Mixing Chart [kg/m³]

CLAY

Little plastically, less reactive, hard, marly:

- Clay dissolves in the prepared mud without greatly increasing viscosity
- small or no cuttings

		Bentonit Typ W	15 - 25
	+	*Argipol*	0,2 - 1,0
or:	+	*PAC L*	1,0 - 2,0
optional:		*Modidet*	0,5 - 1,0

Marsh-Funnel: 40 - 55 sec per liter

Strongly plastically, highly reactive, soft:

- no soil is carried out
- sticky, Gumbos, bit balling, clay rings
- strong water absorption
- volume increase
- break outs, annular blockage

		Bentonit Typ W	15 - 25
	+	*ParaVis 500*	1,0 - 3,0
	+	*ParaTrol*	0,5 - 1,0
optional:	+	*Modidet*	0,5 - 1,0

Marsh-Funnel: 50 - 60 sec per liter

Mixing Chart [kg/m³]

CLAY

Strong viscosity build-up:

Restore flowability by controlled addition of *ParaTrol* . Note: maintain carrying capacity! Do not overdose!

	+	*ParaTrol*	0,1 - 1,0

LOAM

High Clay and Silt content:

		Bentonit Typ W	20 - 25
	+	*ParaVis 500*	0,5 - 1,5
	+	*ParaTrol*	0,1 - 0,5
optional:	+	*Modidet*	0,5 - 1,0

Marsh-Funnel: 45 - 60 sec per liter

High Sand content:

		Bentonit Typ W	20 - 25
	+	*Modipol 600*	0,5 - 1,0

Marsh-Funnel: 50 - 60 sec per liter

!

For all cohesive Soils:

		Bentonit Typ W	25 - 33
	+	*Phrikoton 4.0*	4

Marsh-Funnel: 55 - 65 sec per liter

Mixing Chart [kg/m³]

SAND

Above Groundwater Table:

		Bentonit Typ W	28 - 32
	+	*Modivis 900*	0,5 - 1,0
or:	+	*PAC L*	1,0 - 2,0

Marsh-Funnel: 60 - 80 sec per liter

Below Groundwater Table:

		Bentonit Typ W	28 - 32
	+	*Rheopur*	0,5 - 0,7
or:	+	*Modipol 600*	0,5 - 1,0

Marsh-Funnel: 60 - 80 sec per liter

Quicksand:

		Bentonit Typ W	32 - 35
	+	*Modiplex MH*	2,5
or:	+	*Modivis 900*	1,5 - 2,0

Marsh-Funnel: > 100 sec per liter

Mixing Chart [kg/m³]

Fine Gravel, high Sand content:

		Bentonit Typ W	30 - 35
	+	*Rheopur*	0,5 - 1,5
or:	+	*Modivis 900*	1,0 - 2,0

Marsh-Funnel: 90 - 120 sec per liter

Coarse Gravel, crushed Stone:

		Bentonit Typ W	35 - 40
	+	*Modiplex MH*	2,5

Marsh-Funnel: > 120 sec per liter

Note:

No soda ash and no other additives/polymers together with *Modiplex MH* !

Exception: use of *Moditrol* to reduce filtrates

Mixing Chart [kg/m³]

ROCK

Rock:

		Bentonit Typ W	28 - 35
	+	*Rheopur*	0,5 - 1,0
or:	+	*Modipol 600*	0,5 - 1,0

Marsh-Funnel: 60 - 90 sec per liter

Note:

Required viscosity and mixture of products depend on size of drilled cuttings.

Start with higher viscosity, then reduce if necessary.

At high water sensitivity of soil (shale, marl) Fluid Loss Control Additives (*PAC LV, Modipol 600*) and/or Clay Inhibitor (*PHPA, Argipol*) should be used.

Mixing Chart [kg/m³]

MIXED SOILS

Mixed Soils:

		Bentonit Typ W	25 - 30
	+	*Rheopur*	0,4 - 0,8
or:	+	*Modipol 600*	0,5 - 1,0
or:	+	*Modivis 900*	0,5 - 1,0

Marsh-Funnel: 60 - 75 sec per liter

Note:

Watch mud returns and drilling parameters, if necessary, adjust the recipe to the most encountered soil conditions.

Start with higher viscosity, then reduce if necessary.

Gravel/Sand mixture: Adapt recipe and viscosity of the drilling fluid to the coarsest grain size fractions.

Mixing Chart [kg/m³]

UNKNOWN

Unknown soils:

		Bentonit Typ W	27 - 32
	+	*Rheopur*	0,5 - 0,8
or:	+	*Modivis 900*	0,5 - 1,0
or:	+	*Modipol 600*	0,5 - 1,0

Marsh-Funnel: 60 - 90 sec per liter

Note:

Watch mud returns and drilling parameters, if necessary, adjust the recipe to the most encountered soil conditions.

Start with higher viscosity, then reduce if necessary.

Mixing Chart [kg/m³]

DRAINAGE

Drainage:

	Rheopur ECO	4 - 8
+	*Additive*	none

Marsh-Funnel: 60 - 120 sec per liter

Note:

Rheopur ECO is a mixture of different organic polymers and can also be used as single viscosifier if the use of bentonite muds is not allowed.

Mixing Chart

NOTES

Notes:

Use of *Bentonit W plus* :

If *Bentonit W plus* is used instead of *Bentonit Typ W* , amount of bentonite given in the tables has to be reduced by 10-15 percent. When using *Modiplex MH* together with *Bentonit W plus* the amount of bentonite should remain unchanged.

The addition of polymers in the recipes for *Bentonit Typ W* can also be somewhat reduced.

Bentonite without polymer addition:

If *Bentonit Typ W* or *Bentonit W plus* are used without polymer addition, the amount of bentonite is to increase until the recommended Marsh Funnel viscosity is achieved.

Make up water to adjust with Soda Ash:

if pH <7 or Total Hardness >10° dH,
add 0,1 to 0,5 kg Soda Ash per m³
up to pH 8-9 and Total Hardness <10° dH

Order of Addition:

1. Soda Ash
2. Bentonite
3. Polymers / Additives
4. 15 Minutes Mixing Time