

Performance-based characterization of Arab Asphalt
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Building and Environment
Vol. 33, Issue.6, 1998

Abstract: Asphalt binders are elasto-visco-elastic materials where temperature and rate of load application have a great influence on their behavior. They are classified as rheological materials since their stress-strain response is both time and temperature dependent. Asphalt binder consistency and hence ability to sustain and hold its fundamental cementing mechanism changes depending on temperature. In this research, the physical and rheological properties of the locally produced Arab asphalt binders and the performance requirements of the Gulf countries environmental conditions were determined. The designed experiments and the collected data clearly indicated that the locally produced asphalt binders can be used without modification in areas where the maximum pavement temperature does not exceed 64°C. Temperature zoning indicated that more than 50% of the Gulf countries areas experience a maximum pavement temperature of 76°C. Therefore, asphalt binder modification is required to meet Gulf countries' performance requirements. © 1998 Elsevier Science Ltd. All rights reserved.