

# A well-balanced solution for better performance

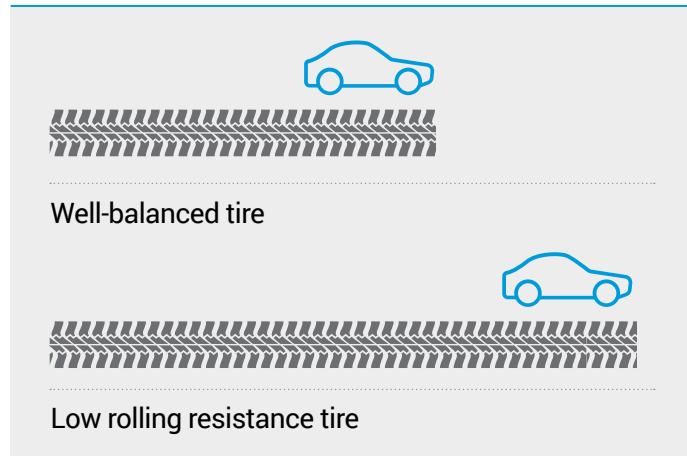


# The drive for safer tires

For tire manufacturers and formulators alike, balancing performance and safety is a constant challenge in both original equipment and replacement tires. Regulations, tire labeling requirements, and third-party ratings all increasingly place emphasis on performance attributes such as wet grip, that are key to safety performance.

Wet grip performance translates into a crucial safety benefit, enabling drivers to have an extra car length or more when faced with critical situations on a wet road.

**Grip**  
**For illustrative purposes only**



Tire makers have a variety of ways to improve wet grip, typically, leveraging polymers, additives, and fillers to address and minimize performance trade-offs. Additives are vital for fine-tuning tread performance at relatively low loading levels. As demand for differentiated tire performance increases, tire manufacturers are searching for compounding strategies that enhance safety performance without significant trade-offs in other key tire properties, avoiding the need to completely reformulate.

Change polymer or blend?

Change filler system?

Change tread design?

Completely change compound?

Synthomer IMPERA™ performance resins

To meet new demands, tools that allow fine-tuning of properties without large-scale negative impacts are desired.

## A well-balanced solution for better performance

Synthomer IMPERA™ performance resins empower tread compounders to create balanced performance by significantly improving wet grip without sacrificing rolling resistance and wear.



### Performance

IMPERA™ enables differentiation that translates to improved overall performance. As a result, manufacturers have the option to call out differentiation downstream.



### Value

Tires with better ratings from third parties can command a better price and possibly achieve greater market share through higher probability of OE fitment. During formulation, IMPERA™ allows greater choice and flexibility in design of the rubber compound.



### Compliance

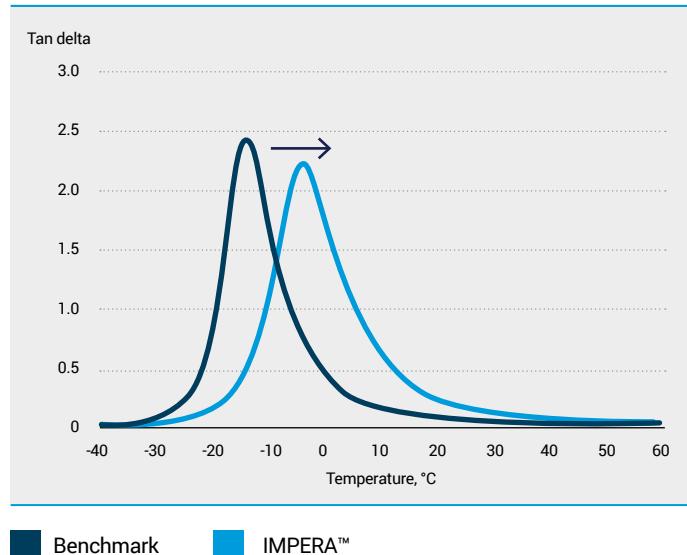
Whether tire manufacturers want to meet their own high standards or achieve better third-party ratings, IMPERA™ can help. With the ability to enhance wet grip and allow for fine-tuning of performance attributes, IMPERA™ is a valuable tool for formulators who need to take tire performance to the next level.

# The IMPERA™ portfolio

Synthomer IMPERA™ performance resins, when used as part of the plasticizer package, result in a significant shift of  $T_g$  to higher temperatures, allowing tire makers to make novel elastomer choices.

For example, IMPERA™ enables the use of lower- $T_g$  polymers or different polymer ratios at wet grip levels that were previously unattainable. As a result, tire makers can achieve a better balance of wet grip and rolling resistance while keeping other properties unchanged.

## Tan delta vs. Temperature



## The IMPERA™ portfolio

IMPERA performance resins enable compound designers to achieve better performance with more polymer options.

With a broad, versatile portfolio, Synthomer offers tire manufacturers many types of performance resins to help balance wet grip, rolling resistance, and wear in tires marketed as ultra-high performance, high performance, winter, summer, racing, and all-season for passenger cars, two-wheelers, trucks/buses, and off-road vehicles.

Thanks to the breadth of the IMPERA product line, tire manufacturers have access to performance resins that are compatible across a wide range of polymers.

Synthomer is committed to sustainable innovation and will continue to add new and increasingly sustainable products to its portfolio.



# IMPERA™ performance resins—Typical properties

IMPERA™ Resin Type & Grade	Softening Point, Ring & Ball (°C)	Glass transition temperature, Tg (°C)
<b>Hydrogenated C5</b>		
<b>E1501</b>	101	51
<b>E1780</b>	130	77
<b>Hydrogenated C9</b>		
<b>E1602</b>	100	47
<b>E1840</b>	92	43
<b>E1740</b>	87	36
<b>E1750</b>	100	50
<b>E1775</b>	123	70
<b>E1790</b>	139	84
<b>E1850</b>	102	49
<b>E1875</b>	123	73
<b>Pure Monomer</b>		
<b>P1503</b>	100	54
<b>P1504</b>	85	40
<b>P1505</b>	141	91
<b>C5</b>		
<b>R1507</b>	101	47
<b>R1607</b>	101	48
<b>R1508</b>	97	45
<b>R1608</b>	96	45
<b>C5/C9</b>		
<b>D1506</b>	90	40
<b>D1606</b>	91	41

Properties reported here are typical values. Synthomer makes no representation that the material in any particular shipment will conform exactly to the values given.

When seeking market differentiation, formulators and manufacturers can rely on Synthomer rubber compounding, chemistry, and tire technology expertise for help.

To discuss which IMPERA™ performance resin is right for your formulation, ask your Synthomer sales representative about collaborating with the Synthomer tire additives team.

# More information

## Want to know more?

For product information and support, please contact a Synthomer representative through the e-mail below.

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### Contact for more information:

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