

Technical Datasheet

1. Product Description

Actifine® is a high performance Functionalised Micronized Rubber Powder (FMRP) and finds applications in tyres, conveyor belting, hose, and other technical rubber goods. It is a cryogenically ground rubber powder produced exclusively from pre-selected end-of-life whole truck tyres and undergoes a patented chemical surface treatment in order to (re)-activate (or “functionalise”) its ability to form interfacial crosslinks with the host compound during vulcanization.

Recommended dosage is generally in the range 10 to 25% according to compound specification requirements. The powder is available in big bags. Actifine® is a circular product that helps to protect and conserve the environment.

Actifine® complies with ASTM D5603 Class 80-1.

2. Specification

Parameter	Unit	Typical Value	Min	Max	Test Method
Hydrocarbon content (polymers, oils, waxes, resins, etc.)	wt. %	62	61	63	I
Carbon black	wt. %	28.5	27	31	I
Inorganic content (ash)	wt. %	8.5	7.5	9	I
Moisture	wt. %	0.5		<1	II
Specific gravity (SG)	g/cm ³	1.14	1.13	1.15	III
Bulk density (untapped)	kg/m ³	400	380	410	IV
Acetone extraction	wt. %	6	5	7	V
Particle size distribution* *D95 percentile - before chemical treatment	µm	<177	<167	<187	VI
SVHC* *Substance of very high concern - ECHA all listings	all <0.1 wt. %	PASS	PASS	PASS	NA

Full Description of Test Methods:

I. TGA to ISO 9924-3:2009(E) Procedure A

II. ASTM D1509:2018 (125 °C)

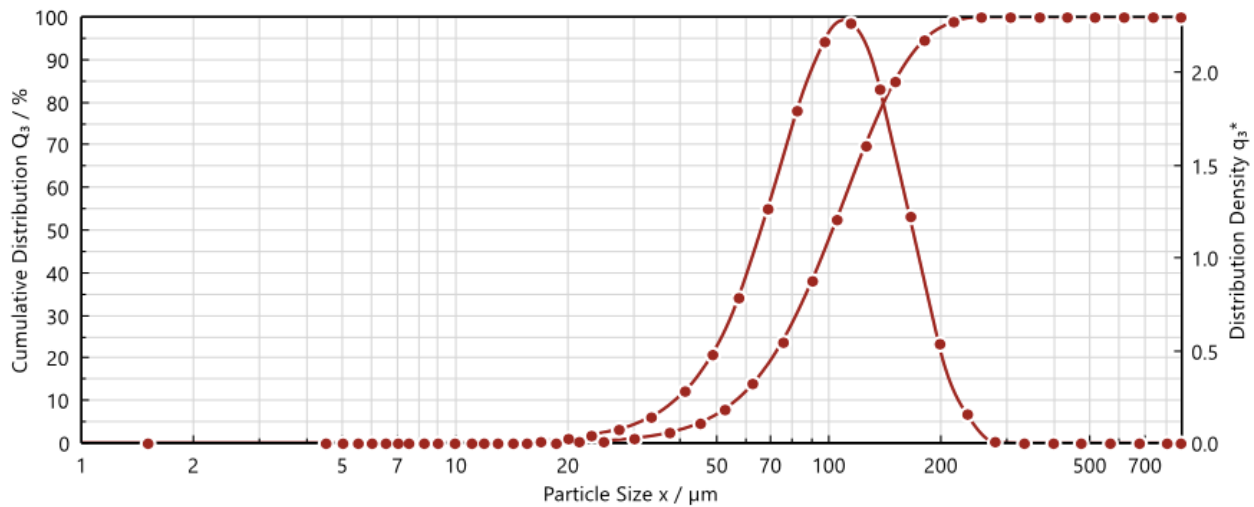
III. ISO 2781:2018 (derived)

IV. ISO 787-11

V. ISO 1407:2011 Method B

VI. Helos/KR and Rodos/L to DIN 66141-66145

3. Typical Particle Size Distribution



4. Applications

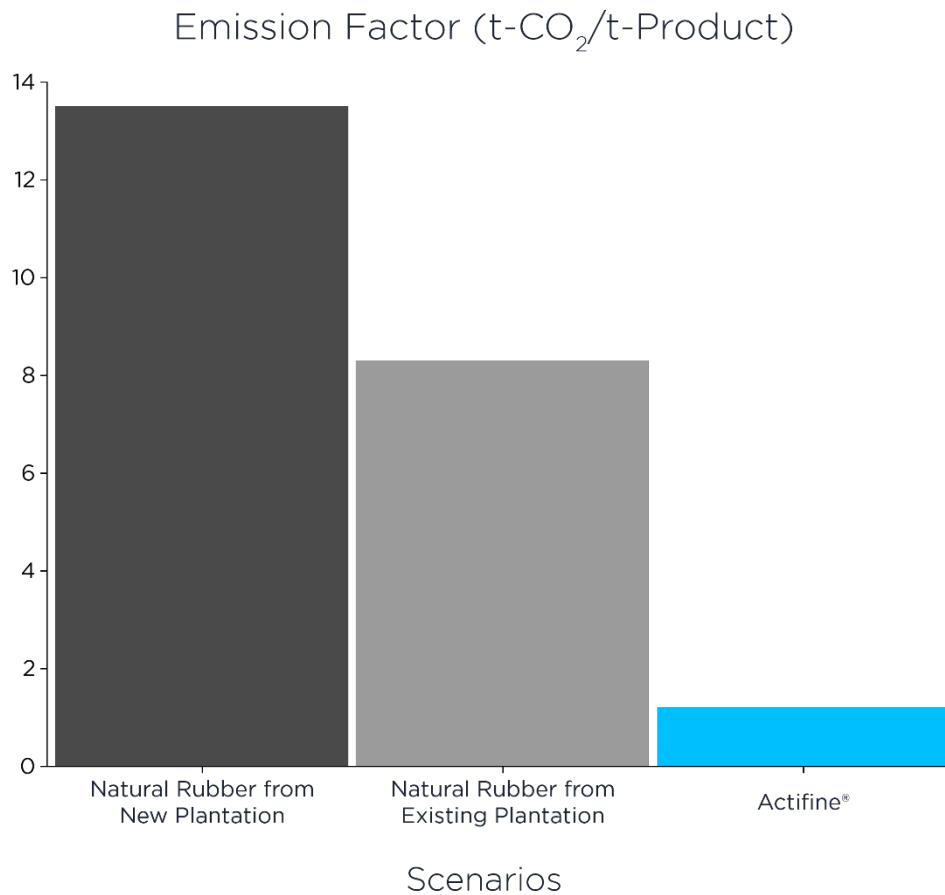
Tyres: The surface activation minimises the negative impacts on ultimate tensile properties, tear and abrasion resistance that are typically associated with untreated MRP. Dynamic moduli, tan delta, hysteresis, and heat build-up are maintained at very attractive levels or even improved, thereby making Actifine® an excellent high performance and low-cost, low-density additive in tyres and other demanding dynamic applications. Recommended loadings in SBR passenger car tyre tread compounds are between 5 to 8 %, tyre sidewalls 8 to 12 %. Recommended loading in natural rubber truck tread and re-tread compounds is between 10 and 15 %. Higher loadings may be possible with fine tuning of the recipe.

Technical Rubber Goods: Loading concentrations vary widely according to application requirements, generally between 10 and 25 wt. % concentrations are typical. In natural rubber compounds loadings can be increased much higher to around 45 % without creating processing problems (e.g., bagging on a two-roll mill). The recommended maximum loading in SBR compounds is 25 % in order to avoid bagging.

Elastomers: Actifine® performs exceptionally well in polychloroprene compounds and typically improves its mechanical properties with a 10 % loading. Actifine® also finds applications in both sulphur and peroxide cured EPDM compounds. In moulded products the surface appearance is unaffected but in extruded compounds the surface appears more mat. Loadings are typically between 10 and 25 %. The typical smell of EPDM is altered somewhat which may be a consideration in certain applications.

Actifine® has a density (specific gravity) of only 1.14 g/cm³ compared with other fillers such as carbon black (1.8 g/cm³), silica (1.95 g/cm³) and cheap mineral fillers (~2.7 g/cm³), therefore keeping applications light-weight and minimizing the effect on the compound volume cost.

5. Carbon Footprint



Life Cycle Analysis (LCA) available upon request.

Important Notice

All information presented in this document are based upon tests and knowledge that ARP believes are reliable and accurate. However, because applications of our products are beyond our control, this information should not be used in substitution for customer’s technical analysis and evaluation to determine whether it is fit for a particular purpose. Our only warranty is that our products will meet the specifications exchanged at the time of sale. ARP disclaims liability for any incidental or consequential damages.

Atlantis Rubber Powders B.V.
Sittard, Limburg
The Netherlands

Revision: 2023-03-30-2.2
© 2023. All rights reserved.
ARP and Actifine are trademarks of Atlantis Rubber Powders B.V.

