

This document is valid with immediate application until further notice.

12/01/2023

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 ⁽¹⁾ | 98 ⁽¹⁾ | ISO 5164 / ASTM D2699 |
| MON | - | 88 | 85 ⁽¹⁾ | 88 ⁽¹⁾ | ISO 5163 / ASTM D2700 |
| Density (at 15 °C) | Kg/m ³ | 762 | 720 | 785 | ISO 12185 / ASTM D4052 |
| Oxygen | % m/m | 3.7 | - | 3.7 | EN ISO 22854 / EN 13132 ⁽²⁾ / Elemental Analysis ASTM D5622 |
| Methanol | % v/v | - | - | 3.0 | EN 1601 / EN 13132 / EN ISO 22854 |
| Nitrogen | mg/kg | < 100 | - | 500 ⁽⁴⁾ | ASTM D4629 / ASTM D5762 |
| Sulphur | mg/kg | < 10 | - | 10 | ISO 20846 ⁽²⁾ / 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 ⁽²⁾ / 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 ⁽⁶⁾ | ISO 13016-1 ⁽²⁾ / ASTM D4953 / ASTM D5191 ⁽²⁾ |
| 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.

General Secretary of the Technical Department

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