





UNDERSTANDING GRAPHENE

Vittoria's revolution of tires and wheels



vittoria[®]

From a **TRADITIONAL** tire maker...

...to a company pioneering a

REVOLUTIONARY MATERIAL.

NO COMPROMISE.



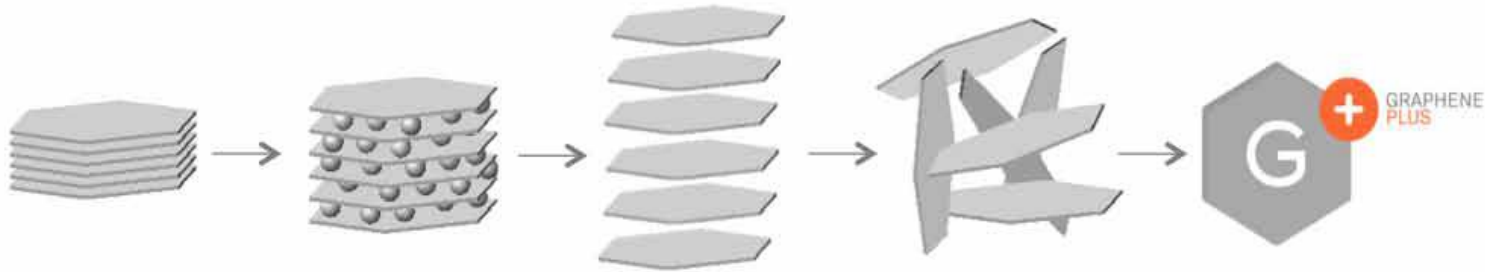
Question: What is Graphene?

Answer:

- Graphene is a recently discovered **REVOLUTIONARY** material (Vittoria uses only the purest form, called **pristine** Graphene)
 - Graphene comes from Graphite, which is a natural mineral
 - You know graphite from the black part of a pencil
 - Graphene was discovered when scotch tape was used to take a layer off a piece of graphite repeatedly



The specific properties of graphene making it truly **UNIQUE**:



1. **enormous surface area:** *1 gram = around 2630 m² that can facilitate any chemical process;*
2. **high mechanical resistance:** *approximately 200 times stronger than steel;*
3. **high thermal conductivity:** *more than 2 times that of a diamond;*
4. **less density:** *is equal to half that of aluminum;*
5. **high elasticity:** *equal to 6 times that of steel;*
6. **high electrical conductivity, transparency, lightness, flexibility and mechanical resistance**



Question: What does Graphene mean for rubber in our tires?

200 x

**Stronger than
STEEL**

6 x

**More flexible than
STEEL**

+

SPEED

+

GRIP

+

**PUNCTURE
RESISTANCE**

+

STRENGTH

= TIRE revolution

NO COMPROMISE.



More info on Graphene in tires

NO COMPROMISE.

Background:

- Graphene changes everything. When developing compounds, Vittoria had to balance its properties very carefully. A tire that was designed for pure speed had to compromise significantly on grip and durability.
- The use of Graphene is such a positive influence, that it allows us to develop with virtually no compromise. The use of Graphene offers more grip, more speed, more puncture resistance and more overall strength, leading to a revolution in tires.



Graphene tires are intelligent

Vittoria tires with Graphene are now intelligent. IT'S compounds become harder and softer, depending on the needs of the rider.

- If the tire is rolling straight, the rubber is at its hardest and offers low rolling resistance.
- If the rider breaks, accelerates or corners, the compounds soften and offer significantly more grip.

IT'S
INTELLIGENT TIRE SYSTEM



Road tires



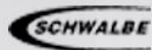


The world's fastest tire CORSA SPEED

50km time trial advantage in seconds.

Wind tunnel resistance average calculation (at 50 Km/h): 10.0 Watt=1sec/1min.

Vittoria Corsa Speed TLR



0 Km

60.0 sec



51.5 sec



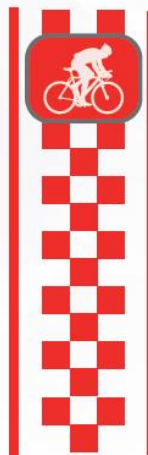
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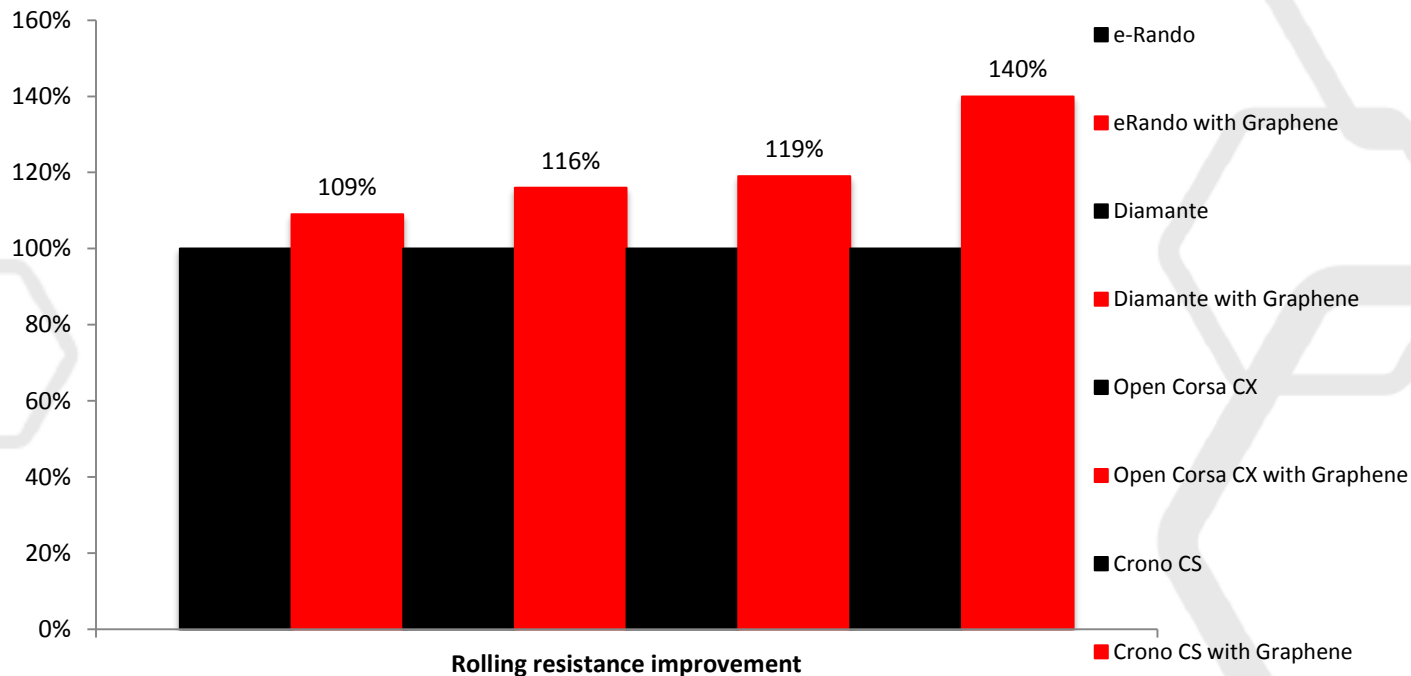
50 Km



Source for independent testing: Wheel Energy, Finland

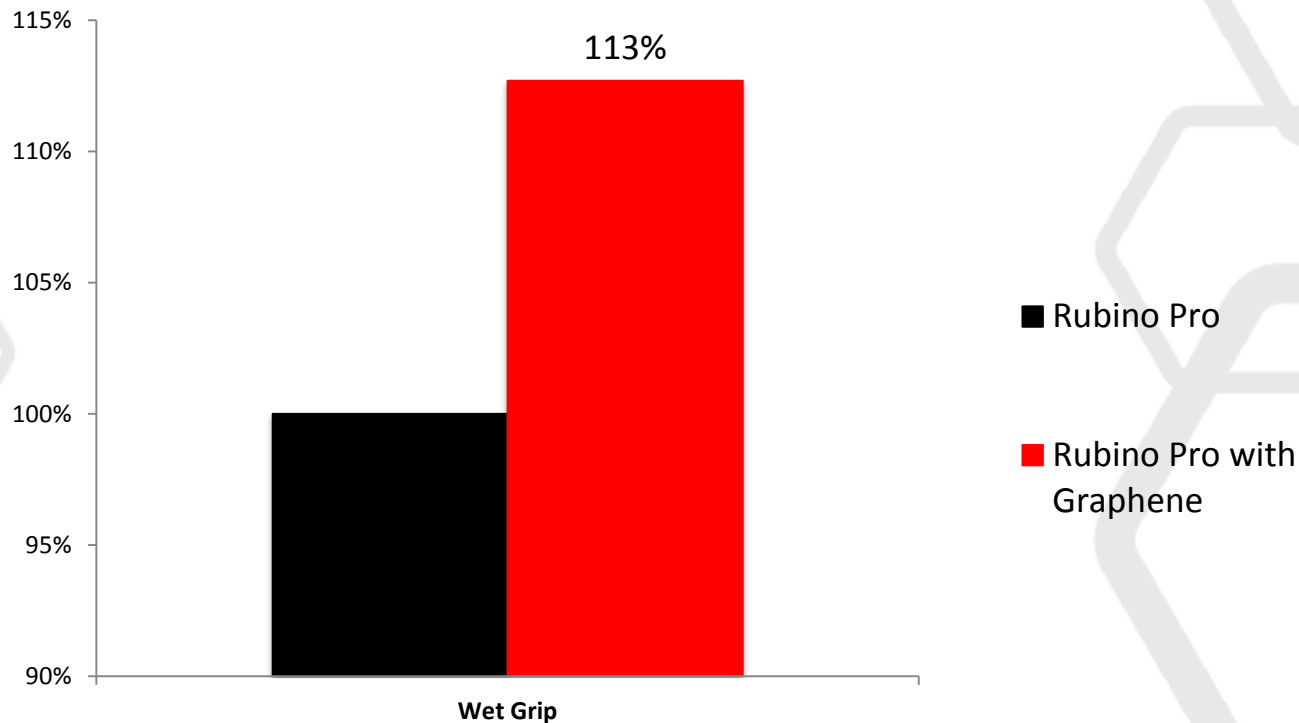


Internal proof: Graphene increases speed





Proof: Graphene improves wet grip





More info on Graphene in road tires

3 compounds



4 compounds

Background:

- The impact of Graphene in percentage of improvement fluctuates significantly, depending on the objective for different compounds. Our R&D focus for development per product determines if we use 1 or as many as 4 compounds (4C) for optimal performance. It is not a matter of 'sprinkling some Graphene' and we have applied elaborate scientific research and methods for our remarkable results. As you mention this, it is always safe to talk about double-digit percentages of improvement rather than being very specific.



Question: What does Graphene mean for our MTB tires?



greatly increased knob strength



longwearing durability



confidence-inspiring (wet) grip



More info on Graphene in MTB tires



4 compounds

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New: MTB e-bike tires with Graphene



Graphene provides the **increased strength** and **durability** that allows the tires to resist damaging the tread due to acceleration torque of MTB electric engines .

