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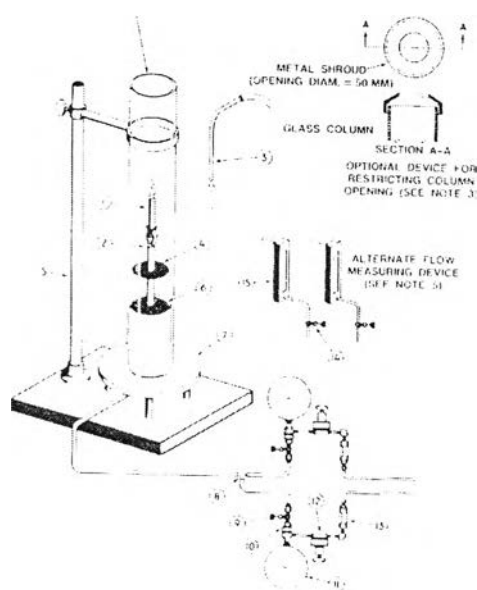
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APPENDICES

Appendix A: Limiting Oxygen Index (LOI) ASTM D2863-70

The minimum concentration of oxygen, expressed as volume percent, in a mixture of oxygen and nitrogen that will just support flaming combustion of a material initially at room temperature. The LOI method used for self-supporting samples has been modified as described below to accommodate the viscous or powdery samples. The measurement was carried out as follows. About 1 g of the polymer sample was placed in a glass cup (diameter 20 mm, height 10 mm) fitted to the specimen holder. An external flame of 20 mm length was maintained in contact, for 10 s, with the polymer. The LOI value was taken as the minimum percentages of oxygen required in a nitrogen-oxygen atmosphere, surrounding the sample, to maintain its combustion for at least 30 s after ignition. The LOI value was taken as the average of five experiments each.

Apparatus



- | | | |
|---------------------------|-------------------------|----------------------------------|
| 1. Burning Specimen | 6. Glass Beads in a Bed | 11. Pressure Gage |
| 2. Clamp with Rod Support | 7. Brass Base | 12. Precision Pressure Regulator |
| 3. Igniter | 8. Tee | 13. Filter |
| 4. Wire Screen | 9. Cut-off valve | 14. Needle |
| 5. Ring Stand | 10. Orifice in Holder | 15. Rotameter |

Figure A.1 LOI apparatus

Procedure

1. Calibrate the flow-measuring system using a water-sealed rotalin drummeter in accordance with Method D 1071
2. The test shall be conducted at room temperature conditions in accordance with Practice D 618
3. Clamp the specimen vertically in the approximate center of the column.
4. Select the desired initial concentration of oxygen. If the specimen burns rapidly, start at a concentration of about 18%.
5. Set the flow valves so that the desired initial concentration of oxygen is flowing through the column.
6. Allow the gas to flow for 30s to purge the system.
7. Ignite the entire top of the specimen with the ignition flame so that the specimen is well lighted. Remove the ignition flame and start the timer.
8. Do not adjust the oxygen concentration after igniting the specimen.
9. The concentration of oxygen must be raised if the flaming of the specimen extinguishes before meeting.
10. Adjust the oxygen concentration, insert a new specimen.

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