

ADMER[®] Pipe Application Grades

PREFACE

ADMER[®] Pipe grades are designed for multi-layer pipes composed of polyethylene (PE), polypropylene (PP), polybutylene (PB) and metal, EVOH or PA. These grades are based on LLDPE or PP and are highly stabilized for pipe application. As a result of our advanced anhydride grafting technology, these grades create superb adhesion to metal, EVOH and PA, while maintaining an excellent processability equivalent to that of common LLDPE and PP.

ADMER[®] Pipe grades are certified in aging resistance or thermal durability according to ISO 2578 respectively DVGW W542 Anhang C for a life time of more than 50 years under operational conditions.

ADMER[®] GRADE SELECTION - PIPE

Adherend	PE	PP	PB-1
EVOH PA	NF410E NF468E	QF460E QF551E	QF460E
Aluminium	NF410E (outside) NE062E (inside)	NF468E (outside) AT2397E (inside)	QF460E QF551E

For further details please refer to www.admer.eu

The information and numerical results are for information only and are given in good faith. In view of numerous factors of which we are unaware and which are beyond our control regarding the use of our products, we cannot guarantee that this information covers all possible aspects of the subject. Moreover, we cannot accept any responsibility with regard to patents for applications and processes described.

05/2011



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ADMER® Pipe Application Grades

PHYSICAL PROPERTIES

PE type ADMER®

Item	ASTM Test Method	Unit	NF410E	NF468E	AT2397E	NEo62E
MFR (190°C, 2.16 kg)	D1238	g/10min	1.6	4.0	4.5	4.5
Density	D1505	g/cm ³	0.92	0.92	0.92	0.91
Tensile strength at yield	D638	MPa	9.8	11	10	8.0
Tensile strength at break	D638	MPa	24	18	21	19
Elongation at break	D638	%	>500	>500	>500	>500
Izod impact strength	D256	J/m	No Break	No Break	No Break	No Break
Shore hardness	D2240	D scale	50	51	47	46
Vicat softening point	D1525	°C	100	95	90	83
Melting point	D3418	°C	120	120	123	122
Adhesion Strength of Cast Film *1) EVOH/AD/PE = 40/40/160 µm *2) EVOH/AD/PE = 20/10/40 µm	Speed 5m/min 20m/min	N/15mm	7.4	9.7 1.5		
Adhesion Strength of Aluminium Sandwich *4) AL/AD/AL = 200/100/200 µm *5)		N/20mm		125	140	135

PIPE APPROVALS

Approval for the usage of certain ADMER® grades in pipe applications must always be obtained by pipe manufacturers. We will support customers in the pipe sector in that approval process by directly disclosing the required information to authorized testing laboratories on request. Evidence of ageing resistance of ADMER® pipe grades according to DVGW W542 and ISO2578 has been obtained.

ADMER® Pipe Application Grades



PHYSICAL PROPERTIES

PP type ADMER®

Item	ASTM Test Method	Unit	QF460E	QF551E
MFR (230°C, 2.16 kg)	D1238	g/10min	3.2	5.0
Density	D1505	g/cm ³	0.90	0.89
Tensile strength at yield	D638	MPa	21	17
Tensile strength at break	D638	MPa	32	17
Elongation at break	D638	%	>500	>500
Izod impact strength	D256	J/m	No Break	No Break
Shore hardness	D2240	D scale	60	59
Vicat softening point	D1525	°C	122	120
Melting point	D3418	°C	148	147
Adhesion Strength of Cast Film *1) EVOH/AD/PP = 40/40/160 µm *3) EVOH/AD/PP = 20/10/40 µm *3)	Speed 5m/min 20m/min	N/15mm		18 4.5
Adhesion Strength of Aluminium Sandwich *4) AL/AD/AL = 200/100/200 µm *6)		N/20mm	130	150

Test Parameters:

- *1) T-Peel method: Speed=300mm/min.
- *2) Processing Temperature: EVOH/ADMER/LDPE = 220°C
- *3) Processing Temperature: EVOH = 210°C, ADMER = 230°C, PP = 230°C, Die = 210°C
- *4) 180° Peel method: Speed = 200mm/min, 23°C
- *5) Heat Seal conditions: 0,1 MPa, 60s, 150°C
- *6) Heat Seal conditions: 0,1 MPa, 60s, 160°C

FOOD STATUS

- EU:** Monomers and additives are listed as authorized monomers/additives in Annex I of Regulation (EC) No. 10/2011. Please refer to our Declarations of Compliance regarding substances restricted by SMLs. (Status: 14th January 2011)
- USA:** All ADMER® grades conform to FDA 21CFR, §175.105 (Adhesives) for indirect food contact. Some grades are also suitable for direct food contact. (Status: 1st April 2010)

Further details are available on www.admer.eu