octane booster series RHC-9600

a new generation of octane booster additives

Rheochemie GmbH

additives customized solution

additives solutions
to boost the world of
tomorrow

octane boosters series RHC-9600

RHC-9600 Octane Booster Series is a new generation high performances Octane Boosters for Oxygenates replacement (MTBE, TAME...). High antiknock power with balanced MON/RON ratio.

RHC-9600 Octane Booster Series increase Refineries' flexibility to process opportunity crude and feedstocks. We carefully select and apply fuel additives to significantly improve Refineries' or Blenders' profitability by minimising reprocessing and give away costs.

The best solution to improve and optimise gasoline blending even using Low Octane Hydrocarbon fractions (Naphtha).

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McAbee
Trucking

why using octane boosters series RHC-9600

- Increase Gross Margin of Refinery / Blending Companies
- Increase RON/MON for all types of low/high octane gasoline as primary antiknock
- Possibility to integrate the raw gasoline with low and very low (65 -88) RON streams
- Optimise Blend stock and available stream usage
- Virtually avoid any giveaway
- Increase Refinery Operation Flexibility
- Prevent “quality excess” if crude gasoline has MON deficit
- Keep “Sensitivity” value (S= RON-MON) ≤ 10
- Improve Combustion efficiency
- Reduce Noxious Emissions
- Manufacture Gasoline in compliance with any international specification

technical overview

The peculiarity of **RHC-9600 Octane Booster Series** against other Octane Booster is very good MON respond due to MON-booster components.

RHC-9600 Octane Booster Series RON antiknock power is much higher than other commercial octane booster but it is about 2-5 times higher than oxygenated octane boosters.

RHC-9600 Octane Booster Series apparent MON/RON ratio is 0.70-1.00 , much better compared with 0.6-0.7 of other octane boosters products (table 2).

Table 2.
RHC-9600 Octane Booster Series antiknock power comparative with other octane booster additives

additive	RON	MON	MON/RON
RHC-9600	400 - 650	210 - 500	**0.7 - 1.0**
Ethanol	125 -140	95 - 105	0.72 -0.77
MTBE	114 -115	105 -106	0.92 - 0.93
ETBE	117 -119	102-104	0.87 - 0.88

technical overview

RHC-9600 Octane Booster Series antiknock power, like others similar, varies complying with:

- the additives efficiency is higher when initial octane number is lower.
- the additives octane power decreases when it's concentration in gasoline increases.
- the additives respond decreases if aromatic content increase.

Table 1.
RHC-9600 Octane Booster Series physical and chemical properties

aspect	yellow to brown liquid	
water content	% w/w	< 0.5
oxygen content	% w/w	0.1-0.5
density 20 °C	kg/m3	0.96 - 1.04
evaporated 200 °C deg	% vol/vol	> 90
final boiling point	°C deg	240

RHC-9600 Octane Booster Series are compatible with other octane booster chemicals. RHC-9600 additives give a synergetic effect with these; the antiknock power may increase about 20- 40% in certain composition range.

RHC-9600 Octane Booster Series additives are compatible as well with all types of oxygenates, such as ethanol, MTBE, ETBE, TAME. No octane power decreasing was observed in mixture with oxygenates, even synergetic interactions occurs in certain situation.

environmental

regulation are in place to
preserve our world

metal free fully organic octane booster

Since years our research team is focused on developing metal free additives capable of providing outstanding performances supporting Refiners in meeting more and more restrictive gasoline metal specifications.
Our additives are Metal Free certified and in compliance with latest European Gasoline specifications.

*Organometallic compounds available for markets tolerant to Metals

noxious emission reduction

RHC-9600 Octane Booster Series are improving combustion efficiency with the result of reducing noxious exhaust gases emission:

- CO_2 emission reduction (ex. 1Million Cars / 10.000 km x year = - 20.000 Tons)
- CO, NO_x and THC (total hydrocarbons) emissions reduction (ex. 1Million Cars/10.000 km/ year = - 650 T)

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GAZOLE
Super
DIESEL
Maximum
by

additive certification

RHC-9600 Octane Booster Series are among the very few certified additives for manufacturing Gasoline in accordance with EN 228 +A1 2017 standard currently valid for the current Euro 6 standard.

MINISTERUL TRANSPORTURILOR ŞI INFRASTRUCTURII
MINISTRY OF TRANSPORTS AND INFRASTRUCTURE

REGISTRUL AUTO ROMÂN ORGANISMUL DE CERTIFICARE PRODUSE
ROMANIAN AUTOMOTIVE REGISTER PRODUCTS CERTIFICATION BODY

CERT CERTIFICARE PRODUSE

CERTIFICAT DE CONFORMITATE EMIS DE R.A.R.-O.C.P.

CERTIFICAT DE CONFORMITATE
CERTIFICATE OF CONFORMITY
NR. 4606

Valabil de la / *Valid from* 28.09.2021

Registrul Auto Român - Organismul de Certificare Produse (R.A.R.-O.C.P.)
certifică prin prezentul că:
Romanian Automotive Register - Products Certification Body (R.A.R.-O.C.P.)
hereby certifies that:

RHEOCHEMIE GmbH

cu sediul în: / *address:* **Hans-Sachs-Straße 16, 9020 Klagenfurt, Austria**

s-a conformat Regulilor Generale, cod RG-00, ale R.A.R.-O.C.P., aplicabile unor produse fabricate în serie, privind certificarea produsului:
has complied with the General Rules, code RG-00, of R.A.R.-O.C.P., applicable to series manufactured products, regarding the certification of product:

Aditiv pentru benzine RHC-9600-SERIES, tip OCTANE BOOSTER

fabricat de: / *manufactured by:* **RHEOCHEMIE GmbH**

în sediul din: / *address:* **Hans-Sachs-Straße 16, 9020 Klagenfurt, Austria**

Produsul a fost evaluat conform Regulilor Generale, cod RG-00, ale R.A.R.-O.C.P., în raport cu cerinţele esenţiale specificate, schema de certificare nr. 4 şi corespunde documentului normativ:
The product was assessed according to the General Rules, code RG-00, of R.A.R.-O.C.P., within the essential requirements specified, certification scheme no. 4 and found to comply with the normative document:

Standard de Firmă, cod SF 001-RHC-9600-series, ediţia 1/21.11.2016, revizia 1/21.03.2019

Benzinele aditivate cu RHC-9600-SERIES, tip OCTANE BOOSTER respectă cerinţele SR EN 228+A1:2017, conform Raportului de încercări nr. 40735/24.09.2021, emis de RQC S.R.L..
Gasoline additivated with RHC-9600-SERIES , type OCTANE BOOSTER complies with SR EN 228+A1:2017, according to Test report no. 40735/24.09.2021, issued by RQC S.R.L..

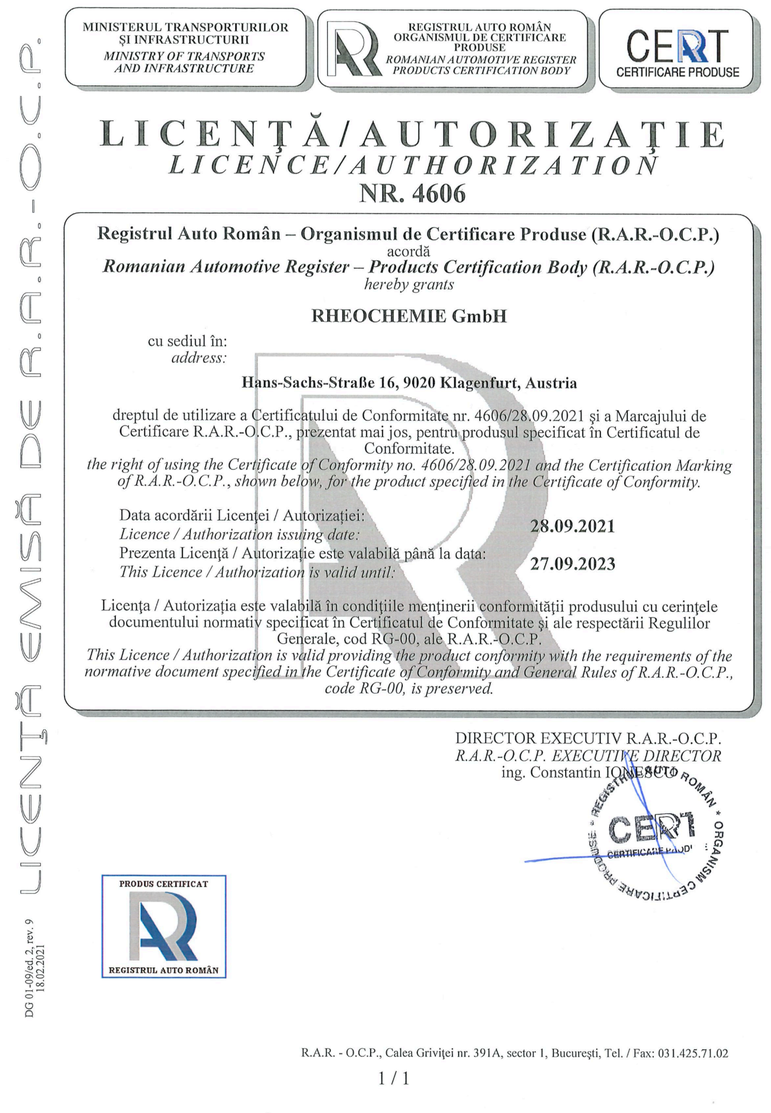
Data certificării iniţiale / *First certification date*: 09.03.2017

DIRECTOR EXECUTIV R.A.R.-O.C.P.
R.A.R.-O.C.P. EXECUTIVE DIRECTOR
ing. Constantin IONESCU

DG 01-08/ed. 2, rev. 9
10.02.2021

Notă - prezentul Certificat de Conformitate nu implică aplicarea Mărcii de Conformitate R.A.R.-O.C.P. pe produsele certificate.
***Note** - this Certificate of Conformity does not imply the application of the R.A.R.-O.C.P. Mark of Conformity on the products.*

R.A.R. - O.C.P., Calea Griviţei nr. 391A, sector 1, Bucureşti, Tel. / Fax: 031.425.71.02



MINISTERUL TRANSPORTURILOR ŞI INFRASTRUCTURII
MINISTRY OF TRANSPORTS AND INFRASTRUCTURE

REGISTRUL AUTO ROMÂN ORGANISMUL DE CERTIFICARE PRODUSE
ROMANIAN AUTOMOTIVE REGISTER PRODUCTS CERTIFICATION BODY

CERT CERTIFICARE PRODUSE

LICENŢĂ EMISĂ DE R.A.R.-O.C.P.

LICENŢĂ / AUTORIZAŢIE
LICENCE / AUTHORIZATION
NR. 4606

Registrul Auto Român – Organismul de Certificare Produse (R.A.R.-O.C.P.)
acordă
Romanian Automotive Register – Products Certification Body (R.A.R.-O.C.P.)
hereby grants

RHEOCHEMIE GmbH

cu sediul în:
address:

Hans-Sachs-Straße 16, 9020 Klagenfurt, Austria

dreptul de utilizare a Certificatului de Conformitate nr. 4606/28.09.2021 şi a Marcajului de Certificare R.A.R.-O.C.P., prezentat mai jos, pentru produsul specificat în Certificatul de Conformitate.
the right of using the Certificate of Conformity no. 4606/28.09.2021 and the Certification Marking of R.A.R.-O.C.P., shown below, for the product specified in the Certificate of Conformity.

Data acordării Licenţei / Autorizaţiei: **28.09.2021**
Licence / Authorization issuing date:
Prezenta Licenţă / Autorizaţie este valabilă până la data: **27.09.2023**
This Licence / Authorization is valid until:

Licenţa / Autorizaţia este valabilă în condiţiile menţinerii conformităţii produsului cu cerinţele documentului normativ specificat în Certificatul de Conformitate şi ale respectării Regulilor Generale, cod RG-00, ale R.A.R.-O.C.P.
This Licence / Authorization is valid providing the product conformity with the requirements of the normative document specified in the Certificate of Conformity and General Rules of R.A.R.-O.C.P., code RG-00, is preserved.

DIRECTOR EXECUTIV R.A.R.-O.C.P.
R.A.R.-O.C.P. EXECUTIVE DIRECTOR
ing. Constantin IONESCU

PRODUS CERTIFICAT
REGISTRUL AUTO ROMÂN

DG 01-09/ed. 2, rev. 9
18.02.2021

R.A.R. - O.C.P., Calea Griviţei nr. 391A, sector 1, Bucureşti, Tel. / Fax: 031.425.71.02

optimisation
is a crucial parameter in
refinery blending management

flexibility, flexibility and again flexibility

Typically MTBE or other oxygenates cannot be added over 10/12% in gasoline and are normally able to support with an increase of 2 to 3 RON at most, simply sometime not enough.

During Refinery operation is very common to face shortage or excess of some streams, or having a technical problem in a units which require reducing the severity affecting gasoline quality or simply having a chance to include a very cheap stream in the blending.

Above mentioned conditions are normally leading to impossibility of meeting RON/RVP Gasoline spec, giveaway of products at low price, importing of gasoline to solve a critical situation…

Having **RHC-9600 Octane Booster Series** available you will be able not only to optimise regular blending, but to face most common emergency situation avoiding huge loss of time and money and utilising up to the last drop of every available stream.

supporting customer as never before

Rheochemie technical team approach starts with a preliminary evaluation trying to get an overview of available streams, blending procedures, gasoline specs… Is important to understand if and which kind of Octane Booster are used and in which way.

Based on typical gasoline compositions and other collected information, we normally perform laboratories test directly in refinery to specifically customise our formulation to customer needs.

We take care of evaluation of necessary eventual blending equipment and integration in the existing blending structure if required.

Along with the product we are providing logistics, necessary equipment, Technicians, supervisors and engineers and whenever needed we can support **RHC-9600 Octane Booster Series** injection, performance monitoring and gasoline specification compliance check.

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NO SMOKING

logistic cost optimisation

Normally a 8/10% of MTBE or similar oxygenates in gasoline blend is increasing the RON number of about 2. Same results can be achieved by adding approx 0,4 % of RHC 9600 Series Octane Booster.

This resulting in a dramatic saving in terms of logistic, transportation and necessary tanks in refinery.

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shipping methods

Octane Booster can be shipped in following methods depending on customer requirements:

-Drums 200 Liters (Each Full Load Container Approx 18 Tons)
-IBC Tanks (Each full load Container Approx 20 Tons)
-ISO Tanks Approx 23 Tons Each
-Bulk vessel Approx 3.000 Tons

Typical shipping methods for refineries are bulk vessel / ISO Tanks due to required volumes.

Mandressi Group

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