

**Federal Institute for Materials Research and Testing
Laboratory II.22
Safety Related Properties of Gases**

To Diary-No. II.2-360/95

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Chemical stability of ethylene oxide and 1,2-propylene oxide in the presence of the sealing material "SIGRAFLEX-HOCHDRUCK"

At the request from February 19, 1992 of the firm Sigrü GmbH ethylene oxide and 1,2-propylene oxide were investigated for their chemical stability in contact with a sealing material at the Federal Institute for Material Research and Testing (BAM). According to the specification by the applicant the material is an impregnated composite material without bonding agent consisting for instance of 4 graphite foil layers (0.5 mm) and 3 layers stainless steel sheet (0.05 mm).

It was confirmed that ethylene oxide and 1,2-propylene oxide remain stable in the presence of the sealing material by warm storage tests for 6 weeks with ethylene oxide at 40 °C, and with 1,2-propylene oxide at 60 °C. Under the given experimental conditions no change owing to the influence of the sealing material on ethylene oxide and 1,2-propylene oxide could be detected. The ignition temperatures did not change. The sealing material was not dissolved by either of the alkene oxides. The slightly enlarged amount of evaporation residue in the case of ethylene oxide stored in contact with the sealing material was identified as polyethylene oxide to 89 %, thereby it was also found that the residue does not consist of soluble parts of the sealing material [1].

The retail name of the sealing material has been SIGRAFLEX-HOCHDRUCK V(050-400)10C3I. Another sealing material called SIGRAFLEX-HOCHDRUCK V(050-400)11Z3I is nearly identical with the sealing material investigated at the BAM [2].

On the part of the BAM there are no objections to change the retail name to SIGRAFLEX-HOCHDRUCK provided that the composition of the sealing material is identical with that of the sealing material SIGRAFLEX-HOCHDRUCK V(050-400)10C3I, investigated at the BAM, or with that of the sealing material SIGRAFLEX-HOCHDRUCK V(050-400)11Z3I respectively [1][2].

On the part of the BAM there are no objections against the use of the report, and its supplement, about the investigation of the chemical stability of ethylene oxide and 1,2-propylene oxide in the presence of the sealing material SIGRAFLEX-HOCHDRUCK V(050-400)10C3I and SIGRAFLEX-HOCHDRUCK V(050-400)11Z3I - now called SIGRAFLEX-HOCHDRUCK - by SGL-TECHNIK GmbH [1][2].

by order

Ulrich Seidelmann



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- [1] Report of the Federal Institute for Materials Research and Testing, Laboratory 4.21 to Diary-No. 4.2-159/92 from June, 4, 1992 about the investigation of the chemical stability of ethylene oxide and 1,2-propylene oxide in the presence of the sealing material "SIGRAFLEX-HIGH PRESSURE V(050-400)10C3I"
- [2] Supplement to Report of the Federal Institute for Materials Research and Testing, Laboratory 4.21 to Diary-No. 4.2-159/92 from June 4, 1992 about the investigation of the chemical stability of ethylene oxide and 1,2-propylene oxide in the presence of the sealing material "SIGRAFLEX-HIGH PRESSURE V(050-400)10C3I"

BAM Diary-No. 4.2-458/93 from April, 24, 1993