

## Development of a Test Method for Static Contact Pressure between Rubber Wheel and Road in Laboratory Friction and Wear Test

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**Abstract:** A test method for the static contact pressure between the rubber wheel and the road surface under different loads was developed by using a laboratory friction and wear testing machine. This method designed a set of fixtures that could be installed on the universal testing machine, which was suitable for the rubber wheels and road surface of Akron wear tester, Lamborn wear tester and RTM comprehensive friction tester. The test process was as follows: using the upper fixture to fix the test rubber wheel, and the lower fixture to fix the road wheel of the testing machine; putting a piece of coordinate graph paper on the road surface, and applying ink pad on the contact part of the rubber wheel; turning on the test machine, and pressing the rubber wheel onto the testing road surface with a certain load. The footprint of the rubber wheel was obtained on the coordinate paper. The footprint area was measured with a microscope, and the static contact pressure between the rubber wheel and road surface under a certain load was obtained by the ratio of the load and the footprint area. This method had a wide range of applications and could provide important guidance for the setting of parameters for the simulation of the tire driving friction test in the laboratory.

**Key words:** tire; rubber wheel; fixture; friction; wear; footprint; static contact pressure

### 益阳橡胶签订GN700密炼生产线合同

日前,益阳橡胶塑料机械集团有限公司(简称益阳橡胶)与国内某大型橡胶企业成功签订了国内首条GN700密炼生产线等新产品合同,合同总额近4 000万元。

益阳橡胶以智能化产品创新助力下游企业低碳发展。GN700密炼生产线由GN700型密炼机及配套大型双螺杆挤出压片机XJY-ZS 1100/500组成。设计技术团队在生产线研制过程中,以节能降耗为主要目标,以数字化、智能化为主要抓手,对设备关键零部件采用三维设计和仿真分析,确保关键零部件的性能和使用寿命,并优化设计,减小设备质量;对设备的冷却零部件通过优化冷却水道形式与结构,有效提高设备的热传递性能,以达到良好的温度控制。GN700密炼生产线主要用于大型轮胎及橡胶制品企业中普通胶料的混炼,其产量大、效率高,每车炼胶量可达到560~575 kg。

GN700型密炼机是益阳橡胶自主研发的全球最大规格剪切型密炼机;采用穿轴式4WH转子,具有较高的抗弯模量,强度大;转子采用强制循环冷却,热传递性能好;转子防尘密封装置采用油缸直接加压式结构,密封性能可靠。与其他剪切型密炼机相比,GN700型密炼机在生产效率、投资成本、功率消耗、占地面积等方面均具有明显优势,与同机型的400,370,430规格密炼机相比,建设投资可节约20%以上,生产效率提高60%~80%,功率消耗可减少约10%,占地面积可减小约60%,润滑油使用量可节约30%~50%。

随着国家“碳达峰”“碳中和”战略的实施,GN700型剪切型密炼机及配套双螺杆挤出压片机的使用需求会越来越多,将逐步替代430,400,270等中小型密炼机,成为大型轮胎和制品行业混炼胶使用的主要设备,从而为用户实现低碳、环保、节能发挥重要作用。

(陈建绥)