



... simply better protection!



Corrosion Intercept®

Preservation of components and systems in a variety of applications

Proven technology offers potentials of cost reduction in remanufacturing and storage.

Contents

Method into the Market

Switching to Oil and Volatile free Intercept Technology

How Intercept technology TM works

Case studies

Sampling of customers

Current packaging examples

Method

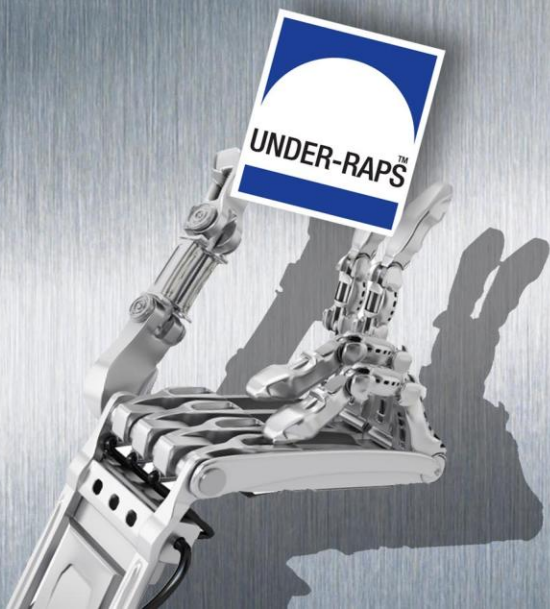
Out dated volatile method

Corrosion Intercept oil and volatile free method

References and Applications

Product examples

Intercept Metallurgical Sample Packaging



Method into the Market

Did you know! There is a **better, safer** alternative than oils for corrosion protection that allows **Inspectability of items.**

Trying to combat corrosion has traditionally been a tough and messy job. Outdated methods call for the application of light oils, greases, Cosmoline or other protective coatings to safeguard metal products against rust and tarnish while in storage or during shipping.

Switching to **Intercept Technology™** packaging eliminates **the need** for these coatings, as well as their tedious removal by solvents at the customer site. Significant savings are quickly realized, both in the cost of coatings and in the reduction of labour, as it's no longer necessary to spend hours using hazardous solvents to clean parts and equipment prior to their use.



**Intercept simply works better,
without oils or volatiles.**



What is Intercept Technology

- ❑ **Oil and Volatile free Corrosion & Static protection**
- ❑ **Developed by** Alcatel-Lucent, Bell Labs in the mid 1980s by John Franey, to solve atmospheric contamination and costly corrosion of the company's circuit packs that were at the core of the telecom's technology. Today he is part of the Reliability Physics team.
- ❑ **Patents** held by Bell Laboratories
- ❑ **Licensed** to Engineered Materials Incorporated



12/16/2011



How Intercept Works

- ❑ Intercept is comprised of highly reactive copper particles bonded into a polymer matrix.
- ❑ This matrix film forms a preferential corrosion site that reacts and neutralises all corrosive gases that pass through or come in contact with the film.
- ❑ It is statistically improbable that they can migrate through the Intercept film without contacting and reacting with one of the active corrosion sites
- ❑ A copper sheet that takes the form of plastic



12/16/2011



Intercept is Green & Clean

Recyclable and re-usable

- Intercept Technology packaging allowed Volkswagen to win 2 Environmental awards 2009.
- Intercept was awarded 1st place for the German Environmental Award for Corrosion protection 2006.
- Silver place “Australian bulk packaging awards” 2010

Intercept uses **no chemicals or vapors**

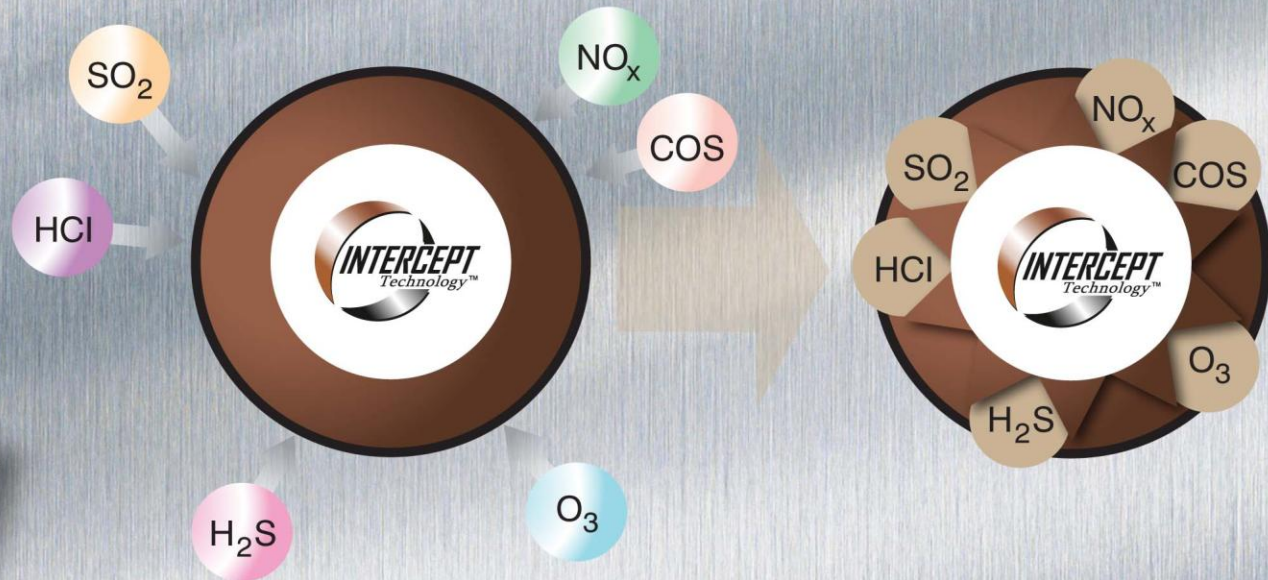
- No separate application areas or special equipment
- No need for handling or disposing of hazardous cleaning solvents and chemicals

Leaves **no contaminates nor deposits**



How Intercept Works to achieve the outcome

Intercept delivers protection by reacting with and then permanently neutralizing corrosive elements



- Chemically bonds to and removes airborne contamination
- Humidity and temperature independent
- Effective at low and high concentrations of gases





Caterpillar Underground Mining Pty Ltd
A.C.N. 069 652 866

2-6 Hopkinson Street
South Burnie, Tasmania 7520
Australia

Telephone: (03) 6432 9000
Int Tel: +61-3-6432 9000

Facsimile: (03) 6431 7262
Int Fax: +61-3 6431 7262

3rd April, 2007

Dear Adam

I would like to take this opportunity and invite you to approach our Parts Suppliers and introduce them to Intercept Anti-Corrosion Film Technology in relation to implementing the Caterpillar Underground Mining Pty Ltd Contamination Control Initiative.

We acknowledge that Under-Raps products have approved Action Packed to be the agent in Tasmania to market this product and look forward to a prosperous relationship.

Yours Sincerely

Kelly Elford
Contamination Control Coordinator

Ref: ka/m

I would like to take this opportunity and invite you to approach our Parts Suppliers and introduce them to Intercept Anti-Corrosion Film Technology in relation to implementing the Caterpillar Underground Mining Pty Ltd Contamination Control Initiative.

We Acknowledge that Under-Raps products have approved Action Packed to be the agent in Tasmania to market this product and look forward to a prosperous relationship.

Customer sampling



Global Material Master Request Listed vendor
No:4021930 since 2009



Listed vendor No:950158 since 2009



Listed vendor No:10062306 since 2009



Category 2 supplier since 2005



Listed vendor No:950158 since 2004



12/16/2011



Outdated Packaging examples



Volatile packed for shipment

*Packaging (on the left)
Washing required to remove blue grease*



Volatile corrosion inhibitors Vci's

*Packaging as it comes back from local refurbishment
Packaging contains volatiles in the pink **front**
wrapping no corrosion protection*



Plain poly no protection

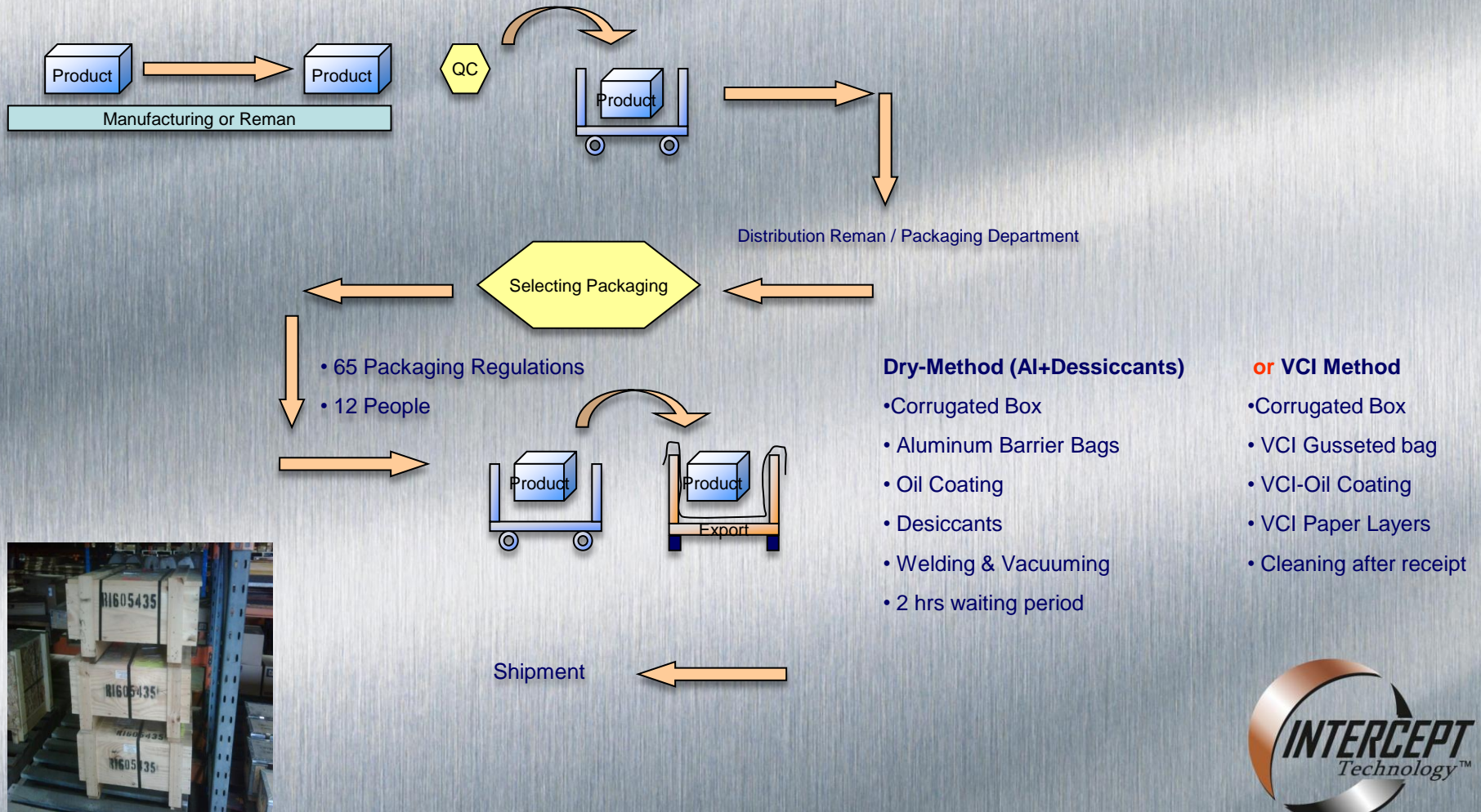
Outbound packaging. Repair and Return

Intercept Technology™ Packaging products fit within a sustainability strategy because they are reusable, recyclable, **do not contain or use volatile components (No VOC's)** and leave a smaller carbon footprint than most traditional protective packaging products.



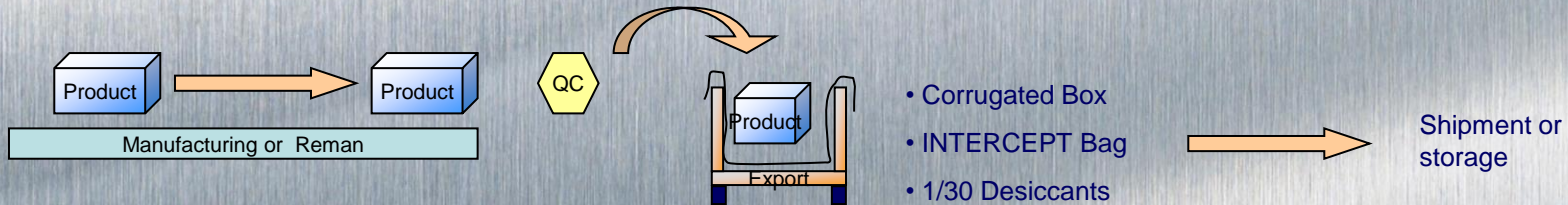
Volatile oil Methods to pack parts

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:



Intercept Methods to pack parts

Using the same true case, the following flow chart explains the different application and cost savings due to the universal applied INTERCEPT product. Despite minimal 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



Applications Large or Small

Corrosion Intercept protection



Applications Large or Small



Note zipper accesses fitted to shrink film for inspection, lifting and forking



Wheel drive application



Intercept Technology™ In a **reusable canvas** cover was designed to protect items while in storage or after wash down until fitting or shipping. The cover has built in desiccant pockets.



Differential indoor application



ICC2 Bag was opened up over diff transport frame



Diff was positioned inside the ICC2 bag and onto the transport frame



3 only 60gram clay desiccants are cable tied around the Diff to control the moisture point.



The ICC2 bag was then pulled up over the bolted down Diff



The ICC2 bag opening was pulled together, twisted and sealed with 2 cable ties



Differential outdoor storage



Differential on the transport frame in **Intercept shrink film pre-made bag** with clear rain hood over the top



Hydraulic Cylinder Ram protection



Hitachi cylinder ends in **pre-made Intercept shrink film Cylinder cover**



Liebherr **Intercept Woven cover** over Intercept2 cover .



Half Intercept half clear shrink film allowing for inspection



Komatsu Rams wrapped in Intercept shrink film pre made cylinder covers in storage



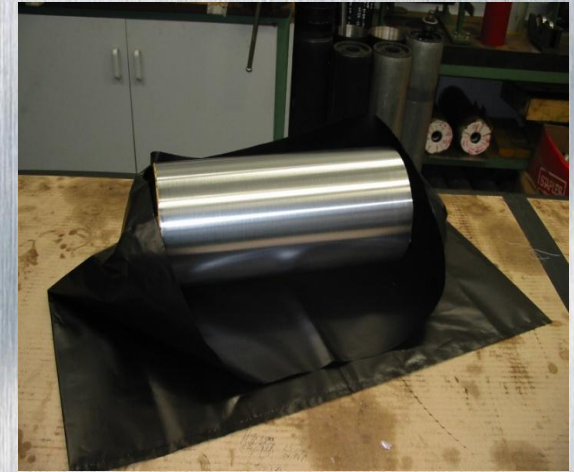
Conveyer roller protection



Out door storage Intercept Static bags and Intercept stretch film



Intercept Woven allows for **reusable** corrosion protection when zipped up goes back to work



As new after 6 months.



Shaker screen UV & Corrosion protection



Loose tarps with no UV protection



Wrapped up ready for transport and storage.



On the road



Schenck Process screens



Ventilation Corrosion protection



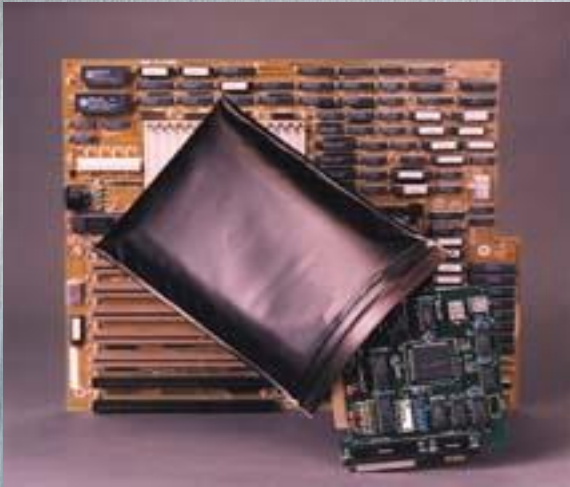
Mine site ventilation



Wrapped up ready for transport and storage.



Static & Corrosion protection



Static and corrosion protection bags



Anti-corrosion and anti-static storage boxes.



Intercept Metallurgical Sample Packaging

The Mineral Sample Packaging System has been designed and tested specifically for packaging of Mineral Samples in a modified atmosphere packaging inert environment. This system will prevent oxidation of the samples for long term storage and Transport. The system is both suitable for samples in Core trays and bagged samples. Since the system design 18 months ago more than 300,000 samples have been packaged and have been sent to laboratories in Australia, South Africa and Canada maintaining their integrity for the duration of storage and transport. The system is now operating on many sites in the Asian region. The Packaging system can also be utilized for manufacture of all the Plastic Sample bags.



HOW CORROSION INTERCEPT PLASTIC SHEETS WORKS:

- Intercept acts as a gas barrier and works by scavenging corrosive gases. Intercept reacts with them and permanently neutralizes them. One of the key ingredients in the Intercept is that Copper is co-valently reacted into the polymer matrix. This Copper backbone gives Intercept its ability to react with and neutralize corrosive gases - both in the atmosphere as well as the gases trapped within the sealed or closed bag, box or tray.



Not just for metals

1. **Paint**
sulphide, ozone

1. Surface erosion/discolour by Sulphur oxides, hydrogen

2. **Textiles**

2. Reduced tensile strength by sulphur oxides, nitrogen oxides

3. **Textile dyes**

3. Fading, colour change by nitrogen oxides, ozone

4. **Paper**

4. Embrittlement by sulphur oxides

5. **Elastomerics**

5. Cracking by ozone

6. **Leather**

6. Weakening powdered surface by sulphur oxides

7. **Ceramics**

7. Changing surface appearance by acid gases, HF

8. **Plastics**

8. Strength loss



Warehouse storage and shipment



Corrosion Intercept®

- No OH&S issues
- Items are able to be inspected
- Saturation indicator
- Reusable
- Protects rubber and seals
- No shelf life on product
- UV stabilised products for outdoor



Intercept Technology™ Products



“Storage and shipping
solutions for all shapes,
sizes and conditions”



... simply better protection!

Intercept Technology™ Group

This presentation is offered as a guideline and only represent values tested under conditions available for Intercept Technology Group (ITG). Although the information given is, to the best of our knowledge, accurate, reliable and complete, it remains still the users' responsibility to assure the correct application and thus usability. Intercept Technology Group assumes no liability in connection with the use of this information whatsoever. It does not represent a warrantee or guarantee of any kind. Intercept technology Group may change the content of this power point presentation with out notice Intercept is registered by EMI Corp.





Under-Raps

Australia and New Zealand

15 Irvine Drive Malaga
Perth Western Australia 6090

Phone 61 8 9248 8900

Facsimile 61 8 9248 8906

info@underraps.com.au

underraps.com.au