ION EXCHANGE RESINS

PRODUCTS MANUAL

Abstract

Ion exchange resins are now being used not only for water treatment as in the past, but in a wide variety of fields including the food, pharmaceutical and semiconductor industries

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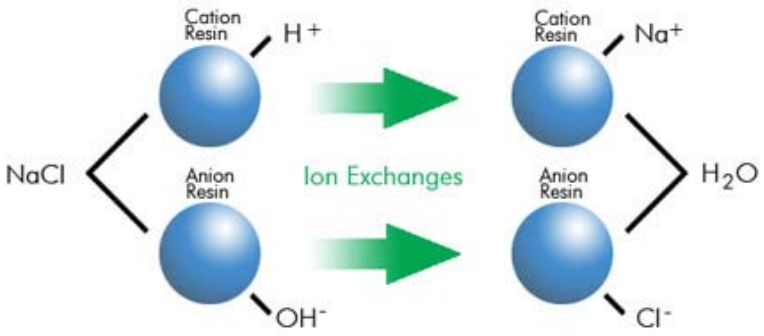
ION EXCHANGE RESINS

PRODUCTS MANUAL



Contents:

STRONG ACIDIC CATION EXCHANGE RESINS - Gel & Macro porous Type

FRANCE Water	FW 001-7	FW 001-8	FW 002-SC Na	FW SQ-60 C	FW D001	FW SQD-61	FW SQD-65
Ionic Form	Na	Na	Na	Na	Na	H	H
Matrix	Polystyrene + DVB						
Mass Capacity meq/g	≥ 4.5	≥ 4.5	≥ 4.4	≥ 4.5	≥ 4.35	≥ 4.8	≥ 4.8
Volume Capacity meq/ml	≥ 1.90	≥ 2.0	≥ 2.1	≥ 2.0	≥ 1.8	1.7	≥ 2.0
Moisture %	45 - 50	43 - 48	38 - 43	43 - 48	45 - 55	50 - 60	45 - 55
Bulk Density g/ml	0.77 - 0.87	0.78 - 0.88	0.81 - 0.87	0.78 - 0.88	0.77 - 0.85	0.72 - 0.82	0.75 - 0.85
Specific Density g/ml	1.25 - 1.29	1.26 - 1.30	≥ 1.30	1.26 - 1.30	1.25 - 1.28	1.15 - 1.25	1.18 - 1.26
Particle Size %		0.315-1.25 mm ≥ 95	0.63-1.25 mm ≥ 95	0.70-0.90 mm ≥ 95	0.315-1.25 mm ≥ 95	0.40-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95
Effective Diameter mm		0.4 - 0.7	≥ 0.63		0.4 - 0.7		
Uniformity coefficient		≤ 1.6	≤ 1.4	≤ 1.2	≤ 1.6	≤ 1.6	
Whole Beads after osmotic attrition %	(≥ 0.90) ≥ 0.60						
Remarks	Domestic gel type standard.	International gel type standard.	Strong cationic resin. Combined with D113SC	Gel type strong cationic resin. Uniform particle sizes.	Very high resistance to oxidation, physical breakage, osmotic shock fracture and organic fouling.	Superior mechanical strength and excellent resistance to organic fouling AQD-61, combined with SQD-92	Strong cationic resin. Very high capacity.

Applications

FW 001-7 : Suitable for softening and demineralization. Also be widely used in glutamate and other amino acid recovery and antibiotics, etc.

FW 001-8 : Suitable for softening and demineralization. Used in amino acid and antibiotics, etc.

FW 001-9 : Used specifically for bi-layered bed system.

FW 001-10 : Used for softening & DI. Having good dynamic properties and low pressure drop. Combined with SQ-70A.

FW 001-11 : Suitable for water and chemical treatment.

FW 001-12 : Used in the recycling water treatment in glycol and methyl ethyl ketone production.

FW 001-13 : Mainly used to convert Vc-Na into VC. SQD-67 has higher capacity than SQD-65.

STRONG BASE INION EXCHANGE RESINS - Gel & Macro porous Type

FRANCE Water	FW 201-4	FW 201-7	FW SQ-70A	FW 201-II	FW D201	FW D202-II	DOC 2001
Ionic Form	Cl	Cl	Cl	Cl	Cl	Cl	Cl
Matrix	Polystyrene + DVB						
Mass Capacity (max Regenerable) meq/g	≥ 3.7 (4.0)	≥ 3.5 (3.8)	≥ 3.5 (3.8)	≥ 3.3 (3.5)	≥ 3.7 (4.0)	≥ 3.4 (3.7)	≥ 3.5
Volume Capacity meq/ml	≥ 1.10	≥ 1.35	≥ 1.30	≥ 1.25	≥ 1.20	≥ 1.20	≥ 0.80
Moisture %	50 - 60	42 - 48	45 - 50	45 - 51	50 - 60	47 - 57	55 - 65
Bulk Density g/ml	0.66 - 0.71	0.67 - 0.73	0.67 - 0.73	0.68 - 0.75	0.65 - 0.73	0.68 - 0.74	0.63 - 0.73
Specific Density g/ml	1.06 - 1.10	1.07 - 1.10	1.07 - 1.10	1.08 - 1.15	1.06 - 1.10	1.07 - 1.12	1.03 - 1.08
Particle Size %	0.315-1.25 mm ≥95		0.5 - 0.7 mm ≥ 95	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95
Effective Diameter mm	0.4 - 0.7			0.4 - 0.7	0.4 - 0.7	0.4 - 0.7	
Uniformity coefficient			≤ 1.2	≤ 1.6	≤ 1.6	≤ 1.6	
Whole Beads after osmotic attrition %	(≥ 0.90)						
Max Swelling Rate	Cl→OH 33%	Cl→OH 27%	Cl→OH 27%	Cl→OH 25%	Cl→OH 20%	Cl→OH 15%	Cl→OH 20%
Remarks	International gel type standard. good kinetic properties and high working capacity	Domestic gel type standard. Good mechanical strength.	Gel type, With uniform particle size. Having good kinetic properties and low pressure drop.	Gel type II strong anionic resin.	Very high resistance to physical breakage, osmotic shock fracture. Silica removal ability.	Macro porous type II. Excellent resistance to physical breakage, osmotic shock fracture.	excellent resistance to organic fouling

APPLICATIONS

FW 201-4 : Suitable for demineralization and silica removal. Widely used in pharmaceutical and food industries.

FW 201-7 : FC used for floating bed and SC for double-layer bed. Also there are OH-type resins.

FW SQ-70A : could be used alone or combined with SQ-60C

FW 201-II : Used for very high working capacity for demineralization.

FW D201 : Used in DI also to absorb Gold from cyanide or pulp. OH-type also available.

FW D202-II : Used in the DI systems. FC used for floating bed and SC for double-layer bed.

DOC 2001 : Mainly used as organic scavenger and for food processing.

WEAK (ACIDIC CATION/BASE ANION) EXCHANGE RESINS

TYPE	W. A. CATIONIC		W. B. ANIONIC				
FRANCE Water	**FW D113**	**FW SQD-112**	**FW D301**	**FW D301-G**	**FW D301-FD**	**FW D301-H**	**FW D309**
Ionic Form	H	H	Free Amine				
Matrix	(Polystyrene + DVB) Gel & Macro porous						
Mass Capacity meq/g	≥ 11.0	≥ 10.5	≥ 4.8	≥ 4.8	≥ 4.8	≥ 4.8	≥ 7.0
Volume Capacity meq/ml	≥ 4.3	≥ 3.5	≥ 1.45	≥ 1.40	≥ 1.35	≥ 1.5	≥ 1.6
Moisture %	45 - 50	50 - 60	48 - 58	50 - 60	50 - 60	48 - 55	60 - 70
Bulk Density g/ml	0.72 - 0.8	0.7 - 0.8	0.65 - 0.72	0.65 - 0.72	0.65 - 0.72	0.65 - 0.72	0.65 - 0.72
Specific Density g/ml	1.14 - 1.20	1.10 - 1.20	1.03 - 1.06	1.03 - 1.06	1.03 - 1.06	1.03 - 1.06	1.03 - 1.06
Particle Size %	0.315-1.25 mm ≥ 95		0.63-1.25 mm ≥ 95				
Effective Diameter mm	0.4 - 0.7	0.4 - 0.7	0.4 - 0.7				
Uniformity coefficient	≤ 1.6		≤ 1.6				
Whole Beads after osmotic attrition %	≥ 0.90						
Max Swelling Rate	H→Na 65%	H→Na 100%	OH→Cl 20%	OH→Cl 25%	OH→Cl 25%	OH→Cl 20%	OH→Cl 45%
Remarks	Excellent resistance to physical breakage, osmotic shock fracture and organic fouling. High capacity.		supper mechanical & osmotic strength, good kinetic properties	excellent resistance to organic fouling	it's better discoloration effect than D301-G & -F	Higher capacity than D301.	primary amine groups and high resistance to organic fouling

Applications

FW D113 : Used for softening and De-alkalization. Also FC for **floating bed** and SC for double-layer bed.

FW SQD-112 : Used for **extraction of colistine sulfate**, with high capacity, high selectivity and easy to elute.

FW D301 : widely used in demineralization

FW D301-G : Widely used in demineralization and discoloration of **starch sweetener syrup** & other organic solutions.

FW D301-FD : Mainly used **to remove acid and color from natural extracts or fermentation broth**

FW D301-H : widely used in demineralization

FW D309 : Mainly used in **adsorption and purification of Streptomycin and other aldehyde compounds.**

STRONG & WEAK BASE ANION EXCHANGE RESINS

TYPE	W. A. CATIONIC		W. B. ANIONIC				
FRANCE Water	**FW 213**	**FW D213**	**FW 313**	**FW 316**	**FW D311**	**FW D319**	**FW SQD-815**
Ionic Form	Cl & free Amine		Free Amine				
Matrix	Polyacrylate based Gel & Micro porous						
Mass Capacity meq/g	≥ 3.5 (≥ 1.0)		≥ 5.5	≥ 5.0	≥ 6.5	≥ 8.5	≥ 5.3
Volume Capacity meq/ml	≥ 1.2	≥ 0.8	≥ 1.4	≥ 1.6	≥ 2.0	≥ 2.6	≥ 1.5
Moisture %	54 - 64	65 - 72	55 - 65	50 - 60	48 - 58	50 - 60	55 - 65
Bulk Density g/ml	0.68 - 0.75	0.65 - 0.73	0.65 - 0.75	0.65 - 0.75	0.65 - 0.75	0.65 - 0.75	0.65 - 0.75
Specific Density g/ml	1.05 - 0.10	1.04 - 1.10	1.04 - 1.10	1.02 - 1.12	1.10 - 1.16	1.05 - 1.15	1.05 - 1.10
Particle Size %	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95				
Effective Diameter mm	0.4 - 0.7	0.4 - 0.7	0.4 - 0.7				
Uniformity coefficient	≤ 1.6		≤ 1.6				
Whole Beads after osmotic attrition %	≥ 0.90						
Remarks	Gel type, excellent resistance to organic fouling	Macro porous type. Organic scavenger. excellent resistance to organic fouling	Gel type weak base. excellent resistance to organic fouling		Very high capacity and excellent mechanical strength.	it's higher capacity than D318	Special designed for Citric Acid

Applications

FW 213 : Widely used in demineralization and discoloration.

FW D213 : Widely used in discoloration.

FW 313/316 : Mainly used for recycle treatment of water containing much organic substances.

FW D311 : Used in food and pharmaceutical industries for SO4, Cl, NO3 removal, adsorption and purification of Citric & Vitamin C.

FW D319 : Mainly used for L-lactic acid & other organic acid adsorption in fermentation industry.

FW SQD-815 : Special designed for Citric Acid production by ion exchange procedures.

SELECTIVE & PHENOLIC BASE ANION EXCHANGE RESINS

TYPE	PHENOLIC BASED RESIN		SELECTIVE & CHELATING RESIN				
FRANCE Water	**FW SQ-338**	**FW SQ-122**	**FW D402**	**FW D403**	**FW D405**	**FW SQ407**	**FW D407**
Ionic Form	**Free Amine**	**H**	**Na**	**Free Amine**	**H**	**FeO (OH)**	**Cl**
Mass Capacity meq/g	≥ 9.5	≥ 4.0	1.95 (Cu)	2.7			3
Volume Capacity meq/ml		0.9	0.6 (Cu)	0.9	0.8 (Hg)	0.5	0.8
Moisture %	75 - 85	60 - 80	52 - 58	52 - 60	45 - 50	35 - 45	52 - 60
Bulk Density g/ml	0.63 - 0.73	0.7 - 0.8	0.72 - 0.78	0.70 - 0.76	0.72 - 0.78	0.78 - 0.88	0.65 - 0.75
Specific Density g/ml	1.02 - 0.10	1.05 - 1.15	1.15 - 0.25	1.08 - 1.18	1.02 - 1.08	1.22 - 1.32	1.05 - 1.10
Particle Size %	0.315-1.25 mm ≥ 95	0.315-1.25 mm ≥ 95					
Effective Diameter mm	0.4 - 1.0	0.4 -1.0					
Uniformity coefficient	≤ 1.9						
Whole Beads after osmotic attrition %				≥ 0.90 %		≥ 0.90 %	
Max Swelling Rate	OH→Cl 40%	H→Na 60%	H→Na 40%	OH→Cl 45%			
Remarks	Gel type epoxy based WBA, excellent resistance to organic fouling & color adsorption	Phenolic based weak acid cation resin	**Cupper** adsorption	**Boron** adsorption	**Mercury** Removal	**Arsenic** Removal	**Nitrate** Removal

Applications

FW SQ-338 : Widely used **to remove acid, colors in food and pharmaceutical** industries.

FW SQ-122 : Widely used in discoloration and **purification of Streptomycin, terramycin, tetracycline and glutamate, sweetener syrups..**etc.

FW D402 : Mainly used to **remove Cu**.

FW D403 : Highly selective and high capacity for **Boron** especially with N-methylglucamine.

FW D405 : Highly selective for various kinds of **Mercury removal** with -SH group.

FW SQ407 : Mainly used for **Arsenic removal** in drinking water treatment.

FW D407 : Mainly used for **Nitrate removal** in drinking water treatment.

ADSORBENT RESINS

FRANCE Water	FW DA201-C	FW DA201-CII	FW DA201-E	FW DA201-H	FW DA201-M	FW DA201-M8	
Surface Area m2/g	1200-1400	1000-1300	≥ 1100	≥ 800	≥ 400	≥ 450	
Average Pore Diameter nm	3.0 - 4.0	3.0 - 5.0	6.0 - 8.0	6.0 - 8.0	6.0 - 8.0	6.0 - 8.0	
Pore Volume ml/g	1.1 - 1.2	1.3 - 1.5	1.5 - 1.8	1.5 - 1.8	0.8 - 1.1	0.7 - 1.0	
Bulk Density g/ml	0.68 - 0.75	0.65 - 0.75	0.63 - 0.73	0.65 - 0.70	0.68 - 0.75	0.65 - 0.70	
Specific Density g/ml	1.03 - 0.10	1.03 - 1.10	1.03 - 1.10	1.02 - 1.07	1.10 - 1.20	1.02 - 1.07	
Moisture %	50 - 60	60 - 70	60 - 70	55 - 65	55 - 65	55 - 65	
Particle Size %							
Effective Diameter mm							
Uniformity coefficient							
Whole Beads after osmotic attrition %							
Remarks	Macronet non-polar adsorbent	Macronet non-polar adsorbent	Macronet non-polar adsorbent with high surface area and high adsorption capacity	High surface area non-polar adsorbent	Middle-polar adsorbent	Weak-polar adsorbent	

Applications

FW DA201-C : Widely used **for adsorption of phenolic and other aromatic compounds from the wastewater.**

DA201-CII: Widely used in **discoloration removal of Patulin and pesticide residues from fruit juice**.

FW DA201-E : Mainly used for **adsorption & purification natural products such as Cephalothin C.**

FW DA201-H : Mainly used for **adsorption & separate anti-biotic and stevioside..etc.**

FW DA201-M: Mainly used for **adsorption non-polar chemicals from aqueous solutions or to adsorb polar chemicals from non-polar solutions.**

DA201-M8 : Mainly used for **adsorption & purification steviaside with very high selectivity.**

CATALYST RESIN / CHROMATOGRAPHIC MEDIA RESINS

Type	CATALYST RESIN			CHROMATOGRAPHIC MEDIA RESINS			
FRANCE Water	**FW 002-CR**	**FW D002**	**FW JY-1**	**FW DTF-01**	**FW D201**	**FW D202-II**	
Ionic Form	H	H	H	Ca	H, Na, K	Cl	
Mass Capacity (max Regenerable) meq/g	≥ 5.0	≥ 4.8		≥ 5.0 (H)	≥ 5.0 (H)	≥ 3.8	
Moisture %	55 - 65	50 - 60		45 - 55	55 - 65	45 - 60	
Bulk Density g/ml	0.72 - 0.78	0.75 - 0.80	0.53 - 0.63	0.75 - 0.85	0.70 - 0.80	0.68 - 0.72	
Specific Density g/ml	1.18 - 1.28	1.22 - 1.30					
Particle Size %	0.4 - 1.25 mm ≥ 95 %			0.2 - 0.4 mm ≥ 95			
Whole Beads after osmotic attrition %	≥ 0.98	≥ 0.90					
Remarks	Super-gel strong acid resin. High activity, selectivity and mechanical strength.	High catalytic activity, selectivity, mechanical strength and very low leachable.	Aldehydes removal in Ethylene glycol	Ca-type resin. Media of Chromatographic separation	Media of Chromatographic separation	Media of Chromatographic separation	

APPLICATIONS

FW 002-CR : Mainly used for **bio-phenol A preparation and ester synthesis or hydrolysis.**

FW D002 : Mainly used for **MTBE and TAME preparation.**

FW JY-1 : Mainly used for **Aldehydes removal in Ethylene glycol up to 90%.**

FW DTF-01 : Mainly used in **separation of fructose and glucose or sorbitol and mannitol…etc.**

FW D201 : Mainly used in **separation of monosaccharaides and oligosaccharides.. etc.**

FW D202-II : Mainly used **as retardant chromatographic media in waste acid recovery.**

MIXED-BED RESINS

FRANCE Water	FW MBS 1	FW MBS 8	FW MBS 10	FW MBS 75
Ionic Form	99% H & 90% OH			
Matrix	Polystyrene + DVB			
Volume Capacity meq/ml	0.6	0.5	0.5	0.5
Moisture %	50 - 60			
Bulk Density g/ml	0.71 - 0.74	0.71 - 0.74	0.72 - 0.76	0.72 - 0.76
Remarks	001-7 H 40% 201-7 OH 60%	001-8 H 40% 201-4 OH 60%	001-7 H 50% 201-7 OH 50%	001-8 H 50% 201-7 OH 50%

FRANCE WATER RESINS EQUIVALENTS

FRANCE Water	BAYER	MITSUBISHI Diaion	DOW Dowex	PUROLITE	RESIN TECH	ROHM & HASS Amberlite	SYBRON
CATION EXCHANGE RESINS							
FW 001-7	S100LF		HCR-S/E/S	C100E		SR1L	
FW 001-8	S100	SK1B	HCR-S/E	C100	CG-8	IR-120	C-249
FW 001-10	S110	SK110	HGR-W2/C10	C100X10	CG-10	IR-122	C-250
FW 001-16		SK116				IR-124	
FW D001	S112	PK216	MSC-1	C150	SAC MP	AMB 252	CFP-110
FW SQD-65	SP120	PK228	CM15/16	C160			C-360
FW SQD-67				C160			
FW 112				C105		IRC-86	
FW D113-II	CNP-80	WK-40	MWC-1	C104E	WAC MP	IRC-76/84	CCP
FW SQD-85	CNP/LF	WK-20	MWC-3	C107E			
FW SQD-88		WT01S		C115E		IRC-50	
FW SQ-122							
ANION EXCHANGE RESINS							
FW 201-4	M504/510	SA 12A	SBR-P	A400	SBG 1P	IRA402/420	ASB-1P
FW 201-7	M500/511	SA 10A	SBR	A600	SBG 1	IRA400	ASB-1
FW 202-II	M600/610	SA 20A	SAR	A200/300	SBG 2	IRA410	ASB-2
FW D201	MP500	PA308/312	MSA-1	A500	SBMP 1	IRA900	A641
FW D202-II	MP600	PA412/416	MSA-2	A510		IRA910	A651
FW D296	MP500A				SBG-1VP	IRA901/904	A642
FW DOC2001	S6328A	HPA25		A500P	SIR-22P	IRA958	
FW D301-III	MP62		66	A100		IRA94	
FW D301-G	MP64	WA 30	MWA-1	A100E	WBMP	IRA93/95/96	
FW 213	VP OC1071			A850E	SBACR1	IRA458	A475
FW D213	VP OC1074			A860		IRA958	MACRO-T
FW 313	VP OC1072	WA 11		A845/847		IRA67	

CONDENSATE POLISHING RESINS							
FW D003NJ			650C	SGC-650H			
FW D203NJ			550A	SGC-550OH			
OIL REMOVAL RESINS							
FW OA-01				OL-100			
CATALYST RESINS							
FW 002CR	K1221			CT110		A131	
FW D002	K2641/2649			CT124/175		A15/35	
FW D002-II						XE 365	
SELECTIVE AND CHELATING RESINS							
FW D401	TP207/208	CR 11	XZ95843	S930	SIR-300	IRC-748	SR-5
FW D402	TP260		XZ87480	S940	SIR-500	IRC-747	
FW D403-II	MK51	CRB 02	XUS43594.00	S108	SIR-1100	IRC-743	
FW D405	TP214		XZ95844	S920	SIR-200	GT-73	SR-4
FW D405-II					SIR-400		SR-3
FW D406							
FW SQ407				ARSEN Xnp			
FW D407		A490		A520E		HP555	SR-7
FW D407-III				A530E			
ADSORBENT RESINS AND INERT RESINS							
FW DA201-A						XAD-2	
FW DA201-B	EP63	HP 21				XAD-3	
FW DA201-C				MN-200			
FW DA201-C II			SD-2	MN500			
FW DA201-D						XAD-4	
FW DA201-DII						XAD-1180	
FW DA201-E		SP825					
FW DA201-G		SP207					
FW DA201-H						XAD-16	

CONTACT US

www.france-water.com

France-Water

Europe

HEAD OFFICE
2 rue Georges de Porto Riche
75014 Paris
+33 (0)9 80 77 38 18
+33 (0)9 80 77 38 18
contact@france-water.com

FRANCE
2 rue Georges de Porto Riche
75014 Paris
+33 (0)9 80 77 38 18
contact@france-water.com

SPAIN
Urb. punta cormoran
30380 La Manga del Mar Menor
(Murcia)
+33 (0)6 50 12 56 24
contact@france-water.com

FRANCE-WATER

Middle East

KSA
AL-Khobar – Dammam

AZDA Group

Khalid M. Al-SHAHRANI
+966 50 590 89 49
awahab@azdagroup.com

IRAQ
Erbil – Italian city
+964 750 183 15 71
alitaknik@gmail.com

SYRIA
Al-Shekh Taha – Aleppo

TECO
+963 94 44 43 303
tecosys2@gmail.com

UAE
Ras Al Khaïmah
+33 (0)6 50 12 56 24
contact@france-water.com

FRANCE-WATER

North Africa

ALGERIA
15 rue Charles Valin
16000 Alger
+213 55 31 91 769
contact@france-water.com

Purchase Manager	Technical Consultant	Technical Manager
Kamel BELKAIM	Daniel Billon-LANFRAY	Nabil TOMEH
Mobile : +33 6 50 12 56 24	Mobile: +33 6 07 57 32 92	Mobile: +33 6 50 62 70 41
kbelkaim@france-water.com	billonlanfray@gmail.com	ntomeh@france-water.com