



Elastomers for Petrochemical Applications

Oil and Gas

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Elastomer for petrochemical applications – oil + gas

Exploring oil and gas and to follow the further processing is putting extreme demands onto the required sealing material.

MCM High-Performance Sealing has been successfully operating in this field for many years and has developed a number of outstanding compounds. Many are equipped with appropriate certificates!

anyseals cooperates closely with **MCM High-Performance Sealing** on O-rings. Since customers often need quantities which do not correspond to the necessary production volume and usually require shortest delivery times, **anyseals** has been building up extensive stocks. Price and delivery times can be taken from the e-shop as usual in seconds.



In oil drilling plants, depending on the different possible positions, one can find harsh mixtures of hydrocarbons even sulfonated, superheated steam, H₂S, CO₂, methane, amine based corrosion inhibitors, temperatures well below 0°C and over 200°C, high pressure.

To cope with so aggressive and diversified combinations the following features must be granted **at the same time**:

- chemical resistance
- outstanding physical properties
- elasticity in a wide range of temperatures
- resistance against explosive decompression (AED)



As a matter of fact the following elastomers are of common use

FKM, bisphenolic cured

Maximum thermal rating (short time +250°C), excellent resistance against hydrocarbons also aromatic, good physical properties, limited resistance to steam and H₂S (max 2000 ppm). Special compounds for explosive decompression (AED).

FKM, peroxide cured

Excellent thermal rating (+220/230°C, short time +250°C), special grades for low temperatures, good resistance to bases, limited resistance to H₂S. Special compounds for explosive decompression (AED).

FEPM, AFLAS®

Excellent thermal rating (+230°C), outstanding resistance against bases and H₂S (up to 30%), limited resistance to hydrocarbons and aromatic substances, limited low temperature flexibility. Special compounds for explosive decompression (AED).

FFKM, evolast®

Outstanding thermal rating (+320°C, short time +340°C), outstanding resistance towards aggressive chemicals, acids, organic and inorganic fluids, ketones, esters, solvents, amines, hot water and steam. Special compounds for explosive decompression (AED).

HNBR

Maximum physical properties, good thermal rating (+160°C, short time +180°C), good steam and H₂S (max 5000 ppm) resistance, limited resistance to aromatic hydrocarbons. Special compounds for explosive decompression (AED).

 materials engineering research laboratory	
TEST CERTIFICATE	
This document certifies that	
"AFL9G" (AFLAS® 90 ED (FEPM))	
compound in O-ring form, supplied by	
MCM S.p.a VIA CASTELLO 70 24060 ADRARA S. M. (ITALY)	
passed the requirements of	
NORSOK M710 Rev 2 in respect of rapid gas decompression resistance, under the following test conditions	
Test gas	90/10 mol% CH ₄ /CO ₂
Test temperature	100°C
Test pressure	150 bar (15 MPa)
Decompression rate	20 bar/minute
No. of cycles	10
Tested by	M V Lewan
Date	1 st July 2010
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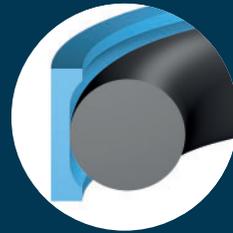
Oilfield Sealing Solutions

Material	Material No.	Hardness Shore A	Colour	Temperature °C from to	Remarks *approvals available
FKM 90 nero	N9000	90	black	-25 +230 (+250)	Copolymer, oil/gas applications
FKM 90 ED	N9001	90	black	-30 +230 (+250)	oil/gas applications, AED - RGD *NORSOK M710 (AED - RGD) – 5.33, – 10.82 mm *NACE TM0297 (AED - RGD) – 5,33 mm *NACE TM0187 (sour gas environment) – 5% + 20% H ₂ S *TOTALFINA SP-TCS-142 *SHELL (80°C – 138 bar) *API6A (sour gas environment) – 10% H ₂ S *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *Life prediction & AED - RGD test – Arrhenius ISO 23936-2 *Saudi Aramco 06-SAMSS-001
FKM 90 PLT/ED	N9012	90	black	-41 +220 (+250)	low temperature, AED - RGD – 10.82 mm *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0297 (AED - RGD) – 5.33 mm *TOTALFINA SP-TCS-142 *ITN 84700/A (AED - RGD) – 10 mm *NACE TM0187 (sour gas environment) – 5% + 20% H ₂ S *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *Life prediction & AED - RGD test – Arrhenius ISO 23936-2 *SHELL - MESC SPE 85/301 *Saudi Aramco 06-SAMSS-001 tested for H ₂ service
FKM 90 GFLT®ED	N9015	90	black	-40 +230 (+250)	low temperature, high chemical resistance, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0187 (sour gas environment) – 20% H ₂ S *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *Saudi Aramco 06-SAMSS-001
FKM 90 GF/ED	N9024	90	black	-25 +230 (+250)	peroxide cured, oil/gas applications, AED - RGD *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] *NORSOK M710 (AED - RGD) – 5.33, – 10.82 mm *Saudi Aramco 06-SAMSS-001
FKM 90 LT40/ED	N9034	90	black	-41 +220	low temperature, AED - RGD very good performance in Methanol *NORSOK M710 (AED - RGD) – 5.33 mm *SHELL - MESC SPE 85/301 *API6A 10% H ₂ S - [FF/HH] *Saudi Aramco 06-SAMSS-001
FKM 90 LT50/ED	N9035	90	black	-51 +225 (+250)	low temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0187 (sour gas environment) – 5% H ₂ S *NACE TM0297 100% CO ₂ (AED - RGD) – 5.33 mm tested for H ₂ service



Oilfield Sealing Solutions

Material	Material No.	Hardness Shore A	Colour	Temperature °C from to		Remarks *approvals available
FKM 90 LT60/ED	N9036	90	black	-61	+225 (+250)	ultra low temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0187 (sour gas environment) – 5%, 20% H ₂ S *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3
FKM 98 ED	N9801	98	black	-27	+230 (+250)	oil/gas applications, AED - RGD *BS EN ISO 23936-2
FKM 98 PLT/ED	N9812	98	black	-40	+225 (+250)	PLT, low temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm
AFLAS® 90 ED	AFL9G	90	black	-20	+200 (+230)	oil/steam, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0187 (sour gas environment) – 5%, 20% H ₂ S *API6A (sour gas environment) – 10% H ₂ S - [FF/HH]
HNBR 90 ED	HN90G	90	black	-35	+160 (+180)	oil/gas applications, AED - RGD *ED Total Fina-Shell, *NORSOK M710 (AED - RGD) – 5.33 mm – 10.82 mm *NORSOK M710 (sour fluid resistance) 2% H ₂ S *EN 14141-2003 (natural gas transportation pipeline) *NACE TM0187 (sour gas environment) – 2%, 5%, 20% H ₂ S *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *Saudi Aramco 06-SAMSS-001 tested for H ₂ service
HNBR 90 ED-L	HN90L	90	black	-55	+160 (+180)	oil/gas applications, low temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm *NACE TM0187 (sour gas environment) – 5% H ₂ S *NACE TM0297 100% CO ₂ (AED - RGD) – 10.82 mm *SHELL *MESC SPE 85/301 *API6A (sour gas environment) – 10% H ₂ S - [FF/HH] tested for H ₂ service
HNBR 98 ED	HN98G	98	black	-35	+160 (+180)	oil/gas applications, AED - RGD
HNBR 98 ED-L	HN98L	98	black	-55	+160 (+180)	oil/gas applications, low temperature, AED - RGD
evolast® N9ED	PN9ED	90	black	-15	+260 (+280)	oil/gas applications, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm – ISO 23936-2 *NACE TM0187 (sour gas environment) – 5% - 20% H ₂ S *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *API6A (sour gas environment) – 10% H ₂ S - [FF/HH]
evolast® N9EX	PN9EX	90	black	-15	+320 (+340)	high temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm – ISO 23936-2
evolast® N9LT	PN9LT	90	black	-46	+250 (+270)	low temperature, AED - RGD *NORSOK M710 (AED - RGD) – 5.33 mm



AED – (Anti-Explosive-Decompression) / RGD – (Rapid Gas Decompression)



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