

## A “How-to” Guide to the Use of ACTIV-8<sup>®</sup> Drier, Stabilizer and Accelerator

An easy to follow, step-by-step guide to the use of  
**ACTIV-8** and metallic driers

**ACTIV-8<sup>®</sup>** Drier, Stabilizer and Accelerator is a 38% solution of 1,10-Phenanthroline, a chelating agent. When used with cobalt or manganese driers, **ACTIV-8** accelerates and stabilizes the drying rates of solvent-borne and waterborne coatings that cure by oxidative polymerization.

To determine the optimum amount of driers and **ACTIV-8**, surface dry, through dry, and hard dry must be balanced. This can be achieved by a mixture of cobalt and/or manganese plus **ACTIV-8**. The amount of **ACTIV-8** required is based *only* on the amounts of cobalt and/or manganese metal. The auxiliary driers are not affected by **ACTIV-8**. A general rule is that manganese/**ACTIV-8** provides the best surface dry while cobalt/**ACTIV-8** provides the best hard dry.

*NOTE: **ACTIV-8** should not be used in a coating containing zinc drier or zinc oxide as an undesirable white compound will form that does not aid in drying. **ACTIV-8** should not be used with iron driers, since **ACTIV-8** plus iron produces a strong pink discoloration.*

### Determining the Amount of ACTIV-8 to Use

It is very important to accurately determine the amount of driers and **ACTIV-8** to be used in a given coating. The three step procedure used to determine the amount of **ACTIV-8** required is as follows:

#### STEP 1: Determine the amount of resin solids in the coating formula

**Example:** For 195 lb. of alkyd resin solution containing 90% non-volatile solids, determine the amount of resin solids.

$$\text{amount of resin} \times \text{percent non-volatile solids} / 100 = \text{resin solids}$$

$$195 \text{ lb.} \times 90 / 100 = 175 \text{ lb. resin solids}$$

#### STEP 2: Determine the amount of metallic drier to be used

Driers are supplied as solutions of metallic salts of long chain organic acids in various solvents. Their concentrations are expressed as % *metal*. Recommended amounts of driers for typical air dry coatings based on resin solids are:

Cobalt 0.02 - 0.05%

Manganese 0.02 - 0.06%

**Example:** For the 175 lb. of resin solids in STEP 1, determine the amount of a 12% cobalt solution that is needed to achieve 0.05% cobalt metal based on resin solids.

$$\text{amount of resin solids} \times \text{percent metal} / 100 = \text{amount of cobalt metal}$$

$$175 \text{ lb. resin solids} \times 0.05 / 100 = 0.0875 \text{ lb. cobalt metal}$$

**STEP 3: Determine the amount of ACTIV-8® Drier, Stabilizer and Accelerator to use**

For solvent-borne alkyds, **ACTIV-8** is used at a ratio of 10 parts **ACTIV-8** (as received) to 1 part cobalt metal. For water-reducible alkyds, a ratio of 5:1 is recommended.

**Example:** Given that there is 0.0875 lb. of cobalt metal, determine the amount of **ACTIV-8** to use.

$$\begin{aligned} \text{amount of metal} \times 10 &= \text{amount } \mathbf{ACTIV-8} \\ 0.0875 \text{ lb.} \times 10 &= 0.875 \text{ lb. } \mathbf{ACTIV-8} \end{aligned}$$

Next, prepare a series of paints at various drier concentrations and then run dry time testing. Consult your resin supplier for starting formulas and drier recommendations with regard to the resin.

**Suggested Formulas for Drier plus ACTIV-8® Drier, Stabilizer and Accelerator Pre-Blends**

Drier efficiency, resistance to loss of dry on aging, and resistance to yellowing can be improved by pre-blending the driers and **ACTIV-8** in a suitable solvent and letting the pre-blend age at least 1 hour prior to addition to the coating. Two formulas for drier plus **ACTIV-8** pre-blends follow.

**1. For coatings based on alkyd binders in organic solvent**

Component	% by Weight
<i>n</i> -Butanol	32.7
Xylene	32.6
<b>ACTIV-8</b>	13.0
6% Mn Solution (1.3% Mn metal)	21.7

Add **ACTIV-8** and Mn solution to solvent, age at least 1 hour.

**2. For coatings based on emulsions or water-reducible alkyd binders**

Component	% by Weight
Hexylene glycol	68.0
<b>ACTIV-8 HGL</b>	12.0
6% Co Solution (1.2% Co metal)	20.0

Add **ACTIV-8** and Co solution to solvent, age at least 1 hour.

**For more information on the use of ACTIV-8, including technical data and formularies, go to [www.vanderbiltminerals.com](http://www.vanderbiltminerals.com).**

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