

CHUCK'S NOTES on

PRICELESS

ARMOR VCI
NANOTECHNOLOGY®



TOOLING & MACHINERY

COMPLETE METALWORKING SOLUTIONS

(800) 991-4225

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TAKING THE WORK OUT OF YOUR WORKDAY™

6 REASONS

You've got metal parts and you'd like to protect them from rust.

So, you are in the process of looking for a company with the best methods and products to solve your rust issues? If that is the case, we have provided 6 highly compelling reasons why ARMOR is the answer.

Don't get us wrong - if you are a touchy feely kind of guy or gal we have other collateral material full of pretty pictures and long words. But if you are the black & white - "show me the money" person, then this booklet is your ticket to answerville. And since our motto is Taking the Work Out of Your Workday, we have provided a Chuck's Notes version to help cut straight to the chase.

- 1. WHO RELIES ON ARMOR**
- 2. ARMOR TAKES ON THE WORLD**
- 3. U.S. TEST RESULTS**
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- 5. MSU TEST RESULTS**
- 6. NOTHING BEATS TESTIMONIALS**



**DID YA
KNOW**

ARMOR VCI Nanotechnology® not only achieves outstanding results in controlled lab tests, as shown in this brochure, but is also engineered for real-world conditions to provide the best overall protection!

1. WHO RELIES ON ARMOR

Armor Protective Packaging® offers rust prevention and rust removal products that are clean, safe, easy, and that protect metals while in-process, in transport, or in storage. ARMOR combines its VCI (vapor corrosion inhibitor) Nanotechnology® with packaging materials such as paper and poly film to create products that displace moisture on metal and guard against rust. ARMOR also offers desiccants, emitters, foam pads, and its Metal Rescue® Rust Remover BATH and Dry Coat™ Rust Preventative. For more than 45 years, ARMOR has worked with customers from around the globe to provide rust prevention and rust removal solutions and to Take the Work Out of Your Workday!



2. ARMOR TAKES ON THE WORLD

ARMOR continuously benchmarks our products against the top tier competitors from around the globe.

TEST OBJECTIVE

Compare the corrosion inhibiting performance of an ARMOR POLY® VCI 4 mil sample and an ARMOR DEFENDER™ 3 mil sample with 4 mil film samples from three major U.S. competitors using test method LTM-001-02.

TEST PROCEDURES

Test performed in a HARSHAW humidity cabinet which provides an environment that promotes/accelerates the corrosion process. Five test pieces each were exposed to this harsh environment. One test piece for each sample was stopped at 4 days, one at 7 days, one at 9 days and one at 11 days. The temperature inside the humidity chamber was 98°F - 105°F, while the tower water was at 120°F, maintaining a relative humidity of 95 - 99%.

SAMPLES TEST Project #112524 Control: Non-VCI 4 mil film bag	RESULTS GRADES (DAYS)			
	4	7	9	11
	GRADE E	GRADE E	GRADE E	GRADE E
ARMOR POLY®	GRADE A	GRADE B	GRADE B	GRADE C
ARMOR DEFENDER®	GRADE A	GRADE B	GRADE B	GRADE C
Competitor Z	GRADE C	GRADE E	GRADE E	GRADE E
Competitor C	GRADE B	GRADE B	GRADE E	GRADE E
Competitor D	GRADE B	GRADE B	GRADE C	GRADE E

DAYS	CONTROL	ARMOR POLY	ARMOR DEFENDER	COMP Z	COMP C	COMP D
4						
7						
9						
11						

TEST CONCLUSIONS

Project #112524

Test results show that ARMOR POLY® and ARMOR's DEFENDER™ are the best-performing, longest-lasting VCI technologies of the five products tested.

DEFENDER FILM WINTER COAT ANALOGY



BEFORE

People wore thick, heavy animal skins to stay warm and dry. This worked, but it was incredibly bulky and cumbersome.

1-LAYER VCI FILM

THICK & BULKY

- Thicker barrier
- 70% of VCI is unused
- Bulky film wastes material



TODAY

People wear jackets with layers of Gore-Tex™ and Thinsulate.™ They have a thinner profile yet provide superior warmth.

3-LAYER DEFENDER VCI FILM

THIN & SMARTER

- Thinner, smarter barrier
- VCI where needed most
- 25% less film, superior protection

DR. DRY

DO YOU HAVE QUESTIONS? YES? GOOD!
PLEASE EMAIL US: INFO@ARMORVCI.COM
BECAUSE IT FEELS LIKE WE HAVE BARELY
SCRATCHED THE SURFACE OF VCI.

QUEEN OF CORROSION

WHAT'S THE DEALIO?:

That's easy! The alternatives are messy and hazardous. Greases and oils are difficult to remove and are terrible for the environment. ARMOR VCIs are a long-lasting, clean, safe and easy-to-use method for fighting rust.

PERIODIC TABLE OF ELEMENTS
TABLEAU PERIODIQUE DES ELEMENTS

GRAND MASTER OF FLASH RUST

WHAT DOES VCI STAND FOR?

Vapor Corrosion Inhibitor. Yeah, that's a heck of a mouthful, but in a nutshell, VCI is the secret sauce we infuse into all of our products to fight against rust.

HOW DOES VCI WORK?

VCI is an inhibitor used to protect metal parts from rust. Once a part is covered or wrapped in an ARMOR VCI product, specialty corrosion inhibitors slowly release within the enclosed airspace and form a nano-barrier around the metal part. Think of it as a really tiny, but powerful, force field straight outta Star Trek. #longlivespock. A typical application would be protecting metal parts inside of bags or boxes in storage or transit.

**DID YA
KNOW**

*Two out of three
of our chemists
have served as the
Chairman of the
NACE (now known
as AMPP) Specialty
Technology –
Group for VCI.*

3. U.S. TEST

Don't take our word for it - here are results from a top U.S. accredited testing lab.

OBJECTIVE

The purpose of this test was to examine the corrosion inhibiting ability of ARMOR, Comp Z, Comp C, and Comp D 4 mil poly bags.

PROCEDURES

Testing was conducted in a heat and humidity cabinet where the humidity was maintained at 95 to 99° RH and the temperature was maintained at 98 to 105° F. All samples were hung from rods and distributed so that no bag touched an adjacent bag. Grades were assessed after a period of 166 hours.

MATERIALS

Three 1 1/2" diameter, 1/4" thick steel disks for each poly bag type were inserted into the bags and double sealed.

SAMPLE	GRADE	SAMPLE	GRADE	SAMPLE	GRADE
Control	E	ARMOR	B	Comp Z	E
Control	E	ARMOR	B	Comp Z	E
Control	E	ARMOR	B	Comp Z	E

SAMPLE	GRADE	SAMPLE	GRADE
Comp C	E	Comp D	C
Comp C	E	Comp D	C
Comp C	E	Comp D	C



RTI LABORATORIES, INC.

Environmental, Chemical & Materials Testing

EVALUATION KEY

Samples are evaluated by the present corrosion and assigned one of the following grades.

Grade A: No visible corrosion

Grade B: Very slight corrosion covering less than 5% of surface

Grade C: Slight corrosion covering 5-10% of surface

Grade D: Moderate corrosion covering 10-25% of surface

Grade E: Heavy corrosion covering more than 25% of surface

CONCLUSIONS

Test results show after a 166 hour exposure that ARMOR 4 mil poly bags provided good corrosion protection. Comp D 4 mil poly bag had more corrosion than the ARMOR bags. The Comp Z and Comp C 4 mil poly bag provided little corrosion protection with nearly 100% surface rust.

Outside labs confirm ARMOR VCI Nanotechnology® provides the longest protection.

4. GERMAN TESTS

Don't take our word for it - here are the results from top German accredited testing labs.

CONTENT OF THE ORDER

The VCI products were tested in accordance with: TL 8135-0043, Anticorrosive films, "Edition 3, September 2002, Appendix A Testing corrosion protection effect of VCI-packaging accessories. Also with the Distance Test, Flask Test under the Volkswagen Group Standard VW 50164 issue 2013-06.

TEST SAMPLES: VCI Products

ARMOR POLY® VCI film

ARMOR WRAP® VCI 30G paper

TEST RESULTS: TL 8135-0043

ARMOR PROTECTIVE PACKAGING	Protected VCI samples
ARMOR POLY® VCI film	
Corrosion Protection	GRADE 3
ARMOR WRAP® VCI 30G paper	
Corrosion Protection	GRADE 3



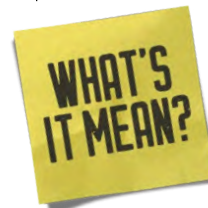
CORROSION PROTECTION GRADE KEY

Grade 0: None

Grade 1: Slight

Grade 2: Middle

Grade 3: Good



ARMOR's excellent "vapor" inhibitor ability is verified by top German labs.



5. UNIVERSITY TEST

We still wanted more - we asked a college professor!

PROCEDURES

According to NACE Standard TM0208-2013 > Test Method Inhibiting Ability (VIA) of Volatile Corrosion Inhibiting Materials

MATERIALS

The test was performed using 4 mil mono films; with 3 test pieces to show reproducibility and 1 control.

1. Control non VCI Poly Film
2. ARMOR POLY® VCI Film
3. Competitor Z Poly Film
4. Competitor C Poly Film
5. Competitor D Poly Film

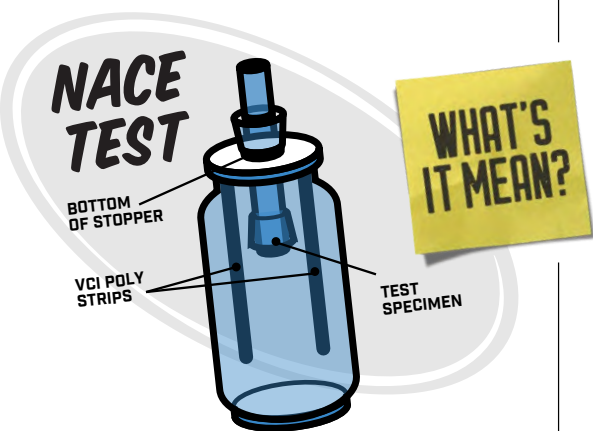
SAMPLE	GRADE
Control	0
Control	0
Control	0

SAMPLE	GRADE
ARMOR	3
ARMOR	3
ARMOR	3

SAMPLE	GRADE
Comp Z	3
Comp Z	3
Comp Z	3

SAMPLE	GRADE
Comp C	3
Comp C	3
Comp C	3

SAMPLE	GRADE
Comp D	3
Comp D	3
Comp D	3



EVALUATION KEY

Samples are evaluated by the present corrosion and assigned one of the following grades.

Grade 3: No corrosion on test piece - excellent corrosion protective effect

Grade 2: No more than 3 corrosion spots, the largest being less than 1 mm in diameter - moderate corrosion protective effect

Grade 1: More than 3 corrosion spots greater than 1mm in diameter covering 1-10% of surface - slight corrosion protective effect

Grade 0: Heavy corrosion - no corrosion protective effect

CONCLUSIONS

The NACE test focuses solely on assessing vapor inhibitor ability (VIA). While it's a great tool for comparing short-term vapor performance among competitors, it doesn't quite capture the full picture when it comes to longevity, including both vapor and contact inhibition, as well as the overall performance of barrier film technologies!

6. NOTHING BEATS TESTIMONIALS

Nothing inspires us more than when we read the glowing testimonials that confirm that we really are Taking the Work Out of Your Workday!

We would like to thank ARMOR for your valuable support in assisting General Motors by implementing a superior rust prevention solution for export shipments to Brazil. Our facility relies on your judgement and guidance to decrease our scrap costs due to corrosion and for all matters regarding successful shipments of our engines. ARMOR Protective Packaging products have proven extremely reliable in preventing corrosion on engines that are manufactured in our facility for export shipments.

Operations Material Handling Engineer, GM Spring Hill, TN

It has been over 10 years that the Borg Warner Powdered Metals plant has been exclusively using this VCI paper from ARMOR with outstanding results in preventing our products from rusting. Whenever we are asked for a recommendation of VCI packaging materials, we never hesitate to suggest the ARMOR brand to anyone.

Engineering Manager, Borg Warner Powdered Metals

Volvo has been using Metal Rescue Rust Remover Bath to de-rust Volvo parts and equipment for several years, saving Volvo thousands of dollars in scrap costs, replacement and administrative costs associated with returns and rejects. We recommend ARMOR products, including Metal Rescue, to all of our Volvo suppliers and our counterparts.

Packaging Engineer, Volvo

WHO IS CHUCK?

Chuck is our resident chemist and OG Grand Master of Flash Rust. If you want to nerd out on corrosion he would be way, way, way too excited to hear from you. Chuck is a "test the humidity in the Tupperware in his lunch box" kinda guy. He lives and breathes rust. In fact, if you have any question about rust he can't answer, call Guinness because you would be the first to stump Sir-Rust-A-Lot.

- Chuck





ERADICATORS OF RUST

TAKING THE WORK OUT OF YOUR WORKDAY™

HEADQUARTERS

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THANK YOU FOR READING AND
SHARING WITH THOSE THAT
READ INSTRUCTION MANUALS
FOR FUN. WE HOPE IT WAS
INFORMATIVE ENOUGH FOR
YOU. IF IT WASN'T AS DEEP
AS YOU LIKE TO GO, WE HAVE
PEOPLE IN OUR LAB THAT
HAVE BEEN WAITING FOR A
CALL FROM SOMEONE LIKE
YOU THEIR ENTIRE CAREER.
CALL, TALK SHOP AND MAKE
THEIR DAY. 517-546-1117



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