



**Elastomer FKM – HNBR – FFKM evolast®**  
**Solutions for complex applications**

# Solutions for complex applications

There are applications that require high demands on the sealing material used: e.g. for extreme temperatures far below 0°C and above 200°C as well as high pressures. Or there are aggressive mixtures of hydrocarbons, superheated steam, H<sub>2</sub>S, CO<sub>2</sub>, methane and amine-based corrosion inhibitors.

**anyseals** has a wide range of seals for the wind industry, subsea equipment, pipeline connections, valves, fittings, pumps, compressors, mechanical seals, etc. originally developed for the oil and gas industry.



**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.



# 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 H<sub>2</sub>S (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 H<sub>2</sub>S. Special compounds for explosive decompression (AED).

## FEPM, AFLAS®

Excellent thermal rating (+230°C), outstanding resistance against bases and H<sub>2</sub>S (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 H<sub>2</sub>S (max 5000 ppm) resistance, limited resistance to aromatic hydrocarbons. Special compounds for explosive decompression (AED).

**merl**  
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**

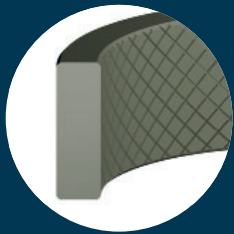
Test gas	90/10 mol% CH <sub>4</sub> /CO <sub>2</sub>
Test temperature	100°C
Test pressure	150 bar (15 MPa)
Decompression rate	20 bar/minute
No. of cycles	10
Tested by	M V Lewan
Date	1 <sup>st</sup> July 2010

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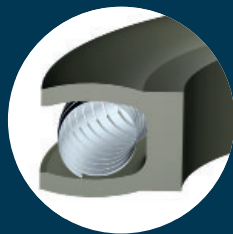
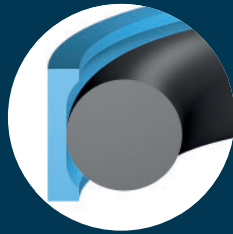
## Compounds for complex applications

Material	Material No.	Hardness Shore A	Colour	Temperature °C from to	Remarks *approvals available
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 <sub>2</sub> S *TOTALFINA SP-TCS-142 *SHELL (80°C – 138 bar) *API6A (sour gas environment) – 10% H <sub>2</sub> 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 <sub>2</sub> S *API6A (sour gas environment) – 10% H <sub>2</sub> 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 <sub>2</sub> service
FKM 90 GF/ED	N9024	90	black	-25 +230 (+250)	peroxide cured, oil/gas applications, AED - RGD *API6A (sour gas environment) – 10% H <sub>2</sub> S - [FF/HH] *NORSOK M710 (AED - RGD) – 5.33, – 10.82 mm *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 <sub>2</sub> S *NACE TM0297 100% CO <sub>2</sub> (AED – RGD) – 5.33 mm tested for H <sub>2</sub> service
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 <sub>2</sub> S *API6A (sour gas environment) – 10% H <sub>2</sub> S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3
FKM 70 GF nero	N7010	70	black	-15 +240	sour fuel MAN 308-2 (Truck & Bus AG 2011) *BAM (150°C - 40Bar Oxygen) VW 2.8.1 A (2011)



## Compounds for complex applications

Material	Material No.	Hardness Shore A	Colour	Temperature °C from to	Remarks *approvals available
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 <sub>2</sub> S *API6A (sour gas environment) – 10% H <sub>2</sub> 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 <sub>2</sub> S *EN 14141-2003 (natural gas transportation pipeline) *NACE TM0187 (sour gas environment) – 2%, 5%, 20% H <sub>2</sub> S *API6A (sour gas environment) – 10% H <sub>2</sub> S - [FF/HH] *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *Saudi Aramco 06-SAMSS-001 tested for H <sub>2</sub> 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 <sub>2</sub> S *NACE TM0297 100% CO <sub>2</sub> (AED – RGD) – 10.82 mm *SHELL *MESC SPE 85/301 *API6A (sour gas environment) – 10% H <sub>2</sub> S - [FF/HH] tested for H <sub>2</sub> service
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 <sub>2</sub> S *Sour fluid test Arrhenius ISO 23936-2/NORSOK M710-3 *API6A (sour gas environment) – 10% H <sub>2</sub> 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





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