Manufacturer's Recommendations

Carwell Rust Inhibitor – T32
Corrosion Preventative Compound

The U.S. ARMY has proven Carwell T-32 (CP-90, Rust Cop) slows or virtually stops corrosion[i]

WHY CARWELL: There is no substitute for good manufacturing design and good exterior coatings to control corrosion. In many cases manufacturers are doing better on vehicle design than ever before. The use of galvanizing, E-coats and various paints and primers are adding to the longevity. The one thing that manufacturers cannot control is the environment. Regular applications of **T-32** helps in this area by extending your equipment's material service life and ensuring proper operational capability and functional utility.

Many of the alternatives for corrosion protection are one-time coatings of various sealers, wax/tar types usually mixed with solvents to make them viscous for application. Although these processes serve some benefit, they also are limited and in later years actually promoted further corrosion. It is well documented in reports written by NACE [ii].

HOW IT WORKS: Carwell Rust Inhibitor **T-32** is a unique, clear liquid blend of rust inhibitors to control corrosion on all metals. It eliminates moisture containing salt, dirt, and air pollutants from the surface of metal to give long lasting protection. It also lubricates moving parts and is an excellent penetrant even through existing rust. **T-32** safely addresses many more areas of vehicles and equipment than any other rust protection product in the market today and gives unequalled corrosion protection for pre-exposed metals. Carwell will lift the moisture and set up a molecular film. This active barrier repels further salt and moisture from coming in contact with the metal. Because it is an active product, moving and creeping it also self-heals, providing that the manufacturer's recommended application schedule is maintained. **T-32** has been used successfully for over twenty-five years is currently serving many military and commercial fleets including the U.S. Army, U.S. Marine Corps, U.S. Postal Service, FedEx, UPS, Town Highway Departments, and NY Schools.

WHERE IT WORKS: Carwell Rust Inhibitor **T-32** or **CP-90** is a recommended and approved Corrosion Preventative Compound (CPC) for use on vehicles and equipment. **T-32** in addition to its conventional areas of benefits (seams, joints, dissimilar metals, internal cavities, flash rust control) can be used on vehicles and equipment for line of sight applications for ocean transportation, long-term storage or any other scenario where military equipment is exposed to highly corrosive areas. It is not necessary to apply Carwell to the rubber, fiberglass or Kevlar composites.

Dissimilar Metals - This is an area that always poses problems where electrolysis will occur. **T-32** penetrates and sets up an interstitial film between the metals, retarding the electrolysis process.

Electrical - Corrosion of wiring and connections, usually known as *greening*, can cause serious breakdowns especially with road salts and the increased use of liquid calcium chloride (brine). **T-32's** voltage drop is less than $1/100^{th}$. It is also 100% non-conductive and with its ability to remove and repel moisture **T-32** reduces breakdowns and replaces the use of *di-electric grease* for batteries, fuse boxes and wiring during the Periodic Maintenance schedule. (REFERENCE: Roberts Testing, Buffalo Testing Lab reports.)

Existing Corrosion - **T-32** cannot remove existing corrosion but will control existing corrosion provided there is a serviceable metal base and the chronic corrosion has not gone too far.

Lubrication – This added benefit ensures hinges, brackets, working mechanisms, door rollers, hood springs, nuts and bolts all continue to function properly year-to-year by providing regular application during Periodic Maintenance.

TESTING SPECIFICATION FOR APPROVAL: **T-32** has been thoroughly tested by third party independent testing and excelled in tests conducted on behalf of the military– US Army Tank Automotive Command (TACOM) **Minimum requirements for Approval for use**:

- Accelerated Laboratory Test – Dayton T. Brown (GM 9470P) – Method B – 80 Cycles
- Stationery Test (3years) on vehicle doors conducted at Cape Canaveral
- Field Test conducted in Hawaii (1) year

There are numerous other Tests conducted by the military which have the **T-32** listed as approved for use and the results are available on request.

Product Testing - over the years the military has conducted a number of tests on Corrosion Prevention Compounds (CPC) that are commercially available at the time of the testing. Carwell **T-32/CP 90** have been tested and excelled frequently and been approved for use by the military. One example is: Marine Corps - Testing CPC for Occluded Sites – 2007. Carwell **T-32/CP 90** was the top performer in controlling corrosion on pre- corroded steel lap joints and crevices. Other products tested were Fluid Film, Zero Rust, Rust Block, LP2 and others. The study was conducted by Southwest Research Institute.

ARL Testing – CARC Paint Compatibility -It is the finding of the U.S. Army Research Laboratory (ARL) that the Carwell **CP-90/T-32** corrosion inhibiting spray exhibits no deleterious effects on the Chemical Agent Resistant Coating (CARC) system based on strict adherence to Manufacture's application procedures and satisfactory completion of the following tests:

a) ASTM B117 – salt fog (modified) 500 Hours
b) GM 9540P – cyclic corrosion test (modified) 25 Cycles
c) ATC test track – pre-exposure to live agent
d) Live agent testing (per CARC specs)
e) ASTM G53-Flourescent UV Condensation (QUV)
f) ASTM D3359A – Wet adhesion
g) ASTM D3359B – Dry Adhesion
h) ASTM D4541 – Pull-off adhesion - HATE
I) ASTM D522 – Mandrel bend - adhesion
j) IR – per CARC specifications
k) Gloss – per CARC specifications
l) ASTM D3363 – Pencil test (film hardness)
m) DS2 - resistance

The ARL observations were that **T-32** did not soften the CARC system. Those IR specifications were met following proper curing and washing and CARC retained its resistance to DS2.

WHEN TO APPLY: - Carwell should be applied to vehicles as follows: Apply liberally to areas prone to corrosion, rusty areas or seized parts. Allow time to penetrate on seized parts. Reapply as needed to maintain the level of protection and lubrication desired. **T-32** will not harm rubber, painted surfaces, plastics, or glass.

Do not allow product to puddle or buildup on weather stripping, rubber gaskets or liners. Protect with silicone spray. Do not apply to recently painted areas for at least 48 hours after paint has properly dried and cured. Do not apply directly to parts that are glued together like side moldings as the product may break down the glue. Wipe excess away with a clean rag.

Application Methods – For applications other than through the use of the aerosol can or pump-spray bottle, **T-32** needs to be sprayed at 40 - 110 psi (temperature affects viscosity) to achieve an even, glistening pattern. For "do-it-yourselfers" we offer a 1-quart, 5-gallon pressurized pot system, and a 55 gallon drum system that can be used for application. For hand tools, the product can be wiped on with a clean, soaked rag. A manual pump sprayer should not be used as it cannot maintain the correct application pressure.

WHEN TO APPLY: - Carwell should be reapplied as follows:

a) Every six (6) to nine (9) months – in corrosion prone environments such as coastal or heavy industrial areas
b) Yearly – in the *Rust Belt* (Northeast United States) or Northwest
c) Every two to three years – West & South
d) As required to corroded vehicles, which need to control corrosion
e) Immediately after exposure to extreme environmental factors such as salt water wash, acid bath, sandstorm, etc.

WHAT ELSE SHOULD YOU KNOW:

Safety -The product is safe and non-toxic, contains no silicones, no Teflon, no solvents, no CFC's, non-flammable and no hazardous Materials as defined by OSHA Regulation 29CFR-19-10.1200. **T-32** does not harm painted surfaces (including CARC paint), plastics, rubber or glass. Please refer to the MSDS (Material safety data sheet) for further information. Carwell **T-32/CP90** has been given a Toxicological Clearance by the SURGEON GENERAL.

Removal and recommended Wash procedures - For best results, after the **T-32** is applied, the vehicle should be allowed to cure for a minimum period of 48 hours and then any excess product can be washed off. Should removal be required for painting or servicing, consider the following:

a) Use an environmentally approved biodegradable mild degreaser.
b) Use water temperatures between 100º- 200º F.
c) Use pressure washer capable of 2000 psi. (caution must be used to prevent coating/paint removal)
d) Pressure washer tip should be kept 18 inches away from surface.

Follow the manufacturer's directions on the label of the mild degreaser for the proper concentration, agitation and rinse procedures.

Surface Repainting - To repaint an exterior surface after **T-32** has been applied, clean the surface with a preparation solvent as usual. Prime within 1 to 2 hours before **T-32** is allowed to creep and return, then top-coat as per paint manufacturer's directions. After topcoat has been allowed to properly cure, reapply **T-32**.

Suits Your Needs – Application and use of **T-32** is flexible and can be easily incorporated into your maintenance program at your operation regardless of fleet size, facility size, or location including field installations without excessive start-up costs. On-site service can also be provided by Carwell's mobile units in certain areas.

GSA National Stock Numbers

NSN 8030-01-414-7423 case 12- 16oz bottles NSN 8030-01-414-8947 pail 5 gallon
NSN 8030-01-414-7430 drum 55 gallons

[i] Field Fleet Corrosion Control Program – US Army Tank Automotive Command (TACOM) issued by MMI – 22 July 1997
Impact of Corrosion Inhibitor on CARC – US Army Research Laboratory - September 2000
US Naval Surface Warfare Center (NSWC) - Accelerated Corrosion Test Comparisons - January 1999
CPAC R&D Effort – Southwest Research Institute – July 17-18, 2007

[ii] Society of North American Corrosion Engineers