Engineering Property - Resilience

Heat build-up in urethane parts, under high frequency ex-ing, exceeds that of conventional elastomers and is the usual cause of premature failure under dynamic conditions. Because of the low thermal conductivity of urethane elastomers, heat developed by internal friction cannot readily be dissipated. The effect of heat build-up therefore, a very important consid-eration when designing with urethanes. Its adverse effects can be minimized by using thin cross-sections from which heat is more easily dissipated. The high strength and load bearing capacity of urethane elastomers makes possible the use of sections which are thin enough to dissipate heat at the same rate at which it is developed.

Values of resilience for typical compounds of Die-Thane are shown in Table 1.

TABLE I

RESILIENCE OF DIE-THANE

Die-Thane Hardness	Yerzley Resilience	Bashore Resilience
Durometer A		
58	72	-
75	70	60
80	70	60
85	65	-
90	65	45
95	-	39
Durometer D		
58	1	-
72	1	48
75	1	50

Die-Thane urethane rubbers can be formulated to exhibit high or low resilience. Yerzley Oscillograms of compounds having high and low resilience are shown on Figure 6.

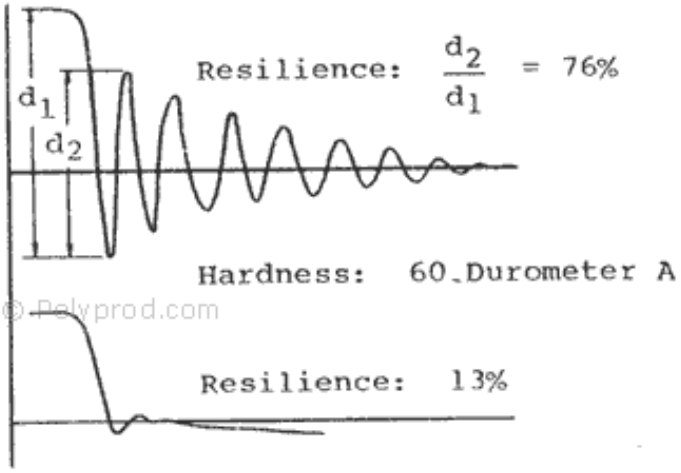

FIGURE 6

Die-Thane provides a greater hardness range with less sacri ce in resilience than many types of elastomers. This is a characteristic because urethanes are non-reinforced while rubber requires the use of llers to develop optimum properties.