

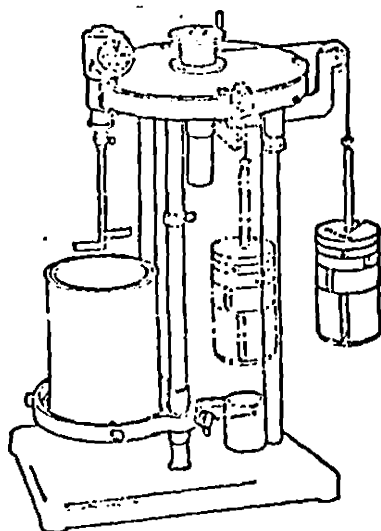


Fig. 9.

Paint Testing Outfit with submerged paddle type rotor, circular metal plate for platform, standard one-pint friction-top can as container, and set of slotted weights.

PAINT TESTING OUTFIT

The Paint Testing Outfit is a modified General Purpose Model and has been specified by the A.S.T.M. in standard method D-562 for testing the consistency of exterior house paints and enamel type paints,¹ and by the U. S. Government in Federal Specification TT-F-141a for sampling and test methods for paint, varnish, lacquer and related materials. In this outfit the usual weight box has been replaced by a set of slotted weights with a suitable hanger, and the cylindrical rotor has been replaced by a submerged paddle type rotor.² The test container is a standard one-pint friction-top can $3\frac{1}{8}$ inches in diameter which, in use, replaces the usual test cup and water bath. It is supported by a circular metal plate provided for the platform.

TEST PROCEDURE

1. Mix the paint sample thoroughly and strain it into the container. Bring the temperature of the sample to $25^{\circ} \pm 0.25^{\circ}\text{C}$ and maintain it at that temperature during the test.

2. Place the container on the metal plate of the platform and raise until the paddle type rotor is centrally immersed in the sample to the mark inscribed on the rotor shaft.

¹ For procedure and report of test results, see A.S.T.M. Standards 1932 Supplement, Part II, Non-metallic Materials, Unnumbered, pp. D53-D57.

² Originally a fork type rotor was used in paint testing outfits, but has been replaced by the submerged paddle type which gives more reproducible results.

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3. Before starting the test, release the brake and check the number of revolutions of the rotor in from 25 to 35 seconds, as measured by a stopwatch. Using different weights, determine the time required for 100 revolutions of the rotor. Select weights that will give at least two readings within a range of 27 to 33 seconds. These determinations should be made from a running start, that is, the rotor should be allowed to make at least 10 revolutions before the timing of the test is started. Determine, by plotting or interpolation, the weight in grams necessary to produce 100 revolutions of the rotor in 30 seconds.

DISCUSSION

Krebs Units and Use of Krebs' Stormer Chart." Many paint manufacturers have adopted Krebs Unit ratings as derived from the Krebs' Stormer Chart, for classifying the consistency of paints. The chart, as shown on page 26, tabulates the driving weight in grams against the time in seconds for 100 revolutions of the paddle.

The same procedure is followed as outlined above, taking care to maintain the temperature of the sample at 25°C $\pm$ 0.25 C.

The number of Krebs Units is found simply by reading in the appropriate line and column. Thus, if 500 grams caused the paddle to make 100 revolutions in 39 seconds, the material under test would have the consistency of 112 Krebs Units. A paint considered to be of proper brushing consistency has been given the arbitrary value of 100 Krebs Units. Additional paints, both thicker and thinner than this standard, were then prepared and, of these, certain ones were selected to differ in consistency by arbitrarily given values of 10 Krebs Units using the modified Stormer Paint Testing Outfit. Consistency of paints varying from 60 to 160 Krebs Units was then measured. Sufficient weights were employed for each sample to vary the time required for 100 revolutions of the paddle type rotor from 21 to 40 seconds. The table shown on page 26 was then derived by interpolation from these results.

Stroboscopic Attachment (National Lead Company Timer). For use on the Stormer Viscometer to accelerate and improve the accuracy of the paint consistency test at rotational speed of 200 r.p.m., in accordance with A.S.T.M. standard method D-562, in which the rate of shear is adopted as a constant, and the force required to produce this prescribed rate is accepted as a measure of consistency. Described in detail under "Attachments," on page 16.

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KREBS' STORMER CHART WITH INTERPOLATIONS

Driving Weight in Grams																																										
Seconds for 100 Revolutions	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	725	750	775	800	825	850	875	900	925	950	975	1000				
24.....	42	52	...	65	...	75	...	83	...	90	...	95	...	99	...	101	...	104	...	111	...	115	...	118	...	122	...	125	...	128	...	130	...	132	...	136	...	137	...	138		
25.....	45	54	...	69	...	78	...	84	...	90	...	95	...	100	...	101	...	105	...	112	...	116	...	119	...	123	...	125	...	129	...	131	...	133	...	133	...	137	...	137		
26.....	47	56	...	69	...	78	...	85	...	91	...	96	...	101	...	103	...	110	...	113	...	117	...	120	...	123	...	126	...	130	...	132	...	134	...	134	...	137	...	138		
27.....	49	57	...	69	...	74	...	81	...	86	...	89	...	92	...	95	...	97	...	100	...	107	...	111	...	113	...	114	...	116	...	118	...	120	...	121	...	123	...	124	...	126
28.....	51	59	...	65	...	70	...	75	...	80	...	84	...	87	...	90	...	93	...	96	...	99	...	100	...	102	...	105	...	107	...	110	...	112	...	113	...	115	...	117	...	118
29.....	53	60	...	66	...	71	...	76	...	81	...	85	...	88	...	91	...	94	...	97	...	100	...	103	...	105	...	107	...	110	...	112	...	113	...	115	...	117	...	119	...	121
30.....	54	61	...	67	...	72	...	77	...	82	...	86	...	89	...	92	...	95	...	98	...	100	...	102	...	104	...	106	...	109	...	110	...	112	...	114	...	116	...	118	...	120
31.....	55	62	...	68	...	73	...	78	...	83	...	87	...	90	...	93	...	96	...	99	...	100	...	102	...	104	...	106	...	109	...	111	...	113	...	115	...	117	...	118	...	120
32.....	56	63	...	69	...	74	...	79	...	84	...	87	...	90	...	93	...	96	...	100	...	103	...	105	...	107	...	109	...	112	...	113	...	115	...	117	...	119	...	120	...	122
33.....	57	64	...	70	...	75	...	80	...	85	...	89	...	91	...	94	...	97	...	100	...	103	...	105	...	107	...	109	...	112	...	114	...	116	...	117	...	119	...	121	...	123
34.....	58	61	...	75	...	81	...	86	...	91	...	95	...	97	...	100	...	103	...	105	...	107	...	110	...	111	...	113	...	115	...	117	...	118	...	120	...	122	...	124	...	125
35.....	59	65	...	76	...	82	...	87	...	92	...	96	...	98	...	101	...	104	...	106	...	108	...	111	...	112	...	114	...	116	...	118	...	120	...	122	...	124	...	126	...	127
36.....	60	66	...	76	...	85	...	92	...	96	...	100	...	103	...	105	...	107	...	110	...	111	...	113	...	115	...	117	...	119	...	120										

NOTE.—On some points a Kevlar (Kevlar) rating obtained at a low number of seconds per 100 revolutions will not check a rating obtained at a high number of seconds. This difference can be minimized by using only determinations made close to 30 seconds per 100 revolutions; consequently, for good reproducibility only the blocked section of the chart should be used. Since using 25-grain increments in the weight may fail to give a reading within the preferred section, 25-grain increments may be used and a reading obtained directly from the interpolated values shown for this section of the chart.

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