

DETERMINATION OF COATING WEIGHT - CHROMATE/ZINC DUST COMPLEX

PORTASPEC X-RAY ANALYSIS METHOD

Application

This procedure is used to determine the Cr concentration (in mg/sq ft or surface) of Dacromet coatings on steel substrates by use of the Portaspec X-Ray Spectrophotometer.

Equipment Required

Portable X-Ray Spectrograph "Portaspec"

Source: Pitchford Industries, Inc.
1901 Painters Run Road
Pittsburgh, PA 15241

Digital Scaler and Timer

Model #20

Source: Pitchford Industries, Inc.
1901 Painters Run Road
Pittsburgh, PA 15241

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

Instrument Setup

1. Inspect wiring to see that connections are proper. (Refer to "Schematic for Instrument Setup.")

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2001 03 13	Revised	Editorial – no technical change A. Cockman
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Page 1 of 6

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2. Plug in the power supply unit to a grounded 117 volt line. The GROUND light on the power supply unit must be "on".
3. Turn the LINE switch to the "on" position. Turn the FILAMENT switch to the "on" position.
4. When the READY light goes on, the X-Ray tube is now capable of being activated.
5. Turn the dial on the Model 20 Scaler (Digital Scaler) to the LINE position.
6. All units of the apparatus are now set for standardization and testing.
7. If the instrument is to be used continuously, the water cooling hoses must be attached to the front of the Portaspec Head. Even for intermittent use at higher milliamperage setting, water cooling should be used. (No danger is involved, since the X-Ray automatically shuts off if the unit overheats.)

¹This setting of 69.0° does not coincide exactly with the literature value for the K α line for chromium. This is due to the calibration of the goniometer. This correctness of using 69.0° is established by noting that the maximum counting rate (as read on the meter on the Portaspec Head) is achieved at this angle. The meter is activated by setting the switch on the top of the Portaspec Head at METER and depressing the thumb switch on the handle at the Portaspec Head.

Note: If the X-Ray tube is being activated by means of the thumb switch, the meter is simultaneously activated. Only when the extension cable (On-Off switch) is plugged in the side of the Portaspec head is the thumb switch required to activate the meter.

Cr Coating Weight Determinations

1. Place the Portaspec Head directly on the sample to be measured. Make certain that the goniometer dial and the milliamperage dial have not been changed.
2. Set the timer on the digital scaler to count for 0.6 minutes by setting the multiplier switch in the X 0.1 position and the counter to 06.
3. Turn on the X-Ray tube. CAUTION!
4. Take a scaler count for 0.6 minutes.
5. Turn off the X-Ray tube.
6. Refer to Graph #1 showing DIGITAL SCALER COUNT FOR 0.6 MINUTES VS Cr COATING WEIGHT (in mg/sq ft). Read off the Cr coating weight of the sample and report as such.