A "How-to" Guide for the Use of ACTIV-8®

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

R.T. Vanderbilt Company, Inc.
INDUSTRIAL MINERALS AND CHEMICALS

ACTIV-8® is a 38% solution of 1,10-Phenanthroline, a chelating agent. **ACTIV-8** used with cobalt and/or manganese driers accelerates and stabilizes the drying rates of solvent and water- borne coatings which cure by oxidative polymerization.

It is very important to accurately determine the amount of driers and ACTIV-8 to be used in a given coating.

The following pages outline this three step procedure.

STEP 1 **Determine the amount of resin solids in the coating formula.**

Example: 250 lbs. of a 70% non-volatile solids alkyd resin solution contain:

250 lbs. x 0.7 = 175 lbs. 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 lbs. of resin solids in STEP 1, determine the amount of 12% cobalt solution that is equivalent to 0.05% cobalt metal.

175 lbs. resin solids x 0.0005 = 0.0875 lbs. cobalt metal

0.0875 ÷ 0.12 = 0.729 lbs. 12% cobalt solution

STEP 3 **Determine the amount of ACTIV-8 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: The 0.729 lbs. of cobalt solution equal 0.0875 lbs. cobalt metal.

ACTIV-8 = 0.0875 lbs. x 10 = 0.875 lbs.

To determine the optimum amount of driers and **ACTIV-8,** one must balance surface dry, through dry and hard dry. 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 levels 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. ACTIV-8 should not be used with iron driers, since ACTIV-8 plus iron produces a strong pink discoloration.

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 for the resin being used.

Suggested Formulas for Drier plus ACTIV-8 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. Formulas for drier plus **ACTIV-8** pre-blends follow.

1. For coatings based on oleoresinous binders in organic solvents.

Component	% by Weight
n-Butanol	32.7
Xylol	32.6
ACTIV-8	13.0
6% Mn Solution (1.3% Mn metal)	21.7

Add **ACTIV-8** and Mn solution to solvent.

2. For coatings based on emulsions or solutions of oleoresinous binders in water.

Component	% by Weight
Hexylene glycol	68.0
ACTIV-8	12.0
6% Co Solution (1.2% Co metal)	20.0

Add **ACTIV-8** and Co solution to solvent.

Please contact us for further information on the R. T. Vanderbilt Company product described in this folder. Samples, Technical Data Sheets and MSDS's are available on request.

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