



**CORTEC**  
CORPORATION

Environmentally Safe VpCI®/MCI® Technologies

# VpCI®-609/609 S Biodegradable Powders

## Corrosion Inhibiting Powder for Ferrous Metals, Patent Pending

### DESCRIPTION

VpCI®-609 is a water-soluble Vapor phase Corrosion Inhibitor (VpCI®) powder for wet or dry corrosion protection of ferrous metals and aluminum. VpCI®-609 is also available as VpCI®-609 S (with silica) and VpCI®-609 W (ready-to-use liquid version).

UFI: 3U20-J0EA-E002-G43C

### PACKAGING & STORAGE

VpCI®-609/609 S powders are available in 5 pound (2.3 kg), 50 pound (23 kg), and 100 pound (45 kg) moisture barrier bags packed in fiber-lined drums. Also available in pouches such as EcoPouch®.

VpCI®-609 W is available in 5 gallon (19 L) pails, 55 gallon (208 L) drums, liquid totes, and bulk.

To ensure best product performance, store in original packaging, indoors, and out of direct sunlight at 40-100 °F (4-38 °C).

Shelf life: 2 years

### CORROSION INHIBITING VpCI® POWDER



### FEATURES

- VpCI®-609 is accepted by Cefas as an offshore chemical. Registered under OCNS number 25717 allowing use at 5,000 ppm
- Protects in liquid phase, vapor phase, and at the air-water interface
- Creates a molecular corrosion inhibiting layer on metal surface
- Provides up to 24 months of continuous protection
- Does not contain nitrites, phosphates, or heavy metals
- Passes Vapor Inhibiting Ability Test (NACE Standard TM0208-2008) before and after Exhaustion Test (MIL-STD-3010C)

### ADVANTAGES

- Vapor-phase inhibiting action protects inaccessible and recessed surfaces
- If the VpCI® layer is disturbed by moisture or the opening of an enclosed space, the layer is replenished by continuous vapor redeposition
- Prevents future corrosion of pre-coated and painted surfaces
- VpCI® layer typically does not need to be removed prior to processing or use
- If required, powder is easily removed by air gun or water flush
- Does not increase alkalinity
- Provides economical protection for very large applications
- Available in ready-to-use liquid form for convenience in hydrostatic testing and preservation applications
- Offers the best ecological footprint in comparison with competitive VCI powders
- One of the most powerful, fast-acting water-soluble Vapor phase Corrosion Inhibiting molecules used worldwide for corrosion remediation and control

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## VpCI®-609 TOXICOLOGICAL TESTING RESULTS (Performed by Nortech A.S. [Norway])\*

- Biodegradability: 100% biodegradable in marine environment, rapidly degradable substance (OECD\*\* 306, BOD 28 Marine Test)
- Toxicity: very low (LD-50 = 5,000 mg oral-rat)
- Bioaccumulation potential: none (OECD Guideline 117)

**\*Testing performed in accordance with Oslo-Paris commission protocol**

**\*\*Organization for Economic Co-Operation and Development**

## TYPICAL USES

- Tubular structures, pipes, and vessels
- Voids, cavities, and tanks
- Internal surfaces of compressors, turbines, engines, tanks, boilers, heat exchangers
- Steam condensate lines, closed circuit heating, and cooling systems
- Equipment during and after hydrostatic testing
- Parts, components, and completed assemblies during shipping and storage
- Additive to shot-blasting media, wet blasting
- Additive to standing water

## PHYSICAL PROPERTIES

VpCI®-609	
Appearance	Off-White Crystalline Powder
pH	6-7 (1% in water)
Solubility in Water	15%
Bulk Density	38-39 lb/ft <sup>3</sup> (0.61-0.63 kg/L)
VpCI®-609 S	
Appearance	White to Off-White Powder
pH	5.9-6.9 (1% in water)
Bulk Density	37-38 lb/ft <sup>3</sup> (0.59-0.61 kg/L)
VpCI®-609 W	
Appearance	Colorless Liquid
pH	8.0-8.5
Weight per Gallon	8.5-8.6 lbs (1.02-1.03 kg/L)

## METALS PROTECTED

- Carbon steel
- Stainless steel
- Aluminum
- Other ferrous metals

## METHOD OF APPLICATION

Apply VpCI®-609 in dry form by dusting, fogging, or sprinkling. (Fogging is easily achieved by using a low pressure air hose and sandblast cup. Large conventional sandblasting systems can also be used). For wet applications using VpCI®-609/609 S Powder, pre-mix with water to dissolve the powder prior to application. For VpCI®-609 W, dilute to recommended concentration and mix well prior to application. Apply VpCI®-609 in aqueous form by spray, flush, or immersion. After application simply cover and close or seal the interior cavity or void.

## DOSAGE

Product	Dosage*
VpCI®-609/609 S	0.3-0.5 oz/ft <sup>3</sup> (300-500 g/m <sup>3</sup> )
VpCI®-609 W	4-8% (when hydrotesting)

**\*These are general dosing guidelines and may not be suitable for every application. Please contact Cortec® Technical Service for specific dosing information.**

## METHOD OF REMOVAL

When required, VpCI®-609/609 S in powder form can be easily removed by using a low pressure air gun or a water rinse. Typically, if applied in aqueous form, the product does not require removal. If necessary, a simple water rinse or flush will suffice.

## LIMITATIONS

- Do not use on copper, copper-based alloys, and other soft yellow metals. Compatibility with non-metallics should be evaluated.
- Caking of powder may occur when it is exposed to moisture and then dried. The likelihood of this is increased when powder is exposed to high heat and multiple wet/dry cycles. To avoid caking of powder do not over apply or unevenly disperse the dry powder. In aqueous applications make sure powder has been totally dissolved before using. Over extended periods of protection, this caking may require a more involved cleaning procedure. Contact Cortec® Technical Service for further details.
- Powder is not soluble in hydrocarbon fluids. Rinse powder from vessels before adding hydrocarbon fluid.
- Powder should be removed from the area on each side of weld before welding or other high temperature processing.

**Note:** Regular VpCI®-609 has a tendency to clump. For dry fogging application use VpCI®-609 S (with silica) where acceptable.

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## STANDARD TEST METHODS

NACE Standard TM0208-2008	Vapor Inhibiting Ability
OECD 306, BOD-28	Marine Biodegradability Test
EPA/600/4-90/027F	Sea Water Toxicity Test
MIL-I-22110C	Vapor Inhibiting Ability

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