



# Germanischer Lloyd

## Free Surface Correction (FSC)

To be done in all loading conditions presented in the Stability Booklet

Liquid in Tank	Free Surface Correction			
	Tank at Departure	FSC	Tank at Arrival	FSC
HFO / MDO / LO	98% full	max. (*1)	10% filling	act.
FWT	full tank	max. (*1)	10% filling	act.
Other hull tanks	part. filled	act., great.	part. filled	act.
	part. filled (filling constant)	act.	part. filled (filling constant)	act.
BW tanks	full tank	0	full tank	0
	full tank	great. (*2)	part. Filled	act.
	full tank	max. (*2)	empty	0
	part. filled	act., great. (*2)	full tank	0
	part. filled	act., great. (*2)	part. filled	act.
	part. filled	act., great. (*2)	empty	0
	part. filled (filling constant)	act.	part. filled (filling constant)	act.
	empty	max. (*2)	full tank	0
	empty	great. (*2)	part. Filled	act.
empty	0	empty	0	

max. = maximum value of free surface moment of a tank at even keel

act. = actual value of free surface moment

great. = greatest value attainable during filling / discharge operation

(\*1) Acc. to IMO 749, chapter 3.3.4 it should be assumed that for each type of liquid at least one transverse pair or a single centreline tank has a free surface.

For each type of liquid the greatest free surface moment of the tank or combination of tanks should be taken into account.

(\*2) All actual values should be taken into account. Additional the free surface moment of that ballast water tank or pair of tanks, which causes the greatest moment in case of pumping operation during the voyage, to be added.

### Remarks

- The k-factor method acc. to IMO 749, chapter 3.3.7.2.3 and 3.3.8 is reliable for box-shaped tanks only. For other shapes the maximum free surface moment of a tank at even keel should be used.

- If a transverse pair of tanks is involved in pumping operation, it should be assumed that both tanks are filled/discharged simultaneously and the combined free surface moment of that pair should be considered.

- If a partly filled ballast water tank is involved in liquid transfer operations during the voyage and if this operation produces the maximum free surface moment of all ballast operations, then it is sufficient to consider only this maximum free surface moment and not the actual value.

- The number of partly filled "small tanks" acc. to IMO 749 3.3.9 is to be kept to a minimum, otherwise its combined free surface is to be considered.

- The order of filling ballast water tanks shall not have an influence on the FSC.