

















Water Salinity – Com	nmon Units		
Water Salinity - Co	ommon Units	5000	Fraining
Term	Symbol	Definition	
weight percent solids	Cw	g solid 100 g brine	Schlumberger
parts per million	C _{pm}	g solid 10 ⁶ g brine	Private
milligrams per liter	C _{mg/l}	g solid 10 ⁶ ml brine	
grains per gallon	Cgr/gal	grains solid gallon brine	_
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where		
ρ_w denotes the water density		
Σ denotes the sum over neighboring cells	SIS Training	
C_s denotes the salt concentration in the aqueous phase		
μ_{seff} denotes the effective viscosity of the salt		
D_z is the cell center depth.		Sc
B_w is the water formation volume		hlumber
<i>T</i> is the transmissibility		ger Priv
k_{rw} is the water relative permeability		ate
S_w is the water saturation		
<i>v</i> is the block pore volume		
Q_w is the water production rate		
P_w is the water pressure		
g is the gravity acceleration	humberger	





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Given two sets of saturation functions, one for the low salinity and one for the high salinity, the saturation end points are first modified as:

$$\begin{split} S_{wco} &= F_1 S_{wco}^L + (1 - F_1) S_{wco}^H \\ S_{wcr} &= F_1 S_{wcr}^L + (1 - F_1) S_{wcr}^H \\ S_{wmax} &= F_1 S_{wmax}^L + (1 - F_1) S_{wmax}^H \\ S_{owcr} &= F_1 S_{owcr}^L + (1 - F_1) S_{owcr}^H \end{split}$$

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LSALTFNC	Tables of low-salt weighting factors versus salt concentration
 ECLIPSE 100 ECLIPSE 300 SPECIAL RUNSPEC GRID EDIT PROPS REGIONS SOLUTION SUMMARY 	This keyword is set to input the weighting factors for the low-salinity saturation functions as a function of the salt concentration. The data comprises NTSFUN (item 1 of keyword TABDIMS) tables, each terminated by a slash (/). These coefficients are used in calculating the saturation end points, the water and oil relative permeabilities and the water-oil capillary pressure when the LOWSALT option is active.
	Each table consists of 3 columns of data:
	1 Salt concentration
SCHEDULE	The values should increase monotonically down the column.
	 UNITS: kg/m³ (METRIC), lb/stb (FIELD), g/cm³ (LAB), kg/m³ (PVT-M).
	2 Weighting factor F_{l} for the low-salinity saturation endpoints and the relative permeabilities interpolation.
	The values should decrease monotonically down the column.
	A value of 0.0 implies that only the high-salinity saturation functions will be used (tables defined by SATNUM) and a value of 1.0 implies that only low-salinity saturation functions will be used (tables defined by LWSLTNUM).
	The value should not be greater than 1.0 or less than 0.0.
	3 Weighting factor F_2 for the low-salinity capillary pressure interpolation.
	The values should decrease monotonically down the column.
	A value of 0.0 implies that only the high-salinity saturation functions will be used (as defined by SATNUM) and a value of 1.0 implies that only low-salinity saturation functions will be used (as defined by LWSLTNUM).
	The value should not be greater than 1.0 or less than 0.0.

LSALTFNC Example					
connate water is 100,000 PPM = 100 Kg/m3				SIS Training	
LSALTFNC F1 = 0 for hi F1 = 1 for lo Salt F1 conc factor LSALTFNC conc F1 factor kg/sm3 0 1.0 20 0.8 40 0.6 60 0.4 80 0.2 100 0.0	igh salinity ow salinity Table F2 factor 1* 1* 1* 1* 1* 1* 1* 1*			Schlumberger Private	
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WSALT	Sets salt concentrations for injection wells		
x ECLIPSE 100 x ECLIPSE 300 SPECIAL RUNSPEC GRID EDIT PROPS REGIONS SOLUTION	This keyword is used to specify the concentration of salt in the injection stream of each well. The keyword should only be used in runs with the Brine option active (keyword BRINE in the RUNSPEC section). If the WSALT keyword does not appear in the injection schedule, then concentration values of zero are assumed. Data should only appear for wells which are currently declared to be water injection wells.		
	The keyword is followed by any number of records, each containing the following items of data, and each terminated with a slash $(/)$.		
x SCHEDULE	The set of records must end with a blank record, containing only a slash (/).		
ECLIPSE 100 only	1 Well name, well name template, well list or well list template		
	A template enclosed in quotes can be used to refer to multiple wells or well lists. See "Well name and well list template matching" in the "ECLIPSE Technical Description" for further details. Well list names should be enclosed in quotes and begin with an asterisk (*). Well lists are constructed with the keyword WLIST.		
	2 The concentration of salt in the injection stream for the well. This quantity can be a user defined argument (UDA), and can be set with keywords UDQ and UDADIMS.		
	 UNITS: kg/sm³ (METRIC), lb/stb (FIELD), gm/scc (LAB), kg/sm³ (PVT-M) 		
	3 The group whose produced salt concentration should be used for the salt concentration of the injection stream for the well.		
	If no group is specified the concentration in item 2 will be used.		
	End data record with a slash (/).		
	End the set of records with a blank record, containing just a slash $(/)$.		
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UDQ					
UDQ ASSIGN FUOIL ASSIGN FUFW ASSIGN FUSWO DEFINE FUPRO UNITS FUPROF UPDATE FUPRO /	500 / oil price 50 / fresh wa DE 33463 / oil p FIT (FOPT-FUSW TT \$ / DFIT ON /	e (\$/Sm3) tter cost (\$/Sm3) roduced by high salt water (Sm3) /OE)*FUOIL-(WWIT IFRESH)*FUFW	. / profit (\$,	SIS Training	Schlumberger Private
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