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TCG-NNT-1; TCG-NM-1

MAR 23 1961

M-9.2
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Completed 1-19-61

Re: MEMORANDUM

To: Temperature and Humidity Test of 2 ea. Plastic Form Plugs, R/N 2h[illegible]32, Serial Numbers Four No. 1 and Four No. 3

Summary of Test

During the environments these two plastic form plugs were subjected to the measurements shown in Figure 1; they decreased in O.D. after the first cycle, an average of 0.036 of an inch. After the six-hour, +120°F, 15% relative humidity cycle, the plugs increased in O.D. dimensions an average of 0.030 of an inch. After the 24-hour, +60°F, 95% relative humidity cycle, the plugs returned to their original dimensions. They were weighed after this cycle and the amount of moisture absorption was 0.123 lb., an increase of 1.47% weight, for Four 1, and 0.095 lb., an increase of 1.07% of weight, for Four 3.

The last cycle, the chamber was controlled at +66°F, 15% relative humidity for 24 hours. After this cycle the plugs decreased in O.D. an average of 0.005 of an inch from the original O.D. dimensions. They were weighed after this cycle; Four No. 1 weighed 0.033, 0.037% and Four No. 3 weighed 0.036 of a lb., 0.04% more than the initial weights of these plugs.

Object of Test

The object of this test is to determine what effect temperature and humidity has on these plastic form plugs.

Authorization for Test

This test was authorized in a work order from Division 7117 to Mr. E. H. Copeland, 7321, dated January 13, 1961. Mr. W. G. Check was the consultant.

Procedures and Results

These two plugs were subjected to the temperature and humidity environments in Nicatt chamber number three, located in the lab of Bldg. 860, see Figure 1 for test.

Per originator 4-14-61 VV

[redacted]

PROGRAM
CATEGORY
ORG. 000
DATE 6/21

RECEIVED MAR 24 1961 CENTRAL RECORD FILE

CENTRAL RECORD FILE
ACCESS AUTHORITY
FILE No. M-9.2

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
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Carmella Dilley 10/26/98
PERSON CHANGING MARKING & DATE
W Cope 10/28/98
PERSON VERIFYING MARKING & DATE
AUTHORITY WC Cope
RECORD ID: 995N0149
DATED: 10/19/98

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Prior to placing these plugs in the chamber, they were weighed (see Figure 1) and the outer diameters were measured in four different places, 45° apart, one inch up from the base of the plugs, (see Figure 3 for sketch of plug and Figure 2 for O.D. measurements).

These two plugs were subjected to +60°F, 15% R.H. for 4 hours, then the chamber temperature was changed and controlled at +120°F, 15% R.H. for 6 hours. The next step, the chamber temperature was changed back to +60°F, 95% R.H. for 24 hours. After this environment the plugs were measured and weighed, see Figures 1, 2 and 3. The last step, the chamber remained at +60°F and the relative humidity was controlled at 15%. The duration of this step was 24 hours. After this last environment the plugs were again weighed, see Figure 1 for weights, and the O.D. dimensions were measured, see Figures 2 and 3.

The Ohaus balance scale, accurate to 1/2 of a gram, located in the lab of Bldg. 860 was used to weigh these plugs. A Division 4232 representative took all the O.D. measurements.

A. K. Alberts

A. K. ALBERTS - 7321-5

R. S. Hooper

R. S. HOOPER - 7321-5

AKA:7321-5:do

Encs: Figures 1-3

Distribution:
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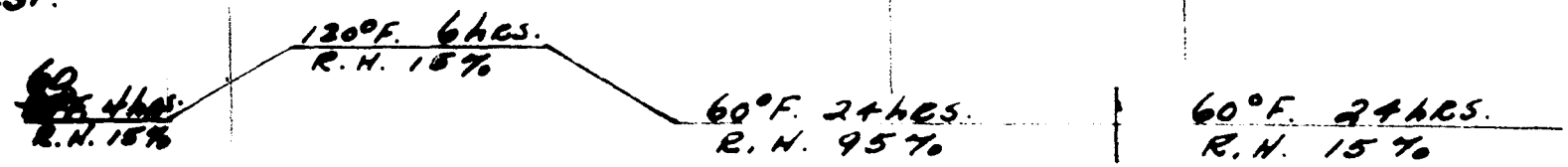
[redacted]

T-17503
Case No. 13.858.00

Plastic foam plugs, P/N 144432
SEC. Nos BEES, Pair #1, and Pair # 3.

TEST:



These 2 ea. units were weighed before the test, after the 24 hr., +60°F., 95% R.H. period, and after the +60°F, 15%, 24 hr. period.

Initial weights;

Pair #1. 8.336 lbs. Pair #3. 8.801 lbs.

Weights after the 24 hr., +60°F. cycle, 95% relative humidity.

Pair #1 8.459 lbs. * 1.47% Pair # 3. 8.896 lbs. 1.07%

Weights after the 24 hr. +60°F. 15% relative humidity cycle.

Pair #1 8.369 lbs. * .07% Pair #3. 8.837 lbs. * .04%

* Ref: ASTM, Part 6, para. 7, (4), page 364.

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FIG. 2.

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T-17503
Case No. 13.858.00

O. D. dimensions of 2ea. plastic foam plugs, P/N 144432, Ser. NOS. Pair #1, and Pair #3.

These plugs were measured initially, and after each phase of the test. Dimension readings were taken at four (4) points, spaced equally around the circumference.

1. Initial measurements.

	Points			Points	
Pair #1.	1. 22.020	inches.	Pair #3.	1. 22.025	inches.
	2. 22.020	"		2. 22.024	"
	3. 22.020	"		3. 22.025	"
	4. 22.020	"		4. 22.026	"

2. After 60°F. 15% R.H., 4 hrs phase.

Pair #1	1. 22.014	inches.	Pair #3.	1. 22.019	inches.
	2. 22.014	"		2. 22.019	"
	3. 22.016	"		3. 22.017	"
	4. 22.016	"		4. 22.015	"

3. After +120°F. 15% R.H., 6 hr. phase.

Pair #1	1. 22.051	inches.	Pair #3.	1. 22.058	inches.
	2. 22.050	"		2. 22.060	"
	3. 22.048	"		3. 22.052	"
	4. 22.049	"		4. 22.054	"

4. After +60°F. 95% R.H. 24 hr. phase.

Pair #1	1. 22.021	inches	Pair #3.	1. 22.024	inches
	2. 22.020	"		2. 22.026	"
	3. 22.022	"		3. 22.024	"
	4. 22.022	"		4. 22.024	"

5. After +60°F. 15% R.H. 24 hr. phase.

Pair #1	1. 22.016	inches	Pair #3	1. 22.018	inches
	2. 22.016	"		2. 22.018	"
	3. 22.015	"		3. 22.018	"
	4. 22.015	"		4. 22.017	"

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FIG. 3.

[redacted]

T-17503
Case No. 13.858.

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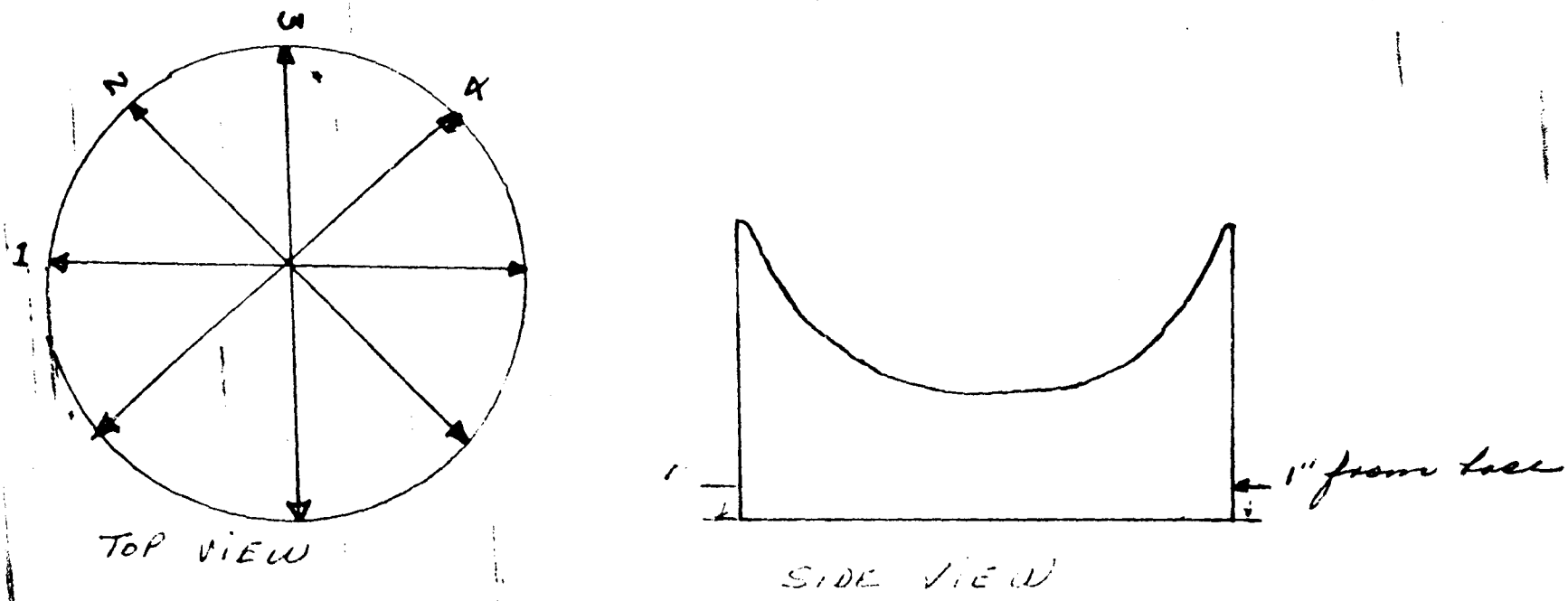

SKETCH of plug, showing points measurements were taken, 4 places around the circumference, one inch up from the base.

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