

“The Ultimate Solution in Anti-Tarnish Technology”



The INTERCEPT® Technology

(Anti-Tarnish Silver & Jewelry Storage)

Simply Better Protection

Intercept Silver and Jewelry Care

- **Intercept Silver & Jewelry Care Co. is the authorized distributor of the Intercept jewelry line of products**

➤ **PREVENTS TARNISHING & KEEPS FINE JEWELRY LOOKING
AS NEW AS WHEN YOU FIRST PURCHASED IT**

INTERCEPT
Silver & Jewelry Care Co.

Simply better protection

Intercept Silver & Jewelry Care Co., LLC

Toll free: 888-668-7674

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PROTECTING JEWELRY



- ✘ Jewelry has always captivated people, used as money and status since early times, often designs are the same today as 2000 years ago
- ✘ Jewelry captures the imagination because of the sparkle, the radiance – the problem is, how to keep it looking new?
- ✘ Noble metals such as pure gold and platinum do not tarnish, but everything else, including gold and silver alloys do. They tarnish because of pollution. We have the solution...



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What is Corrosion ?



- Corrosion can be a chemical reaction between a metal and a reactive or unstable gas (atmospheric pollution) or liquid.
- Corrosion can be caused by an electrical reaction between two different types of metals (galvanic corrosion).
- Corrosion can be an electro-chemical Reaction between dust or fungi and a metal-surface.

In Principle; Corrosion is an action which
changes the chemical or physical structure of metals.



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AIR QUALITY IN CHINA IS DEGRADING...



H2S Levels - China

- Average H2S level in North America (Europe would be double this level)
 - Average Level of H2S outdoor (Shanghai, China)
 - H2S found inside electronic manufacturing plants – Suzhou, China
 - H2S is studied more because it is over 10x times more reactive than SO2.
 - SO2 is more of a problem when soot or dirt is in the air, hence it does cause concern in China and Asia due to high level of coal used
- 7 ppb
 - 800 ppb
 - 1500 ppb



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Atmospheric Pollution



- Ozone (**O₃**) - reactive oxygen
 - Accelerates degradation of materials in conjunction with other reactive gases / also affects rubber, paper and plastic
- Hydrogen Sulfide (**H₂S**) and Sulfur Dioxide (**SO₂**)
 - Effluent from pulp mills, oil refineries, heavy industry, fossil fuel combustion and decaying vegetation, breakdown of vulcanized rubber, breakdown of paper
- Carbonyl Sulfide (**COS**)
 - From fossil fuel combustion, wood fires and ocean surfaces
- Nitrous Compounds (**NO_x**)
 - Including amines, amides, ammonia, nitrates, nitrites
- Hydrogen Chloride (**HCl**)



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Intercept Technology™ :

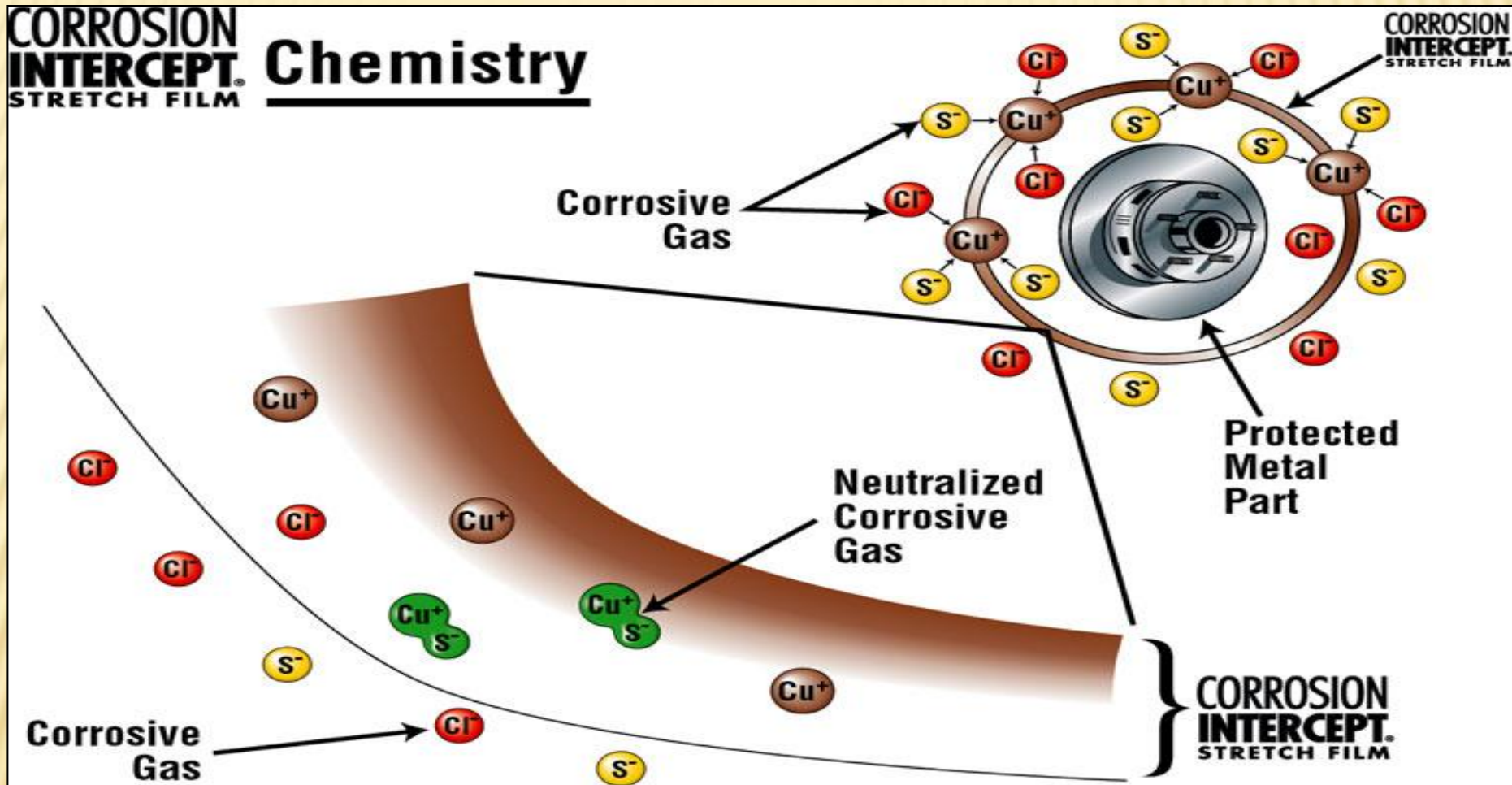
- Intercept acts as a gas barrier – reacting with and neutralizing corrosive gases as they try to penetrate
- Intercept acts a preferential corrosion site, creating a clean micro-environment
- In intimate contact the CU in Intercept acts as a passive mildewcide, not allowing molds and mildews to grow
- Intercept is non-abrasive and does not coat or leave deposits on items it protects
- Intercept is environmentally friendly



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How Intercept Works



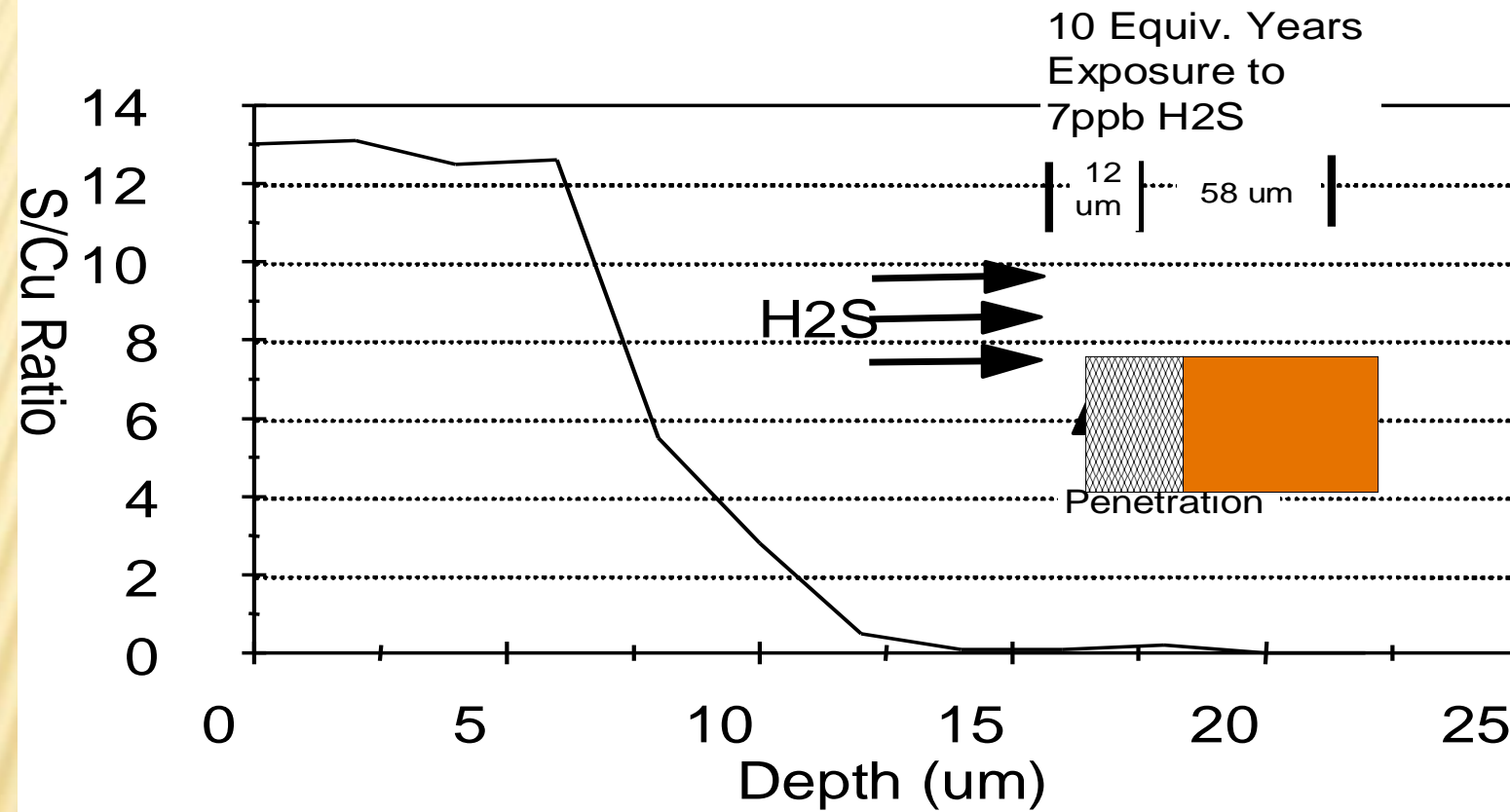
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Sulfur Penetration into 3 mil Static Intercept Film Test Using SEM-EDX (Scanning Electro-Microscope)



Intercept - Sulfur Penetration



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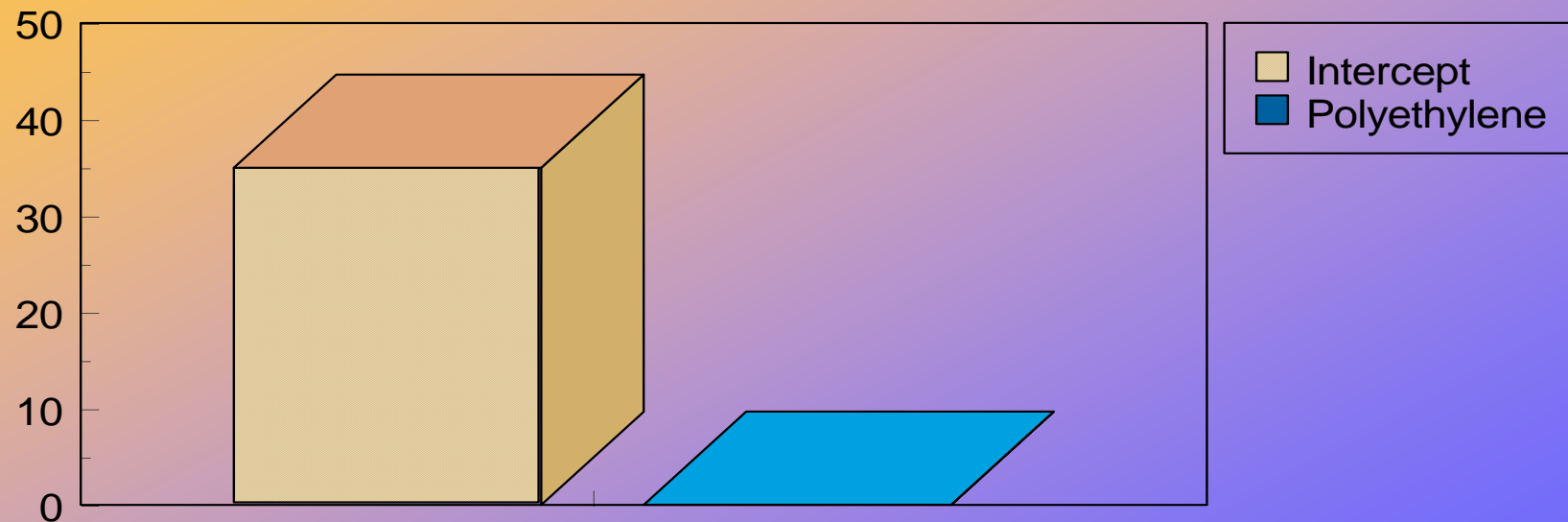


Chlorine Penetration Through 2 mil Corrosion Intercept Film (50µm film)

DuPont Chlorine Test

Years to Breakthrough

Time Chlorine Takes to Move Through the Plastic



1 Part Per Million Chlorine - .002" Thick Film

Intercept - 35 Years
Polyethylene - 7 Days



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REACTIVE VERSUS PASSIVE

- ✘ Only Intercept uses reactive protection – not passive protection as the others employ
- ✘ Some products attempt to protect with carbon or charcoal
 - + Carbon can hold non-reactive gases, but not reactive or high energy gases – these are the gases that cause tarnish
- ✘ Other products use Silver in fabric
 - + Short life span
 - + Silver is not effective at protecting against Chlorine – a major issue with products shipping by ocean, or products manufactured or stored in Asia or Europe



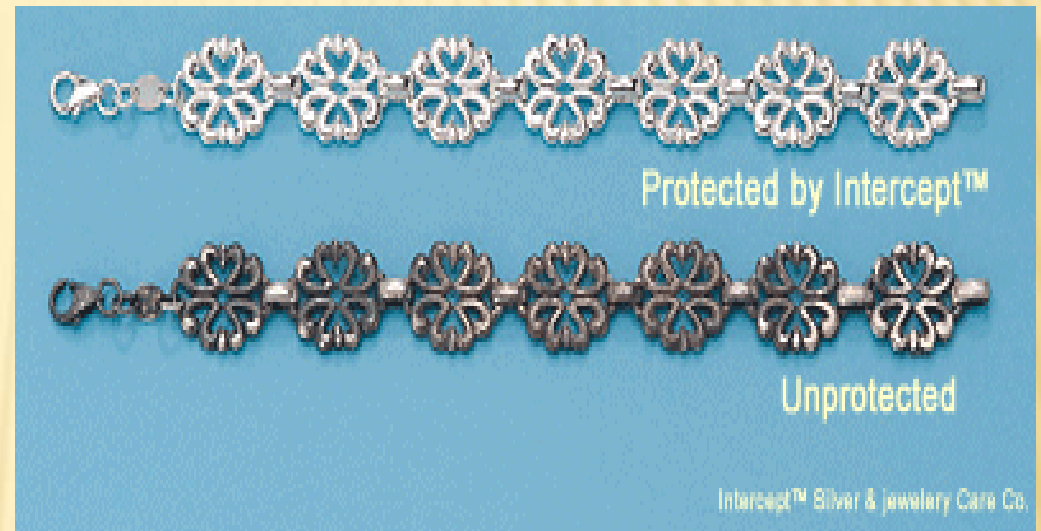
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Silver Bracelet- Real Time Aging



- Note the serious tarnish
- on unprotected bracelet
 - Unprotected - 18 months
- Protected in Intercept Bag for 3 years
 - No Corrosion



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Silver Spoon - Real Time Aging



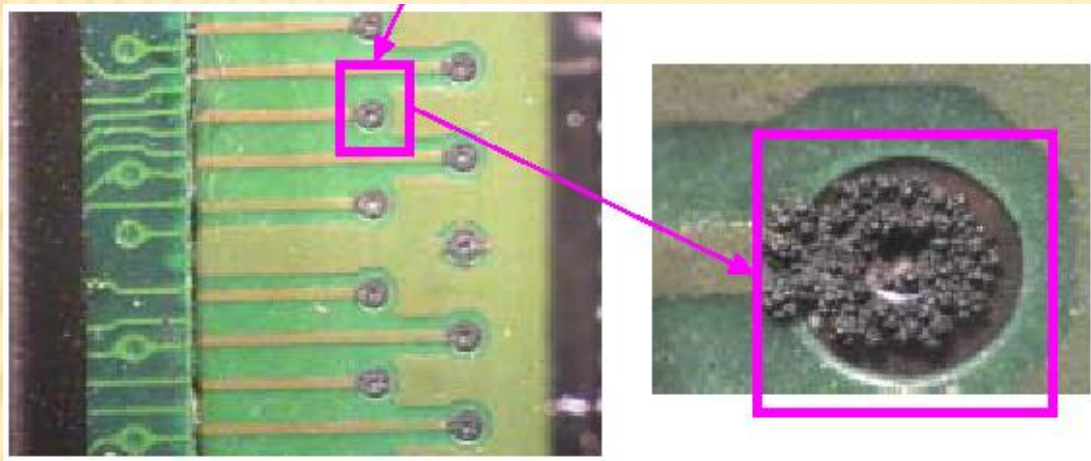
- ☞ Silver Spoon left in Corrosion Intercept Bag for 7 years
 - No Corrosion
 - Taken out of bag and displayed for numerous trade shows
- ☞ Unprotected shows serious corrosion



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Corrosion Happens in 2 to 25 Faster in Asia than in the US... so we need to protect



Situation is not Restricted to Asia, But also Middle East, South America, etc.

Field failure

Corrosion Issues made worse in Asia due to high levels of China dust levels



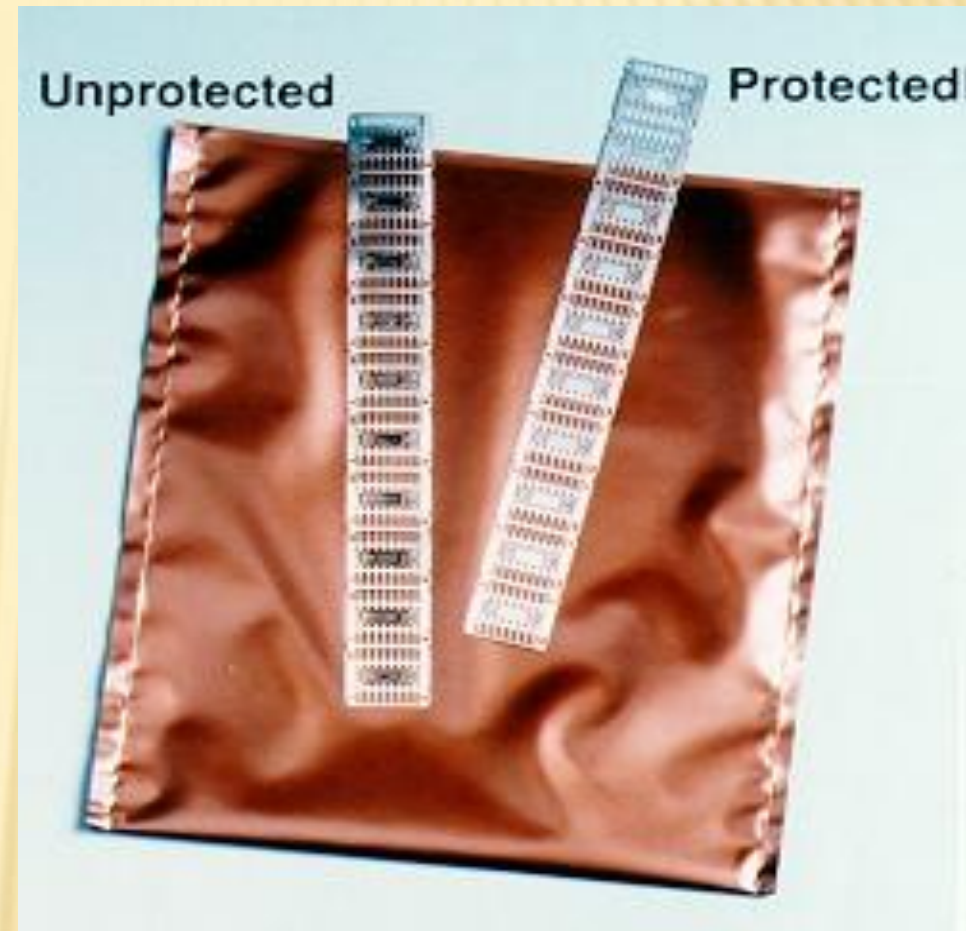
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Silver Frames - Natural Aging



- ✓ Silver lead frame protected for 6 years in 2 mil Intercept Bag
 - No Corrosion
- ✓ Unprotected Silver Lead Frame was in a 3 mil plain plastic bag for 6 months
 - Massive Corrosion



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Copper Bus Bar - Real Time



- ✓ Copper Bus Bars
- ✓ Protected for 7 years in an Intercept Bag
 - No Corrosion
- ✓ Unprotected
 - Massive Corrosion
 - Noticeable Corrosion within days



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Coin Protection



- “Z” shows 10 years exposure to Sulfur in a standard commercially available tri-fold coin book - coins ruined
- The same book lined with Intercept - coins show no Corrosion
- Testing courtesy of Lucent Technologies



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Independent Lab ASTM B117 Testing Results 4 weeks (672 Hours) in Salt Fog Testing

Intercept Technology



VCI Protection



Pink Poly Anti-Static



Aluminized Polyester



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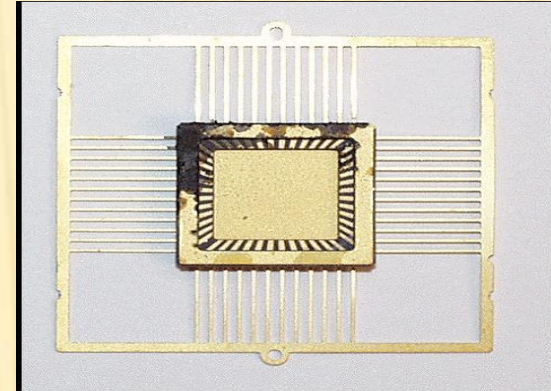


Gold Plate – Under Plate Corrosion

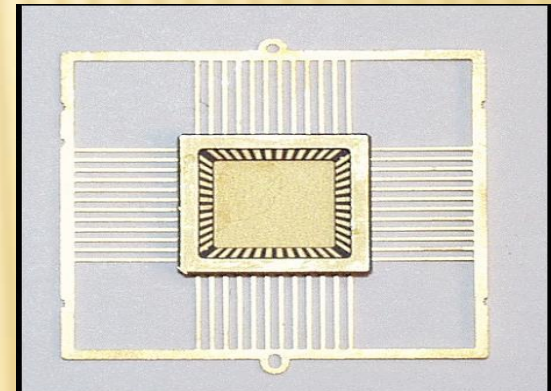


- These identical gold plated lead frames were left in a moderate level sulfur chamber for two months. One was Intercept protected, the other was not (it was stored in a standard ESD bag). This was equivalent to 6 months in China.
- The Result?
The unprotected frame suffered serious undercoat corrosion and cannot be cleaned or rescued. The protected frame suffered no corrosion even though it remained in the chamber long after the unprotected frame failed and was removed

Note: Protected frame was in a 2 mil Static Intercept® bag



Unprotected



Protected



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Wetting Balance (Salt Fog Test)

Intercept vs. Shielding Bags



Test Methods:

Thirty silver plated copper coupons were obtained and sectioned from the support panel which they were attached to. The coupons were identified with a number and examined for scratches or anomalies in the plating surface prior to salt fog exposure (See Figures 1 and 2).

Salt Fog Exposure

Ten coupons were sealed in Brand X static shielding bags and ten sealed in Intercept[®] anti-corrosion ESD bags. An Audion Electro Sealmaster 580-A bag sealer from West Coast Plastic Co was used and it was noted that for Brand X bags setting four gave the best seal while setting six worked best with the Intercept[®] bags. The twenty sealed bags along with five control coupons (unsealed) were interdispersed through out the Harshaw model 300 Salt Fog chamber and exposed to seven consecutive days of salt fog per ACI procedure AP0210-1. At the end of the environmental stressing the bags were opened and the coupons examined visually for qualitative analysis of the corrosion if any present on the coupons (See Figures 3 through 27).



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Salt Fog Test - Intercept vs. Standard Packaging



Its easy to
See that
The solder
Has gaps
And does
Not give
Adequate
Coverage –
This is due
To massive
Tarnish on the
Silver surface

Samples sealed in Brand X bags



Figure 43 Coupon #16.



Figure 44 Coupon #17.



Figure 45 Coupon #18.



Figure 46 Coupon #19.



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Salt Fog Test - Intercept vs. Standard Packaging



The wicking
Of the solder
Was excellent
Forming a
Smooth, solid
Solder joint

Lead-Free solder
Requires a clean
Corrosion free
Surface – which
Is possible with
Intercept bags

Samples sealed in Intercept® bags



Figure 33 Coupon #1.



Figure 34 Coupon #2.

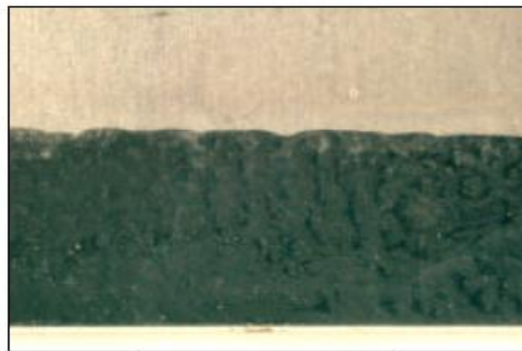


Figure 35 Coupon #3.



Figure 36 Coupon #4.



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SOLUTION - INTERCEPT TECHNOLOGY™



- ✘ The Static Intercept material and process of using Intercept for packaging has been ISO certified.
- ✘ Intercept Packaging provides:
 - + Process Security
 - + Assurance that the product packed within will remain pristine, free of oxidation and corrosion
 - + Assurance that the product packed within will be fully ESD protected
 - + Assurance that the product can be stored safely for 1 day or 10 years per mil in the same package



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Static Intercept[®] (SI)



SI is being used by a number of renowned companies.

The advantages of the material are:

- Environmentally-friendly (no migration of particles and elements)
 - No sloughing (NASA approved for Space Flight)
- High effectiveness (from -35°C to $+80^{\circ}\text{C}$)
 - Humidity independent, permanent ESD protection
- Long durability (> 10 Years corrosion protection per mil of Intercept[™])
- Protects Ferrous & Non-Ferrous metals.
- Universally usable and cost effective
- Safe for all Gemstones-non-abrasive



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Product Variety



Intercept Coated Fabric
Stretch and Shrink Film
Bags (With and without closing)
Flat-Film
MVTR- and EMI-Film
Injection Molded Products
Intercept Coated Boxes
CD-Protection
Nylon-Bags



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Intercept – Proven Technology:



Commercial Users of Intercept

- Alcatel Lucent
- Analogic
- Boeing
- Corus Steel
- D'Addario
- Guggenheim Museum
- HSN
- ITT Aerospace
- Lockheed
- NASA
- PAJ
- QVC
- Siemens
- U.S. Military



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Value Proposition:



- **Create immediate brand differentiation due to corrosion prevention and mold & mildew protection**
- **Demonstrate technical innovation in a product line over competition**
- **Attract, migrate & retain clients looking for these product qualities**
- **Sell at higher profit margin due to intrinsic qualities of product and perceived value**



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Potential Product Examples:



+ Intercept =

- Creates brand differentiation
 ∅ Corrosion/Tarnish
- Creates innovative product and sales differentiation
- Can be sold at higher profit margin



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Conclusion:



Use of the Intercept Technology™ Products will help prevent corrosion, tarnish and oxidation extending the life of your products.

Intercept Technology™ – Simply Better Protection



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