RIM AND RRIM DEVELOPMENT IN JAPAN

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INTRODUCTION

The use of RIM products in the automotive industry in Japan was started by the stimulus of the successful use of RIM bumpers in the United States. The first use of RIM bumpers in Japan was seen in the Toyota Celica in 1977 and was followed by Mitsubishi cars in 1978, Nissan (Datsun) cars in 1979 and Mazda cars in 1980. The major use of RIM in the Japanese automotive industry, therefore, is in the production of bumpers. To a lesser extent it is used in such automotive parts as dash boards, steering wheels, etc. The major non-automotive uses of RIM are in ski cores and computer housings. The total usage of automotive RIM parts in 1979 amounted to approximately 7,000 metric tons; total usage of non-automotive RIM or rigid RIM foams amounted to approximately 1,000 metric tons. The consumption of various RIM products in Japan in 1979 is shown in Figure 1.

The rise in the annual production of motor vehicles in Japan for the last 2 decades since 1960 is shown in Figure 2. In 1980 the production of passenger cars reached 7 millions for the first time. The shortage of oil and its subsequent high cost resulted in severe regulations in improving the fuel efficiency of cars. Table I shows a joint notification of the Ministry of International Trade and Industry (MITI) and Ministry of Transportation regarding the fuel efficiency of cars. The notification was issued in December, 1979, as a guideline for improving fuel efficiency of cars. It requires that improved mileage be reached by 1985. For example, a car having an equivalent inertia weight of 1,000 kg must meet the mileage requirement of 12.5 km/l or 29.3 mpg. This target is much higher than the target in the U.S.A., i.e., 11.7 km/l or 27.5 mpg.
In order to meet these requirements, the reduction of car weight is strongly suggested.

Since Japanese cars have already been down-sized, improved fuel efficiency could be achieved only by down-weighting of cars, and the down-weighting can be achieved by the increased use of plastics, high