R_2 is a straight chain or branched C_{2-6} aliphatic hydrocarbon residue optionally substituted with a hydroxyl group and being represented by

$$-CH_2-CH_2-,\ -\overset{CH_3}{\overset{|}{C}}HCH_2-\text{ or }-CH_2-\underset{OH}{\underset{|}{CH}}-CH_2-$$

and

l is 1, 2 or 3.

(2) Phosphate esters of compounds of said formula (1-A) as represented by following formula (1-B):

$$CH_2=\overset{R_1}{\overset{|}{C}}-COO-R_2-\overset{O}{\overset{\|}{P}}(OH)_2 \qquad (1\text{-}B)$$

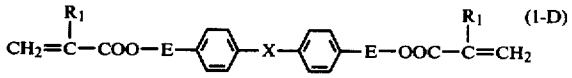
wherein R_1 and R_2 are as defined in the formula 1-A provided that when group $-R_2-$ possesses $-OH$ as substituent, this $-OH$ may be a phosphate ester.

(3) Compounds represented by following formula (1-C) and their phosphate esters:

$$CH_2=\overset{R_1}{\overset{|}{C}}-COO\left(CH_2\underset{OH}{\underset{|}{C}}HCH_2\right)_l O-R_3 \qquad (1\text{-}C)$$

wherein l and R_1 are as defined in the formula 1-A and R_3 is a C_{1-3} alkyl or phenyl group.

(4) Compounds represented by following formula (1-D):



(1-D)

wherein R_1 is as defined in the formula 1-A,

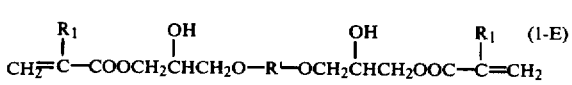
X is an alkylidene group such as

$$-\overset{CH_3}{\overset{|}{\underset{CH_3}{\underset{|}{C}}}}-$$

or $-SO_2-$ and

E is a C_{2-5} oxyalkylene group having a hydroxyl ($-OH$) group as a substituent or an alkylidene group containing between 1 and s carbon atoms with a hydroxyl group as a substituent.

(5) Compounds represented by following formula (1-E):

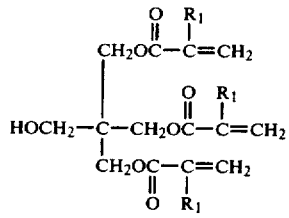


(1-E)

wherein R' is

$$-CH_2CH_2-,\ -CH_2CH_2OCH_2CH_2-,$$
$$-\overset{CH_3}{\overset{|}{C}}H-CH_2-\text{ or }-\overset{CH_3}{\overset{|}{C}}HCH_2-O-\overset{CH_3}{\overset{|}{C}}HCH_2-.$$

(6) Compounds represented by following formula (1-F):



(1-F)

wherein R_1 is as defined in the formula 1-A.

(7) Compounds represented by following formula (1-G):

$$CH_2=\overset{R_1}{\overset{|}{C}}-COO-R_2-NH_2 \qquad (1\text{-}G)$$

wherein R_2 is as defined in the formula 1-A.

(8) Compounds represented by following formula (1-H):

$$CH_2=\overset{R_1}{\overset{|}{C}}-COO\left(CH_2\underset{OH}{\underset{|}{C}}H-CH_2-O\right)_p CH_2\underset{O}{\underset{\diagdown\ \diagup}{CH-CH_2}} \qquad (1\text{-}H)$$

wherein R_1 is as defined in the formula 1-A and p is 0 or a positive integer of 1-3.

Of those compounds of (1)-(8) above, hydroxy- or epoxy-containing ones represented by the formulae 1-A, 1-C, 1-D, 1-E, 1-F and 1-H are particularly preferred.

A-II. Preferred as the acrylamide derivatives or methacrylamide derivatives possessing at least one group selected from the group consisting of carboxyl group, epoxy group, amino group and hydroxyl group, in which are used in the present invention are those which are represented by following formula (2):

$$(Y)_m-X-\underset{R_4}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-\overset{R_1}{\overset{|}{C}}=CH_2 \qquad (2)$$

wherein

m is 1 or 2,

R_1 is a hydrogen atom or a methyl group,

R_4 is a hydrogen atom or a C_{1-10} hydrocarbon residue,

Y is

$$-OH,\ -NH_2,\ -\underset{O}{\underset{\diagdown\ \diagup}{CH-CH_2}},\ -\overset{O}{\overset{\|}{P}}(OH)_2$$

or $-COOH$ and

X is a C_{1-25} organic group of $(m+1)$ valence.

Of the compounds represented by the above formula (2), those in which Y is a carboxyl group or a hydroxyl group are particularly preferred.

As such compounds the following are particularly preferred:

(9) Compounds represented by following formula (2-A):