

This document is valid with immediate application, until further notice.

Date: 14/02/ 2024

## Fuel

The fuel adopted in TCR Competitions/Championships must respect the TCR Tech. Regulation limits/values, and must comply with the following specifications, based on FIA-APP J Art 252.9 (09-12-2022):

PROPERTY	UNITS	Typical Reference (Fuel in TCR Europe & Dyno Test)	MIN.	MAX.	Test Method
RON	-	98	95 <sup>(1)</sup>	99 <sup>(1)</sup>	ISO 5164 / ASTM D2699
MON	-	88	85 <sup>(1)</sup>	89 <sup>(1)</sup>	ISO 5163 / ASTM D2700
Density (at 15 °C)	Kg/m <sup>3</sup>	762	720	785	ISO 12185 / ASTM D4052
Oxygen	% m/m	3.7	-	3.7	EN ISO 22854 / EN 13132 <sup>(2)</sup> / Elemental Analysis ASTM D5622
Methanol	% v/v	-	-	3.0	EN 1601 / EN 13132 / EN ISO 22854
Nitrogen	mg/kg	< 100	-	500 <sup>(4)</sup>	ASTM D4629 / ASTM D5762
Sulphur	mg/kg	< 10	-	10	ISO 20846 <sup>(2)</sup> / ASTM D5453
Lead	mg/l	< 0.3	-	5	EN 327 / ASTM D3237 / ICP-OES
Manganese	mg/l	-	-	2.0	ASTM D3831 / (ICP-OES) EN 16136
Benzene	% v/v	< 0.5	-	1.00	ISO 12177 / ASTM D5580 / ISO 22854 <sup>(2)</sup> / ASTM D6839 / EN 238
Olefins	% v/v	6.1	-	18.0	ISO 22854 / ASTM D6839
Aromatics	% v/v	33.0	-	35.0	ISO 22854 / ASTM D6839
Total di-olefins	% m/m	1.0	-	1.0	GC-MS / HPLC
Total Styrene and alkyl derivatives	% m/m	-	-	1.0	GC-MS
Oxidation Stability	Minutes	> 400	360		ISO 7536 / ASTM D525
DVPE	kPa	55.8	-	80 <sup>(6)</sup>	ISO 13016-1 <sup>(2)</sup> / ASTM D4953 / ASTM D5191 <sup>(2)</sup>
Ethanol	% v/v	10	-	10	EN 228

(1) A correction factor of 0.2 for MON and RON shall be subtracted for the calculation of the final result in accordance with EN 228: 2012

(2) Preferred method

(4) Octane boosting nitro compounds are not permitted

(6) The maximum DVPE may rise to 100 kPa for winter competitions.

### Distillation characteristics:

PROPERTY	UNITS	Typical Reference (Fuel in TCR Europe & Dyno Test)	MIN	MAX	Test Method
At E70 °C	% v/v	-	20.0	52.0	ISO 3405 / ASTM D86
At E100 °C	% v/v	64	46.0	72.0	ISO 3405 / ASTM D86
At E150 °C	% v/v	82	75.0	-	ISO 3405 / ASTM D86
Final boiling point	°C	176	-	210	ISO 3405 / ASTM D86
Residue	% v/v	1.1	-	2.0	ISO 3405 / ASTM D86

The only oxygenates permitted are paraffinic mono-alcohols and paraffinic mono-ethers (of 5 or more carbon atoms per molecule) with a final boiling point below 210°C.

The addition of a lubricant is not permitted in TCR fuels.

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