



TALL OIL ROSIN

TOR

The rosin acid composition and reactivity of Forchem's Tall Oil Rosin (TOR) products are comparable to gum rosin and they are unmodified so as to provide a cost-effective and flexible starting point for many end applications and customer-specific processes.

In keeping with Forchem's ecologically sustainable principles our local, European-produced TOR offers customers significant environmental and cost advantages compared with traditional gum rosins in steel drums which must be imported from distant countries.

TOR TALL OIL ROSIN

ANALYSIS SPECIFICATION

PRODUCT	Acid Value	Colour Gardner	Free rosin acids, %	Softening point, °C
FOR 85	min. 168	max. 5,0	min. 87	min. 61
FOR 90	min. 170	max. 4,5	min. 90	min. 68

CARBON FOOTPRINT
Forchem TOR

89 gCO₂eq./kg

ANALYSIS TYPICAL VALUE

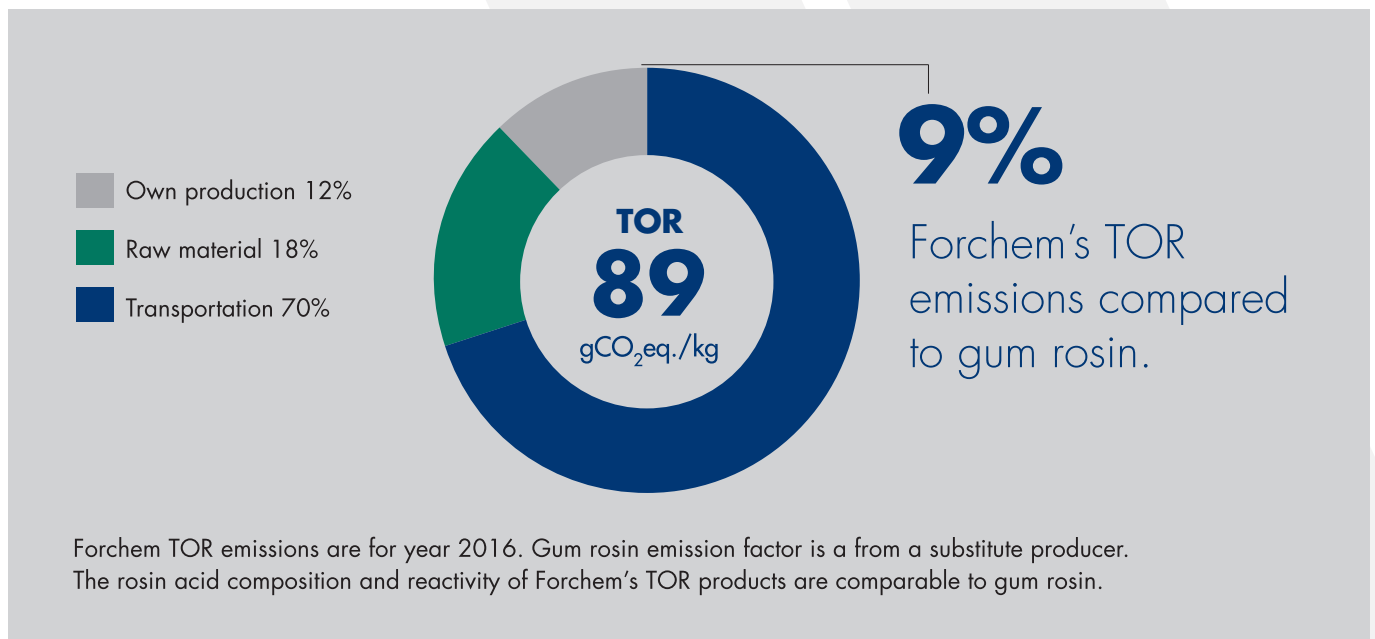
PRODUCT	Acid Value	Colour, Gardner	Free fatty acids, %	Free rosin acids, %	Softening point, °C	Unsaponifiables, %	VOC (Delivered in liquid form), %
FOR 85	176	3,1	4	91	63	4	0
FOR 90	178	3,3	3	93	72	3	0

FORCHEM TOR


– At the forefront of low carbon solution

The limited availability of the earth's resources and growing consumer demand has turned the availability of natural resources and the state of the environment into a globally important question. Forchem tall oil products have a low carbon footprint, generating minimal volumes of greenhouse gases compared to alternative materials.

Our raw material, crude tall oil (CTO) is an industrial co-product derived from the kraft pulping process. There is no additional use of natural resources. Forchem utilizes almost entirely bioenergy, which enables climate friendly operations. The production facility is located next to a pulp mill, minimizing the emissions from raw material logistics. The European produced Forchem TOR is used to satisfy the demands of today's environmentally aware consumers and global markets.



METHODOLOGY FOR CARBON FOOTPRINT CALCULATIONS

gaia  This calculation was conducted by Gaia Consulting Ltd. 2017

- Product carbon footprint is the sum of greenhouse gas emissions of a product system, expressed in CO₂-equivalents.
- Calculations are conducted following the life cycle assessment standards ISO 14040 and ISO 14044.
- Emissions are for year 2016. The presented results include emissions from raw material production, transportation and operations in Rauma refinery (cradle – to gate)
- Primary data was collected and used for all processes under the control of Forchem.
- Secondary data was collected from available databases (mostly Ecoinvent v. 3.0) and used to estimate the emissions of raw material production and transportation.
- Emissions of crude tall oil production (CTO) were assumed to be 3.5 % of the emissions of sulfate pulp production. This is based on the average amount of CTO produced as side-product in sulfate pulp processes in Finland (mass basis).
- Emissions factors for average Nordic pulp mills is used for CTO originating from Nordic and Global average for CTO produced outside Nordic countries.
- This calculation was conducted in co-operation with Gaia Consulting Ltd. (www.gaia.fi) for business-to-business purposes only.

Forchem assumes no responsibility or liability for the completeness and correctness of this analysis and this document including the data and information collected from raw material suppliers.

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