



**Shanghai Powerflex New Material Co., Ltd (under Sane Zen Group ) The anti-fatigue agent AF27 developed by Powerflex.** Designed to improve the performance of rubber products. The reaction of surface active groups with the end groups of natural rubber molecular chains effectively optimized the dispersion of carbon black in rubber, and significantly reduced the dynamic heat generation of natural rubber carbon black system. This improvement enhances the dynamic mechanical properties of the compound, improves the heat aging characteristics of rubber products, and reduces the compression heat generation, thereby extending its service life. The appropriate use of **AF27** can not only increase the hardness, elasticity and constant elongation stress of the compound, but also have no obvious effect on the tensile strength.

In shock-absorbing products, **AF27** prevents vulcanizates from reverting after high temperatures or prolonged use - a condition in which physical properties decline due to degradation of the cross-linked network of vulcanizates. **AF27** can slow down the degradation rate of polysulfide bonds due to increasing temperature, thereby improving the thermal stability of vulcanized rubber and extending the service life of shock absorber products.。



## Main functions:

- 1. Reduce dynamic heat generation: significantly reduce hysteresis loss by changing the structure of the end of the molecular chain.
- 2. Increase elasticity: significantly improve the elasticity of rubber products.
- 3. Reduce the dynamic and stiffness ratio: optimize the effect of shock absorption products.
- 4. Prevent return phenomenon: protect vulcanized rubber to remain stable under extreme conditions.
- 5. Accelerated vulcanization: improve production efficiency.

## Suggestions for use:

- Suitable for natural rubber or rubber based on natural rubber, the recommended dosage is 1~1.8 phr.
- The anti-fatigue agent AF27 must be added when mixing natural rubber NR to maximize its effect.



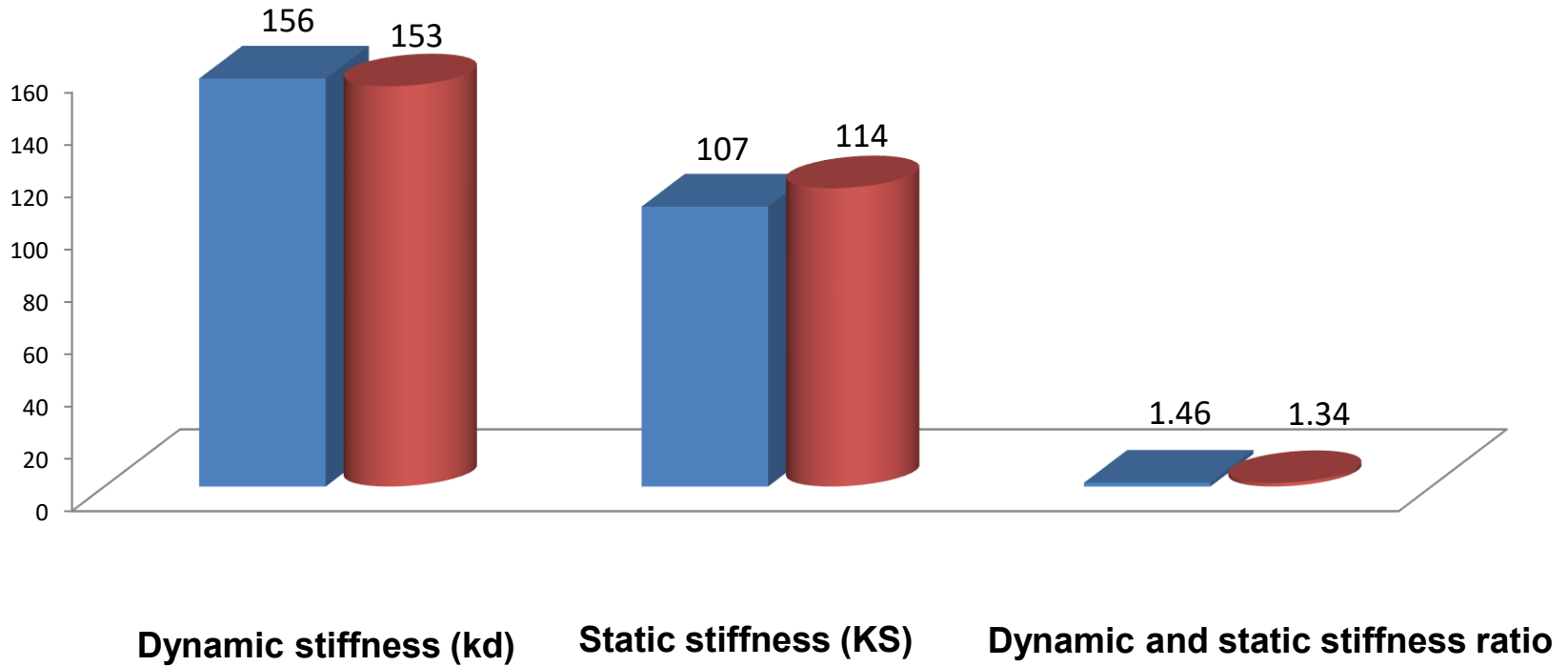
The addition of anti-fatigue agent **AF27** effectively reduces the dynamic and static stiffness ratio: improves the performance of shock absorber products.

For shock-absorbing rubber products, we compared two formulations :

*Formula 1:* This is the basic formula of shock-absorbing rubber products .

*Formula 2:* On the basis of formula 1, we added anti-fatigue agent AF27, the dosage is 1.2 phr.

The carbon black components in the formulation, including N330 and N774, are 35 phr, and the addition of anti-fatigue agent AF27 improves the dispersion of carbon black. Specifically, in rubber products, this improvement results in a lower static/static stiffness ratio ( $K_d/K_s$ ). It has been reduced from 1.46 to 1.34, making it more shock absorbing. Other performance changes are minimal.



● **Formula1**  
None

● **Formula 2**  
With anti-fatigue agent **AF27**



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