

## 英语翻译技巧(22)

涂学忠

(化工部北京橡胶工业研究设计院 100039)

## 4.2 CALENDERING TECHNOLOGY

Rubber compounds behave as viscous non-Newtonian liquids. If a uniform gauge of sheeting is to be produced, then the viscosity of the compound must be constant. If rubber is not evenly distributed across the ingoing side of a calender nip, then, in those areas where an excess of compound occurs, sheeting of a thicker gauge will be obtained at the outgoing side of the nip, i. e. the finished sheet<sup>①</sup>.

In order to achieve uniform viscosity, the temperature of both the compound and the calender must be controlled<sup>②</sup>, as the viscosity of rubber compounds is affected very considerably by temperature. The temperature of the compound is normally controlled by running under conditions which do not change substantially from day to day<sup>③</sup>. It is not unusual, however, for the different conditions operating in summer and winter to upset the calendering operations. The sheeting is run round the calender and on to a liner, i. e. an interleaving material such as fabric which prevents the compound sticking to itself. If a more precise control of gauge or a reduction in the number of blisters in the sheet is needed, then a second nip is introduced. The first nip then meters compound accurately to the second nip<sup>④</sup>, which produces the compound of the required gauge.

When an unsupported sheet is taken from a calender nip, it shrinks along its length and

increases in thickness and width. This results in rubber sheets having a crown, i. e. they are thicker in the centre than at the edges<sup>⑤</sup>. Different compounds have different viscosities and elasticities even in the unvulcanised condition, so different crowns are obtained. The loads on the calender rolls amount to many megagrams, which in turn produce roll deflection resulting in some crowning. The proportion of the crown in the sheet due to roll deflection and the amount due to recovery and shrinkage depend upon the type of compound and also upon the gauge and subsequent handling<sup>⑥</sup>. The thinner the sheet, the greater the load on the rolls. The greater the rubber content of the compound and the less the amount of milling given to it, then the greater the shrinkage to be expected, and hence the greater the crown. In order to obtain uniformity there are two methods which can be employed to overcome the problem of shrinkage. One is to chill the compound quickly, and restrain it by wrapping it tightly in a liner; the other is to allow the compound to shrink freely, or even to force shrink it, before wrapping it in a liner. Compound cooled with the strains in it will shrink lengthways when taken from the liner, especially so when heated. It depends therefore upon the ultimate use of the sheeting whether accurate gauge is obtained by cooling it and locking the strains in the material, or by allowing them to dissipate before wrapping up<sup>⑦</sup>.

## 生 词

viscous	粘滯的,粘性的
non-Newtonian liquid	非牛顿流体
sheeting	片材,胶片
viscosity	粘度
ingoing side	进料侧
outgoing side	出片侧
upset	干扰
interleaving material	隔离材料,垫布
blister	气泡
crown	凸起,中高
deflection	弯曲,变形
chill	(使)冷却
restrain	限制
dissipate	耗散

## 译 文

## 4.2 压延工艺

胶料具有粘滯的非牛顿流体的性质。如果要生产厚度均一的胶片,则胶料的粘度必须恒定。如果压延机辊隙进料一侧的胶料分布不均匀,那么在胶料过多的部位,辊筒出片一侧出来的胶片,即成品胶片就比较厚<sup>①</sup>。

由于温度对胶料粘度的影响非常大,所以要获得均一的粘度,必须控制胶料和压延机这两者的温度<sup>②</sup>。通常通过在每天基本不变的条件下操作来控制胶料温度<sup>③</sup>。但是,夏季和冬季不同的操作条件干扰压延作业也是常有的。胶片绕经压延机以后,衬上垫布,以防止胶料自粘。如果需要更精确地控制厚度或减少气泡,则引入第二辊隙。第一辊隙精确地按规定量供给第二辊隙胶料<sup>④</sup>,第二辊隙产生具有所需厚度的胶片。

从压延机辊隙取下的无衬底胶片,长度将缩短,而厚度、宽度将增大。这引起了胶片中部凸起,即中心比两边厚<sup>⑤</sup>。不同胶料即使在未硫化时也具有不同的粘弹性,因而胶片的中凸度也不相同。压延机辊筒承受的负荷有许多吨,这将使辊筒弯曲,从而使压延胶片

产生一定的中凸度。由辊筒弯曲使胶片产生中凸和由胶片还原、收缩产生中凸的比例取决于胶料的种类、胶片的厚度以及随后的处理<sup>⑥</sup>。胶片愈薄,辊筒承受的负荷就愈大。胶料含胶率愈高,捏炼程度愈低,胶片收缩率便愈大,因而中凸度也愈大。为了获得厚薄均一的胶片,有两种方法可解决收缩问题。一种方法是迅速冷却胶片,并把它紧紧缠绕到垫布上限制其收缩;另一种方法是令胶片自由收缩,甚至强制其收缩,然后再把它缠绕到垫布上。拉伸冷却胶片从垫布上取下时将在纵向上收缩,在受热时尤为如此。因此,是采取将应力固定于胶料中卷取,还是让此应力耗散后再卷取去获得精确厚度,取决于胶片的最终用途<sup>⑦</sup>。

注:①“the finished sheet”是“sheeting”的同位语。

②“the temperature of both the compound and the calender”可译作“胶料和压延机这两者的温度”。

③此句中的“running”是“操作”或“加工”的意思。

④此处“meters”是动词,意为“计量供给”、“定量供给”。

⑤此句如果直译为“这样产生了具有中高度的胶片”就太不合汉语表达习惯了;“at edges”的复数无法用汉语对应表达为“边们”,可按理解译为“两边”。

⑥“the crown in the sheet due to……”和“the amount due to……”并列作“proportion”的定语。

⑦“it”是形式主语,“whether”引出的是主语从句作真正主语。

## 英译汉常见错误实例

Waddell and Parker used photoacoustical infrared (PA-FTIR) and PIXE spectroscopy in conjunction with classical techniques to characterize tread lugs sectioned from worn