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TCG-NNT-1

APR 6 1953
Case No. 443.0
Ref. Symbol: 1611
Project No. EP-1143
Completed: 12/15/52

MR. R. E. FISHER - 1621

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Re: Compression Test of the H-46 Gasket Material

Object of Test

This test was performed to determine the effects of continuous compression upon the physical characteristics of two types of rubber gasket material by exposing representative samples of each material in a state of constant compression to various temperature conditions. The two types of gasket are products of the Conrad Rubber Co. Type 1 is a tool-made sample with Cook Electric Part No. 839008 (no Conrad Stock No.); type 2 has Conrad Stock No. 8351-GR-S.

Authorization for Test

This test was requested by Division 1621 in a Work Order Authorization dated November 24, 1952. Mr. W. L. Reeves was the consultant.

Procedure

While compressed to 1/8 inch total thickness, the samples were subjected to the following temperature conditions:

1. -65°F for one week
2. +165°F for one week
3. +165°F for 70 hours, followed by room temperature for one hour and -65°F for 6 hours

The prepared samples of the type 1 gasket were 0.349 inch thick, 0.491 inch wide and approximately 2 inches long. The type 2 were 0.379 inch thick, 0.506 inch wide, and approximately 2 inches long (see Fig. 1(a) for a cross-sectional view of the gasket). One sample of each type was subjected to conditions (1) and (2); two samples of each type were subjected to condition (3), thus being reasonably certain of a consistent value for compression set if samples gave values within a small percentage of each other.

Following conditions (1) and (2) a visual check was made to determine the extent of any distortion and/or splitting of the gasket samples. Following condition (3), the permanent set of the samples was calculated, based on the entire thickness of the samples including the centerhole.

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The compression set was calculated as prescribed in ASTM D 395-49T. The deformation incurred by the samples of the type 1 gasket was such as to practically disallow any calculation for compression set; however, a calculation was made based upon the smallest thickness of the sample.

Metal plates (Fig. 1) were used to compress the samples. A Bowser temperature box and a Fisher oven were used to provide the required temperature conditions.

Results

Following exposure to -65°F for one week, neither type of sample showed any perceptible damage, distortion, or change in dimensions. Following exposure to 165°F for one week, the type 1 sample was badly distorted (0.192 inch thick, 0.510 inch wide (Fig. 1(b)); the appearance of the samples representing the type 2 gasket was essentially unchanged. Following exposure to 165°F for 70 hours and -65°F for 6 hours, the type 1 samples appeared distorted as above; one of the type 2 samples suffered a 1-1/2 inch crack along the bottom of the gasket. The compression set for the type 2 gasket material samples averaged 20.1 per cent. An approximate value of 70 per cent might be offered as some indication of the magnitude of distortion of the samples of the type 1 gasket material (Fig. 1(b)).

Test Conducted by R. S. HOOPER - 1611

Original Signed By
R L. WAGAR
Approved by R. L. WAGAR - 1611

RSH:1611:re

Copy to:
J. R. Townsend, 1600
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L. J. Blakner, 2530
L. E. Lenkin, 1280

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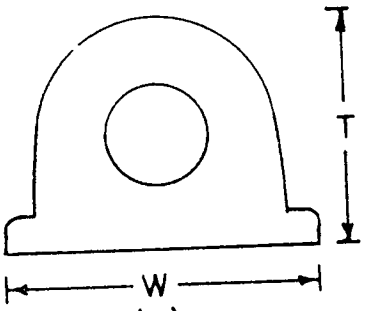
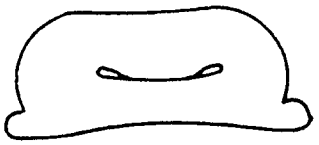
CROSS-SECTIONAL VIEW
BEFORE COMPRESSION

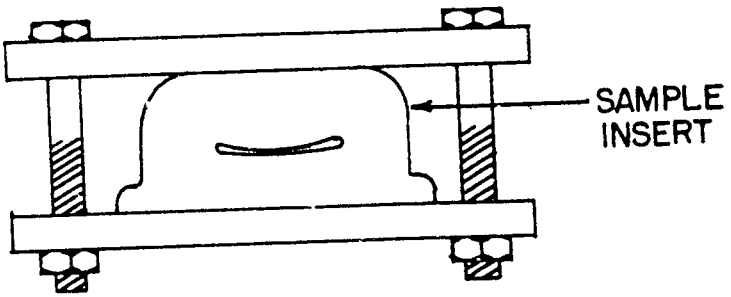


(a)

CROSS-SECTIONAL VIEW
OF TYPE I GASKET
FOLLOWING COMPRESSION



(b)



METAL PLATES USED TO RETAIN
SAMPLES AT CONSTANT COMPRESSION

(c)

FIG I — COMPRESSION TEST OF H-46 GASKET SAMPLES

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