - $+80^{\circ}$ C
- Non-out-gassing (awarded with occupational safety prize in 2005)
- Long protection of 15+ years possible
- Cost effective (overall cost)
- proven technology
- recyclable

Negative:

- higher initial material cost
- less known in the market



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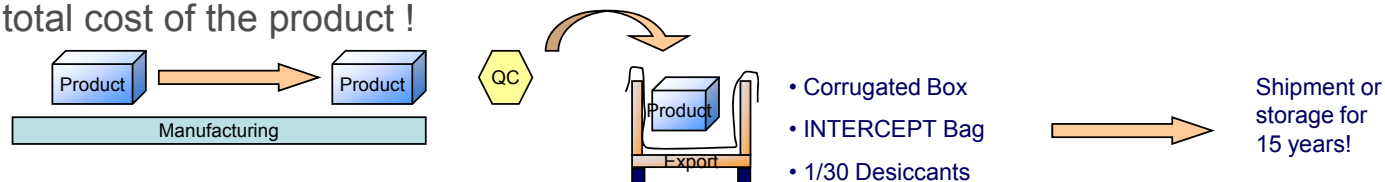
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Details

INTERCEPT Work Flow

Using the same true case, the following flow chart explains the different application and cost savings due to the universal applied INTERCEPT product. Despite higher cost for INTERCEPT it resulted in a lower process cost which allowed the client to save 20% on the total cost of the product !



Differences

- 65 Packaging Regulations were reduced to 3 (export, Long-Term and Intermediate)
- One Product for all materials and all regions
- The ease-of-use of INTERCEPT allowed to design a complete project packaging unit
- The Quality Control person actually packages the product for exports
- No oiling and later washing required



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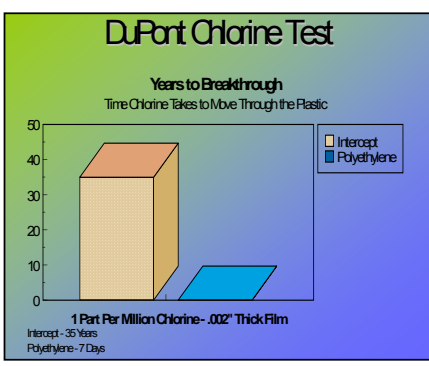
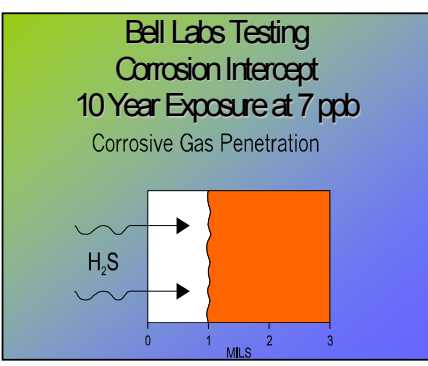
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INTERCEPT

INTERCEPT TECHNOLOGY™

- High Performance (from -35° C to +80° C)
- Long, warranted protection (>10 Years)
- Product Liability Insurance (1.0 Mio € per Packaging unit)
- Process certified ISO 9001:2000
- Protects all ferrous- and non-ferrous metals, alloys, electronic components plastics and organic materials.
- Environmentally safe, RohS compliant, TRGS 615 und TRGS 900 compliant, recyclable
- cost-effective in overall cost
- Occupational Safety Prize 2005 for a cleaner alternative in corrosion protection (BAUA)
- ESD 10⁶ -10⁸ Ω permanent (even at humidity <5%)
- Available in all traditional packaging formats
- Re-usable (up to 8 cycles for bags)



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References

INTERCEPT Application

INTERCEPT has been applied successfully since 1984 in a number of applications. The following are a number of application references which have a proven track-record pertaining the cost savings aspects and better protection for the parts.



Sinter metal Components -Germany to Mexico

Reduction of oil-coating at manufacturing and avoiding cleaning before assembly in Mexico



Engine Blocks – Germany to India

Complete 6-Sigma testing phase consent. Engine blocks are shipped without coating to India for assembly.



References

INTERCEPT Application



Drive Train Components – Germany to world-wide
Avoidance of secondary coating and cleaning processes.



Gear Box – 15 Year Storage for end-of-life packaging
Replacement of Barrier systems with 80% Cost reduction.



Engine Parts, Bulk Shipment – Spain to world-wide
Complete replacement of traditional coating and barrier packaging



References

INTERCEPT Application

Clients short-term applications

ZF Lemfoerder, ZF Sachs, Robert Bosch, Siemens Automotive, Benteler, Mahle, IFA (GM), Ford Motor Company, Volvo, Voest, Caterpillar, Volvo Trucks, Hellmann Logistics, GKN, Toyota, Cummins, Honsel, GETRAG, etc.

Clients Long-term applications

BMW AG, Continental, Xetic, Siemens VDO, Nissan, GETRAG, Toyota, RR PLC,

Clients repetitive usage

MBHPE (UK), Visteon, Getrag, Robert Bosch, Fiat (Tofas), Volvo (Trial), Toyota (JP), GKN (Spain), Benteler

New Projects

- Fully recyclable thermoformed trays for use of up to 5 years (trials running successfully for the past 1,5 years (real life)
- Fully lined containers (injection molded and thermoformed). Anti-corrosion properties = 5 years, ESD = permanent. First climate chamber testing successfully completed (VWPVT 1210 – Bosch and 50 cycle washing)



References

INTERCEPT Application



Drive Train Components – Germany to world-wide

Reduction of processing time and cost.



Axles – South Africa to China

Replacement of Barrier systems with 65% Cost reduction.



Bosch International Transports

Thermoformed Trays to be re-used up to 12 times without any need for oiling



Processing

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SRI Durach: Shipment of cabinets, no vacuum, no welding



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Bosch , Complete Container Liners



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SIEMENS Robicon USA – Replacement of dry methods for the past two years



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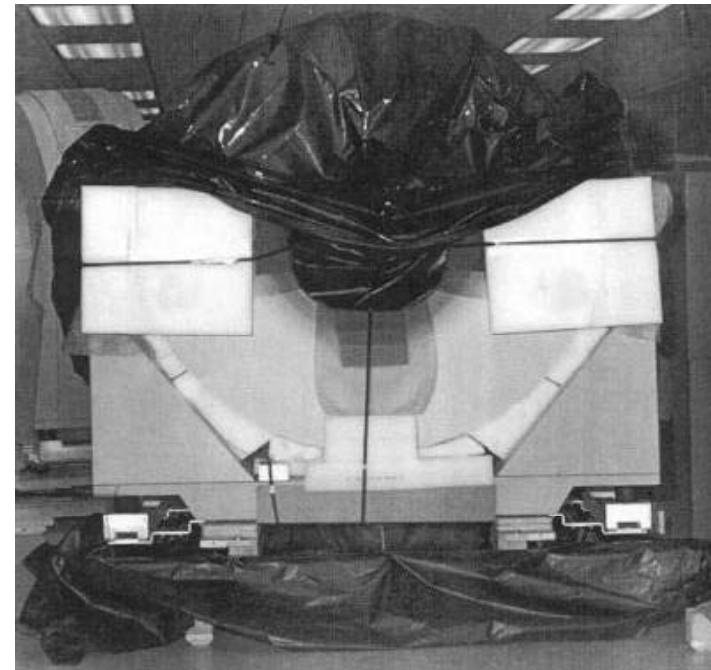
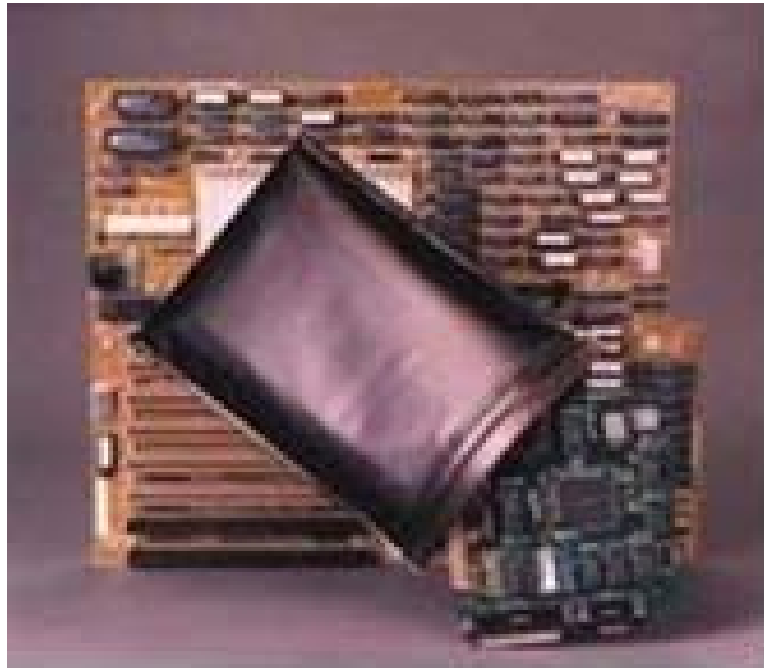
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Prozesse

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AT&T – 1.2 Mio Parts world wide



Analogic – All Export Packaging (CT Scanner)

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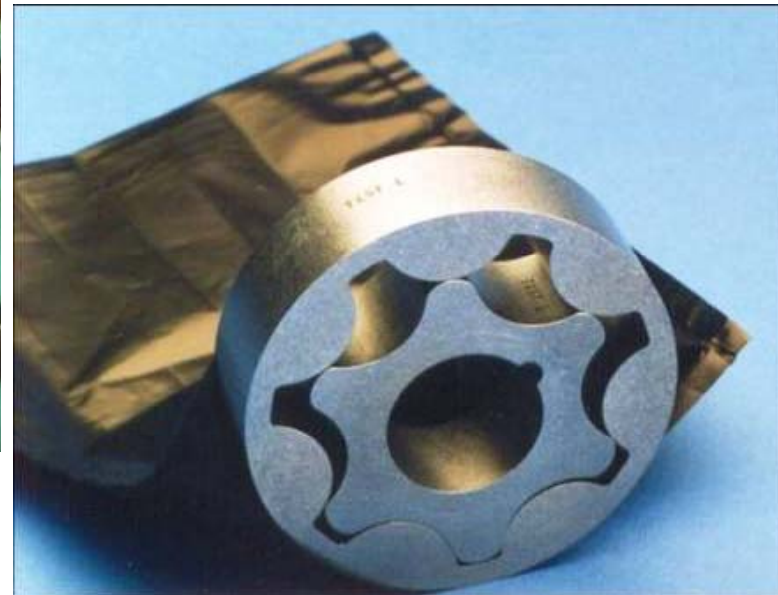
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Processes

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BMW long term packaging (End-of-Life Packaging) gear boxes



Parker Aerospace long term packaging (15+ Jahre) hydraulic pumps

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Prozesse

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US Militär – Storage of fighter planes



Militär Contractor – Storage of armoured vehicles after maintenance

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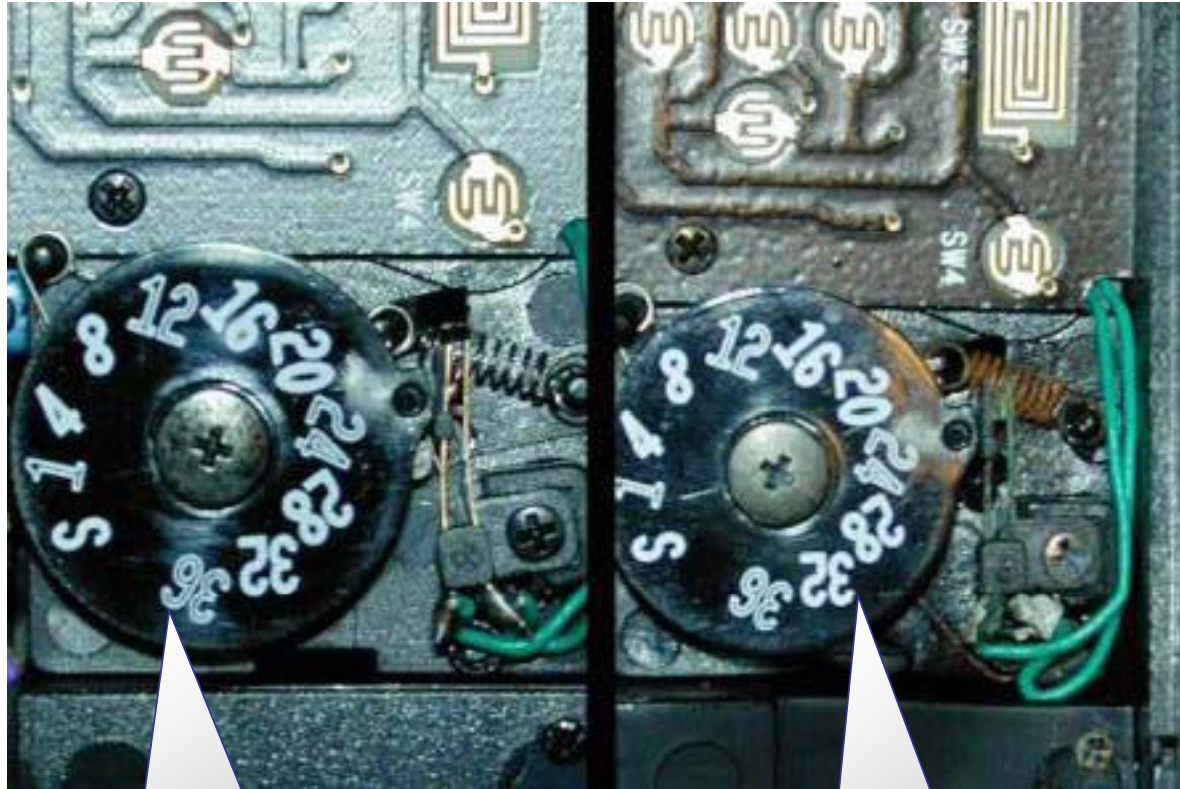
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Corrosion

Test

Source: KODAK Inc.



10 Year 7ppb H2S:
INTERCEPT

10 Year 7 ppb H2S:
Dry Pack

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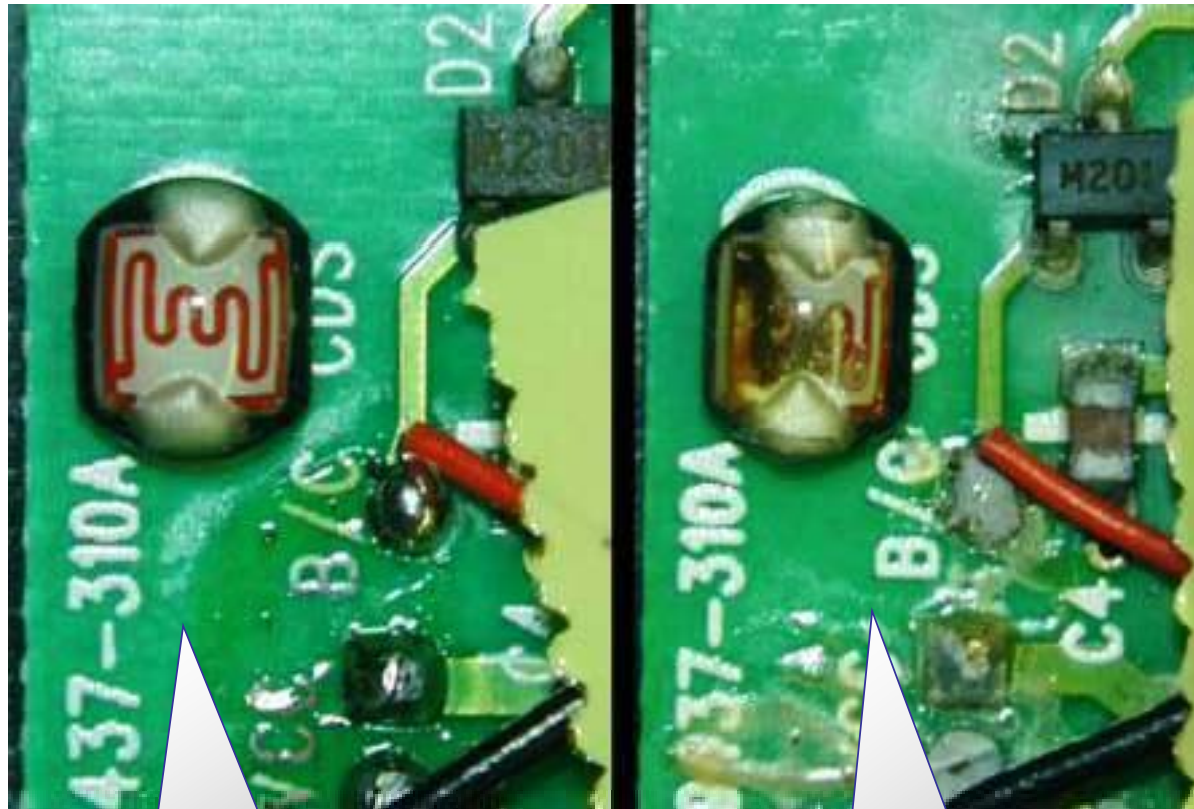
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Corrosion

Test

Source: KODAK Inc.



10 Year 7ppb H2S:
INTERCEPT

10 Year 7 ppb H2S:
Dry Pack

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New Products

INTERCEPT TECHNOLOGY™



- Protection for up to 24 months
- No oiling necessary
- Multi-material protection
- Cost effective



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New Products

INTERCEPT TECHNOLOGY™

Thermoformed – Blister – Trays

- Re-usable (up to five years)
- ESD and Corrosion protection
- No oiling
- Protects all Materials
- Reducing cost



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New Products

INTERCEPT TECHNOLOGY™

Coated Containers

- Re-usable (up to 5 years)
- No Oiling
- Protects all materials



STORAGE WITH INTERCEPT SHRINKFILM LINED CRATES

Just before full shipping, crate production started for the up-armoured cabs going to Iraq, the US Army Tank, Automotive, and Armaments (TACOM) Program Office was hit with a new requirement - "Make the crates reusable and anticorrosive - able to store truck cabs for over three years."

Knowing that all woods and plywoods used in crating release corrosive acetic and formic acids, TACOM officials were questioning what direction to go.

But that quandary lasted only a moment as Jim Russell, TACOM Packaging Engineer, remembered an anticorrosive technology presentation by Randy Dutton, VP of FPM Inc., to a National Institute of Packaging, Handling and Logistics Engineers (NIPHLE) conference.

At that conference Dutton spoke of how Intercept Technology packaging was poised to revolutionise wood crating by sacrificially removing all the corrosive gases released by wood and by cleansing trapped air within the crate.

As a barrier material, the Intercept packaging shields the equipment from the wood. Intercept further provides anti-mould/mildew protection because the constituent reactive material is a highly reactive form of copper that is covalently bonded to the polymer.

More importantly, the safety of equipment and personnel is assured because no chemicals are involved.

All that has to be done is either package the item in Intercept or just line the inside surfaces of the crate.

Tacom working in conjunction with

FPM, the truck cab manufacturer, Stewart & Stephenson (S&S), and the crating company, Advanced International Services (AIS), specified the implementation of an Intercept solution.

The end result, involving about 2,500 large crates, showed virtually no additional delay or cost and a project that ran so smoothly that the trio of TACOM, AIS, and S&S won 1st Place in Long-Life Storage Packaging Design at NIPHLE 2006 with this Intercept lined crate project.



Above: Crate lined with Intercept Shrinkfilm
Below: Cabs waiting packaging



Further, the project was acknowledged by the US Army Materiel Command with this comment, "After a review of the process, it was determined that the repackaging process was perfect for the application."

"By originally designing the container to be reusable, the contractor was able to very easily ship the old cabs home with minimal labour and material costs. This is an outstanding example of reusable packaging at work."

Protecting parts for the automotive industry.



These automotive dies are currently not being used in vehicle production. However, they need to be accessible should they be required.

The actual intent in wrapping the dies in Intercept Shrink-film was to prevent rust from running into the ground in order to meet the requirements of the Environmental Protection Agency.



Over 1000 Automotive Dies Protected From Corrosion



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New Products

INTERCEPT TECHNOLOGY™

Coated GLT

- Re-usable (up to 5 years)
- No oiling
- Protects all materials also in bulk
- Washable and volume-reduced



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New Products

INTERCEPT TECHNOLOGY™



Coated KLT & construction

(Fritz Schäfer GmbH)

- Re-usable (up to 5 years)
- No Oiling
- For all materials
- Washable up to 100 cycles



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Processing

INTERCEPT TECHNOLOGY™

- Shipment and Storage of components
 - PE-LD 100µm replacing dry-method, no vacuum, neither limited in time as well as region.
- Shipment and Storage of components and systems
 - PE-LD 100µm replacing dry-method, no vacuum, neither limited in time as well as region.
- Intermediate storage in production
 - PE-LD 70µm zipper bags, no vacuum, up to 10 years storage, re usable



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**Thank you for your
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