Bilag 1.3 - Samleark BDK-Kraft 13 + 2 Stk. + OlieQ + Manf. Year + 26 kV pr. 25-10-2016

Sample object	Transformator
Manufacturer	Strömberg
Serial nr.	5800657
Product type	KYRT 170 x 23
Voltage (kV)	150 kV
Voltage tap 1	
Voltage tap 2	
Power	18 MVA
Power tap 1	
Power tap 2	

Year of manufacture		Serie nr.	**IEC 60422**	5800657	5800656	5800036	5800037	5800760	5800761	5800926	5800925	5800924	5800923	5800072	5800073	5800762	5800763	5801023
Energised without load		Oil Quality		?? ??	?? ??	NT 20 X	NT 20 X	NS 10X	NS 10X	Nytro 10X	Nytro 10X	Nytro 10X	Nytro 10X	NT 20 X	NT 20 X	NS 10X	?? ??	?? ??
		Oil Weight		12.600 kg	12.600 kg	13.300 kg	13.300 kg	12.600 kg	12.600 kg	12.600 kg	12.600 kg	12.600 kg	12.600 kg	13.300 kg	13.300 kg	12.600 kg	12.600 Kg	10.300 kg
Analysis result		Manf. Year + Voltage		1993(22-10-1996)	1991(08-01-1997)	**03-02-1983**	**14-01-1983**	14-04-1993	15-04-1993	16-08-1995	15-08-1995	14-12-1994	13-12-1994	**25-03-1983**	**24-03-1983**	1997(14-09-1993)	1996-10-21(1993)	18-09-1996
		Sub St. ID		**FGD KT3C**	**FGD KT3D**	**HEJ SGF T25**	**HEJ SGF T26**	**IGF T25**	**IGF T26**	**KAS JKF KT31**	**KAS JKF KT32**	**MAG OJF KT33**	**MAG OJF KT34**	**ROF T25**	**ROF T26**	**RYT FAF KT33**	**RYT FAF KT34**	**SØN SDBF KT33**
Sample date				21-04-2016	21-04-2016	27-05-2016	27-05-2016	28-06-2016	28-06-2016	08-12-2015	08-12-2015	08-12-2015	08-12-2015	30-06-2016	30-06-2016	08-06-2016	08-06-2016	07-12-2015
Prov nr.				16-02311	16-02310	16-02636	16-02637	16-03185	16-03186	15-05078	15-05077	15-05081	15-05080	16-03187	16-03188	16-02689	16-02690	15-05079
Sample place				Botten	Botten	-	-	Botten	Botten	Botten	Botten	Botten	Botten	Botten	Botten	Botten	Botten	Mitten
Analysis	**Norm**	**Unit**																
Oil temperature		°C		22	22	30	35	30	32	8	7	10	7	18	17	30	31	9
Water content	IEC 60814	mg/kg	from 2010	3 (2015)	3 (2015)	5 (2014)	4 (2014)	5 (2010)	3 (2010)	2 (2014)	2 (2014)	3 (2014)	2 (2014)	5 (2010)	3 (2010)	3 (2014)	3 (2014)	2 (2014)
Insulation water content		%(w/w)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidity	IEC 62021-1	mg KOH/g		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**<0.01**	**<0.01**	<0.01	<0.01	<0.01
Dielectic strength	IEC 60156/95	kV/2.5 mm		82	82	76	70	55	79	97	98	94	69	66	75	72	75	86
Acidity	IEC 62021-2	mg KOH/g		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dielectic strength1	IEC 156/95	kV/2.5 mm		97	75	93	81	67	86	99	99	100	80	70	72	94	96	98
Dielectic strength2	IEC 156	kV/2.5 mm		86	77	85	65	50	94	87	100	81	65	68	81	83	71	99
Dielectic strength3	IEC 156	kV/2.5 mm		80	67	76	71	67	75	100	100	100	69	61	67	29	65	91
Dielectic strength4	IEC 156	kV/2.5 mm		74	95	88	68	51	59	100	100	92	70	80	77	88	76	70
Dielectic strength5	IEC 156	kV/2.5 mm		84	91	70	65	44	93	100	100	99	67	65	86	71	78	65
Dielectic strength6	IEC 156	kV/2.5 mm		70	85	42	72	50	69	99	87	93	64	56	67	70	67	91
Standard deviation				9	11	18	6	10	14	5	5	7	6	8	7	24	11	14
Colour	ASTM D1500			0.5	<0.5	0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.0**	**1.0**	<0.5	<0.5	<0.5
Visual inspection	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan delta	IEC 60247	x10-3		<1	1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1
Resistivity+ 90C	IEC 60247	G ohmm		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Resistivity- 90C	IEC 247	G ohmm		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interfacial tension	ASTM D971-99	mN/m		45	45	44	43	46	46	49	48	48	47	**42**	**44**	46	46	48
Inhibitor1	IEC 60666	% (w/w)		0.32	0.33	0.32	0.32	0.34	0.34	0.32	0.32	0.33	0.33	0.29	**0.30**	0.33	0.33	0.33
Inhibitorh	CRC	%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inhibitor2	CRC	%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Passivator, Irgamet 39	IEC 60666	ppm		-	-	1	1	-	-	-	-	-	-	<1	<1	-	-	-
S8 (ECD)	GC-ECD	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-
DBDS (ECD)	GC-ECD	mg/kg		86 (2016)	81 (2016)	<1	<1	104	107	36	47,1	55,3	56,5	<1	<1	85	89	89,2
CCD-C	IEC 62535			korr	korr	ej korr	ej korr	korr(2016)	korr(2016)	Korr	Korr	Korr	Korr	korr(2015)	korr(2015)	korr	korr	Korr
CCD	New method			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Korrosivt svavel	ASTM D1275B			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corrosive Sulfur	DIN 51353	-	SILVER	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr	ej korr
DP	IEC 60450			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fra 2010 **2FAL**	IEC 61198	µg/g		<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)
Fra 2010 **2ACF**	IEC 61198	µg/g		<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)
Fra 2010 **2FOL**	IEC 61198	µg/g		<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)
Fra 2010 **5MEF**	IEC 61198	µg/g		<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)	<0.05 (2015)	<0.05 (2015)	<0.05 (2010)	<0.05 (2010)	<0.05 (2010)
Density	ISO 3675	g/cm³		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rapid oxidation	Rancimat B	h		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphur content	CSM	mg/kg		180	100	580	750	50	60	-	-	-	-	590	600	220	90	-
Viscosity +40 C	ISO 3104	cSt		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper content		mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	-	-	<0.02	<0.02	<0.02	<0.02	-
PCB		mg/kg		-	-	-	-	<2	<2	-	-	-	-	<2	<2	-	-	-
Sludge	IEC 422:89	% (w/w)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flash point (Closed cup)	ISO 2719	°C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen (H2)	IEC 60567	µl/l		14	11	<3	<3	<3	3	7	7	6	10	<3	<3	<3	<3	<3
Oxygen (O2)	IEC 60567	µl/l		30000	31000	29000	30000	28000	30000	30000	28000	29000	28000	30000	30000	28000	28000	29000
Nitrogen (N2)	IEC 60567	µl/l		68000	71000	60000	62000	62000	68000	68000	63000	66000	61000	65000	65000	60000	61000	62000
Methane (CH4)	IEC 60567	µl/l		2	2	1	1	2	2	2	2	2	2	1	1	2	2	2
Carbon monoxide (CO)	IEC 60567	µl/l		120	104	18	18	98	115	118	116	112	131	21	23	127	109	89
Carbon dioxide (CO2)	IEC 60567	µl/l		803	851	680	663	879	1070	943	967	937	954	656	674	859	792	1080
Ethene (C2H4)	IEC 60567	µl/l		2	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	2	<1
Ethane (C2H6)	IEC 60567	µl/l		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	3	<1	<1	<1
Acetylene (C2H2)	IEC 60567	µl/l		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propane (C3H8)	IEC 60567	µl/l		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propene (C3H6)	IEC 60567	µl/l		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propene + Propane (C3H6+C3H8)	IEC 60567	µl/l		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iso-Butane (C4H10)	IEC 60567	µl/l		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TCG	IEC 60567	µl/l		138	120	19	19	100	120	127	125	120	143	25	27	132	113	91
TGC		% (v/v)		10.3	10.7	9.34	9.66	9.48	10.3	10.3	9.59	10.0	9.39	9.97	9.97	9.27	9.37	9.60
Pour point	ISO 3016	°C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pour point	ASTMD5950-02	°C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Analysis date				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-