Case Study No. 7:

Keeping Hydrogen under Control – AFM 34 Flange Gaskets for Shielding Gas Installations in Steel Heat Treatment Plants

THE CHALLENGE

Safe supply and removal of hydrogen: Hydrogen is used as shielding gas in industrial furnaces when annealing steel, e.g. normalizing and recrystallizing, in order to obtain a uniform microstructure with optimum strength and working properties. Due to its unusually high diffusivity, hydrogen is difficult to seal. Moreover, it is highly flammable, and with atmospheric oxygen it forms explosive oxyhydrogen gas. Therefore, utmost safety is required.

THE SOLUTION FROM VICTOR REINZ

Uncompromising gas tightness plus safety – AFM 34. Outstanding mechanical strength combined with excellent gas tightness. For example, AFM 34 provides more than 1000 times better sealing than required by the German TA-Luft (Technical Guidelines on Air Quality) for volatile organic compounds. What's more, it has received numerous approvals. That's a guarantee for safety – with hydrogen and in many other applications.

What kind of challenge do you face?
Give us a call!

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VICTOR REINZ®

Technical Data [1] (Nominal thickness 2.00 mm)		**AFM 34**
Tensile strength (across-grain)	ASTM F 152	> 18 N/mm²
Residual stress	DIN 52913	
16 h, 300 °C		~ 25 N/mm²
16 h, 175 °C		~ 36 N/mm²
Compressibility and Recovery	ASTM F 36 J	
Compressibility		5-8 %
Recovery		> 55 %
Sealability		
DIN 3535-6 FA		~ 0.02 mg/(s·m)
According to TA-Luft (VDI 2440/2200)		
Q=30 MPa, T=200 °C (2000 h!), Δp_{HE}=1 bar		$8.6 \cdot 10^{-8}$ mbar·l/(s·m)
Swelling	ASTM F 146	
- in oil IRM 903, 5 h, 150 °C		
Increase in thickness		< 7 %
Increase in weight		< 7 %
- in ASTM Fuel B, 5 h, RT		
Increase in thickness		< 10 %
Increase in weight		< 10 %
- in water / antifreeze (50:50), 5 h, 100 °C		
Increase in thickness		< 10 %
Increase in weight		< 10 %
Max. continuous temperature[2]		250 °C
Max. operating pressure [2]		150 bar

Form of delivery	**AFM 34**
Gaskets according to drawing, dimensions provided, or other agreements	
Sheets (standard format)	1500 x 1500 mm
Nominal thickness	0.30 to 5.00 mm
Tolerances	according to DIN 28091-1

Approvals

DIN-DVGW, SVGW, ÖVGW
KTW, WRc/WRAS
VP401 (HTB), Fire Safe, BAM
Grade X
TA-Luft

Note: Refer to data sheet No. 334 or visit our website at www.reinz.com/datasheet for more detailed information.

[1] The preceding technical data applies to the material in its delivery condition without additional treatment or handling.
[2] Maximum continuous temperature and maximum pressure may not occur simultaneously.

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