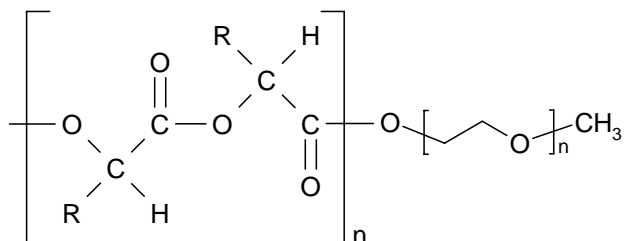


## Molecular weight of PEG copolymers

### Example 1: Diblock Copolymer



Polyester A block

Polyether B block

R = H      glycolide  
 R = CH<sub>3</sub>    lactide

#### Explanation of the letters and numbers:

RG	P	d	50	15	5
----	---	---	----	----	---

molar mass PEG-MME / 1,000 => 5000 Dalton

weight % PEG => 15 w %

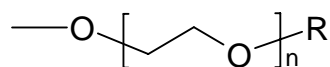
composition of the A-block in mole % => 50:50

d = di-block

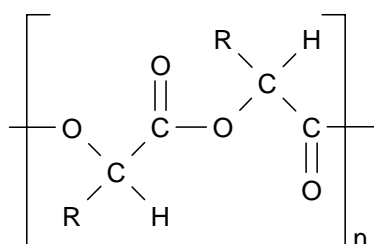
P = PEG-Monomethoxyether

composition A-block,  
 RG = D,L-lactide-co-glycolide

#### calculation of the average molecular weight based on the PEG content:



PEG-block: 15 w % of polymer chain; 5,000 Dalton

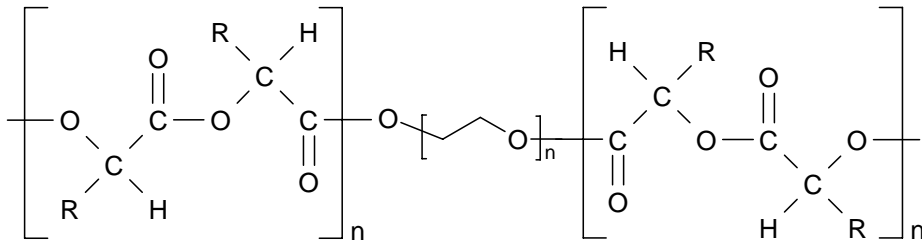


total: 100 % of copolymer: 5,000\*100/15 = 33,000 Dalton

D,L-Lactide-co-glycolide-block: 85 % of polymer chain, 33,000\*0,85 = 28,000 Dalton

## Molecular weight of PEG copolymers

### Example 2: Triblock Copolymer

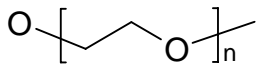


Explanation of the letters and numbers:

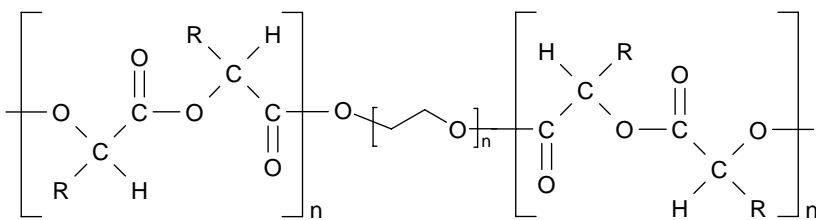
RG P t 50 10 6

- |              |   |                                                                           |
|--------------|---|---------------------------------------------------------------------------|
| RG: A-Blocks | → | D,L-lactide-co-glycolide                                                  |
| P: B-Block   | → | PEG                                                                       |
| t: triblock  | → | <b>one</b> PEG-block and <b>two</b> Poly- D,L-lactide-co-glycolide-blocks |
| 50           | → | A-blocks contain 50 mole-% D,L-Lactide and 50 mole-% glycolide            |
| 10           | → | the whole polymer contains 10 weight-% PEG                                |
| 6            | → | PEG has a molecular weight of 6,000 Dalton                                |

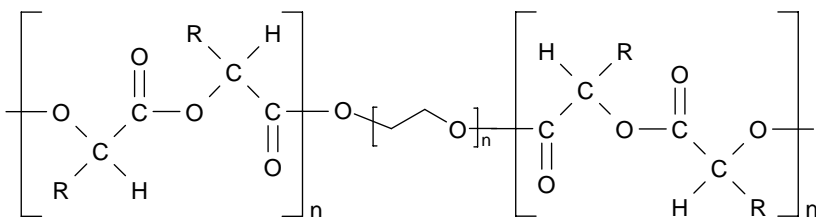
calculation of the average molecular weight based on the PEG content:



PEG-block: 10 % of polymer chain, 6,000 Dalton



whole PEG-copolymer: 100 % of polymer chain,  $6,000 \cdot 100 / 10 = 60,000$  Dalton



D,L-Lactide-co-glycolide-blocks: 90 % of polymer chain,  $60,000 \cdot 0,9 = 54,000$  Dalton, each A-block 27,000 Dalton