

# Usage Guide

Material Name: Copaltite

High Pressure and High Temperature Sealing Compound

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## Product Information

**Copaltite Liquid** is used for threaded connections and machined surfaces. It is a smooth paste that is easily spreadable. Although normally used without gaskets, Copaltite Liquid makes an excellent gasket dressing. The Liquid form is available in a 1 quart can or a 5 ounce tube.

**Copaltite Cement** is for rough surfaces, warped flanges or unfinished parts. It is a thick paste with a coarse texture which allows for it to fill gaps in scored, uneven surfaces. Copaltite Cement is also used as a gun grooving compound. The Cement form is available in a 1 quart can or a 5 ounce tube.

### **Used successfully on:**

- Steam joints at 2,000 psi and 1200° F
- Flanges without gaskets up to 6,500 psi
- Threaded joints at 10,000 psi

### **Applications:**

- Steam turbines
- Heat exchangers
- Pressure vessels
- Boilers
- Compressors
- Condensers
- Pressure gas lines
- Refrigeration lines
- Hydraulic systems

The United States Government, along with many industries world wide, has proven Copaltite an unequalled sealing agent. Wherever a packing is required against pressure, heat, cold, gases, acids, Freon, oil, benzene or gasoline, Copaltite is the premier product on the market. Under the most exacting conditions, Copaltite out performs any other product. It adheres readily to surfaces and its elasticity guarantees a perfect seal against vibration, expansion and contraction leaks. For sealing threads, flanges and other fittings exposed to high temperature and pressure, Copaltite is unexcelled.

- Effective in temperature range from -315° F to 1500° F.
- Cures quickly when heat of at least 300° F is applied.
- Possesses Anti-seize properties for very high temperature applications
- Low shrinkage and coefficient of expansion.
- Easy separation of joints after extended use at extremely high temperature and/or pressure.
- Resists most chemicals. Copaltite is used on lines containing steam, ammonia, hydrocarbons, refrigerants, hydraulic fluids, propane, brine, acids, and mild alkalis.
- Adheres to metals, ceramics, rubber and most plastics.
- Withstands severe vibrations and thermal shock.
- Completely meets Navy test requirements for use on marine turbines at 1200 PSI and 950° F (MIL-S-15204D).
- Copaltite sealants consistently out perform other high pressure and high temperature pipe dopes.

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## General Directions for Use

- A thin coat of Copaltite should be applied both surfaces to be sealed. The surfaces should be clean and dry. All dirt, oil, grease or moisture should be removed with gasoline or other solvent before applying Copaltite, as it has no affinity for foreign matter and must secure a direct bond to the metal surface.
- Heat of at least 212°F must be applied to set Copaltite. At any temperature below 212°F, the set up time is too long to be practical. At 300°F, set up time is approximately 30 minutes. Set up time is up to 4 hours for temperatures below 300°F.
- If a joint is to hold high pressure at an elevated temperature, heat should be applied without pressure until the Copaltite has set.
- If using Copaltite for a steam application, apply it to the joint, tighten and heat the joint by turning on the steam at little or no pressure for about six hours, preferably overnight. The Copaltite seal joint will then withstand high temperatures and pressures.
- If Copaltite has hardened, a wire brush and alcohol may be used to remove the product.
- If Copaltite needs to be thinned, Copaltite liquid can be used to thin Copaltite Cement. To thin Copaltite liquid, pure alcohol can be used.
- Copaltite should be stored in a cool, dry place. The shelf life is one year from date of manufacture when stored at 72°F.

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## Frequently Asked Questions

### ***How thick should Copaltite be applied when used as a gasket coating?***

A thin film of Copaltite should be applied when used as a gasket coating. The Copaltite should be applied to both surfaces of the gasket and allowed to become quite tacky before tightening down the surfaces.

### ***How thick should Copaltite be applied without a gasket?***

Copaltite should always be used sparingly. Only a sufficient amount to cover the flange or surface is necessary. Excess material will be forced out when the head is tightened down or the surfaces brought together.

### ***Should the joint be made up tightly while the material is still moist or should it be permitted to dry?***

The joint should not be tightened down immediately. Sufficient time should be given for the thinner content to evaporate. This will not only insure a better joint but will keep the Copaltite from being forced out when the joint is tightened.

### ***If Copaltite is used on flanges, should both faces be coated?***

Yes, both faces of the flange should receive a very thin coat of Copaltite.

### ***Will Copaltite freeze a joint after being in service for a long period of time?***

No, Copaltite will remain plastic indefinitely, and all joints are easily broken with alcohol and a wire brush.

### ***Will a wide range of temperature cause Copaltite to become hard and brittle?***

Copaltite will remain plastic under any conditions with temperatures varying from -315°F to 1500°F.

### ***When storing Copaltite, should any special precautions be taken?***

It is important to store in a cool place away from heat or sunlight. In the event that a can is opened repeatedly and a small is used, it is advisable to keep a thin film of methanol (pure alcohol) on top. This will prevent Copaltite from drying out when coming in contact with the atmosphere.

### ***How should the surface be prepared for Copaltite application?***

All dirt, oil, grease or moisture should be carefully removed with gasoline before applying Copaltite, as it has no affinity for foreign matter and must secure a direct bond to the metal surface.

### ***Will extreme vibration, contraction or expansion impair the security of the joint?***

No, the plastic quality of Copaltite prevents any cracking or breaking due to extreme vibration, contraction or expansion.

### ***In the event that it is necessary to thin Copaltite, what should be used?***

For thinning Copaltite cement, Copaltite liquid should be used without exception. To thin Copaltite liquid, pure methanol should be used. In no case should turpentine or other thinner be used.

### ***How should heat be applied?***

Externally applied heat can be accomplished with a heat gun, infrared lights, or an oven for small parts. Care should be taken if an open flame such as a torch is used because Copaltite is flammable. If the metal is heated at a remote distance from the Copaltite joint, the metal can be made to conduct heat to the joint and affect a cure.

### ***Are there any special instructions for using Copaltite on large diameter flanges?***

Cover both faces with Copaltite cement of minimum thickness, after which bring the faces into contact but do not tighten the joint for approximately one hour. Additional security may be obtained by slotting both inside flange faces – the slot to be staggered.

### ***How do I know how much Copaltite I need for my application?***

1 quart of Copaltite covers 3,091 square inches. 1 tube of Copaltite covers 88 square inches. 10 quarts covers exactly 20 square meters.

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## Instructions for sealing turbine horizontal joints

After casing has been lifted, clean upper and lower flange surface of all foreign matter. Be sure surface area is clear, dry, and free of any oil. Use gasoline or any solvent to clean off surface. Wipe clean and dry.

### 1. Grooved turbines with smooth surface flanges

Apply thin film of liquid Copaltite to upper and lower flange surfaces, but not in groove. Allow to become tacky then lower casing and bolt down. This will make an actual tight joint without considering grooves.

While turbine is being warmed up before being placed in operation, and while turbine is hot, a pressure gun capable of developing at least 4000 psi should be used for dispensing Copaltite cement into the grooves. Filling the grooves should be done around the entire turbine in order to secure a uniform and permanent joint. This forms a Copaltite cement key.

When dispensing Copaltite cement into any one groove outlet, remove the nest plug (which we will call No. 1) in the direction the groove is being pumped. When the Copaltite begins to flow from No. 1 opening, close same and also remove gun and close opening. Start pumping into the next opening (which we will call No. 2), at the same time removing plug from No. 3 opening. Continue until all plugged openings have been pumped.

### 2. Grooved turbines with scored surface flanges

In the event the flange surfaces are scored, then substitute Copaltite cement in the place of Copaltite liquid for making flange joint. Use Copaltite cement for pumping groove.