3.2 Table of suitability

	Al2O3 ceramic sintered material	**Polyethylene/ Nylon**	**Silicon carbide**	**Borosili-cate glass**
UMS type:	SK20 SKPE25	SPE20	SIC20, SIC40 SIC300	SG25 SPG120
Suitable for determination of ...				
Anions:				
NO3- Nitrate	+++	+++	+++	+++
SO42- Sulphate	+++	+++	+++	+++
PO43- Phosphate	+++	+++	+++	+++
Cl- Chloride	+++	+++	+++	+++
Cations:				
Ca2+ Calcium	+ [1]	++ [1]	+++	+ [1]
K+ Potassium	+ [1]	++ [1]	+++	++
Na+ Sodium	++[1]	+ [1]	+++	
NH4+ Ammonium	+++	+++	+++	+++
Al3+ Aluminium	---(critical [2])	++(critical with pH<2[1])	++	+++
Cu2+ Copper	---[3] [5][8]	+++	+++	+++
Cr2+ Chromium	--	+++	+++	+++
Fe2+ Iron	- [2]	+++	+++	+++
Mg2+ Magnesia	--	+++	+++	+++
Ni2+ Nickel	--	+++	+++	+++
Elements				
S Sulphur	+ [1]	+ [1]	+++	+++
P Phosphorus	++ [2]	+++	+++	+++
Si Silicon	---	+++	-	+++
DOC	++ [8]	++[3]	++	+
TOC	++ [1]	+ [1]	++	+
Humins:				
Heavy metals:				
Cd Cadmium	--- [6]	+[6]	-	-
Pb Lead	--- [5] [6]	+[6]	-	-
Herbicides	+ (Atrazin) [3] [7][8]	+(Atrazin) [7]		/
Pesticides	/	/		/
Fungicides	/	/		/
PAK				
Trace elements	-	/		/

Literature source	Caption
[1] Göttlein, 1996 [2] Grossmann et al., 1987 [3] Klotz, Unold, 2000 [4] Riess, 1993 [5] Guggenberger und Zech 1992 [6] Haberhauer 1997 [7] Schroll 1996 [8] Klotz, 1997	--- completely unsuitable -- unsuitable - only for experts, requires good knowledge and suitable conditioning of the suction cups / no experiences + limited suitability ++ suitable after conditioning and sufficient forerun for flushing +++suitable after sufficient forerun for flushing

3.3 UMS sampler types

3.3.1 Suction cups

SK20

SK20 simple ceramic cup with removable shaft. For continuous and discontinuous extraction. Suitable for determination of nitrate and common organic and inorganic substances.

SIC20

Pore water sampler SIC20 with removable shaft like the SK20, but with a SiC silicon carbide cup instead of the ceramic cup. SiC is sintered at 2500°C and is less absorbent/desorbent than ceramic or borosilicate. The bubble point 90 kPa. UMS SiC cups are patented.

SPE20

Instead of a ceramic cup the SPE20 pore water sampler has a porous PE-nylon-membrane which is specially suitable for heavy metals and whenever ceramics are inappropriate.

SKPE25

The sampled solution is stored inside the shaft and is collected by applying a pressure to the additional tube. With ceramic cup.

SG25

Pore water sampler with porous borosilicate glass cup. Borosilicate is suitable for phosphate and DOC. Available with a diameter of 20 mm or 25 mm