

OECD polymer of low concern (PLC) criteria

OECD = Organisation for Economic Co-operation and Development

| Polymer               | Polymer composition | MW, Mn, MWD |
|-----------------------|---------------------|-------------|
| Fluoropolymer         | ✓                   | ✓           |
| PTFE                  | ✓                   | ✓           |
| TFM-PTFE              | ✓                   | ✓           |
| PFA                   | ✓                   | ✓           |
| FEP                   | ✓                   | ✓           |
| ETFE                  | ✓                   | ✓           |
| Alternative Materials |                     |             |
| PE                    | ✓                   | ✓           |
| PP                    | ✓                   | ✓           |
| PS                    | ✓                   | ✓           |
| PA 66                 | ✓                   | ⚠           |
| PMMA                  | ✓                   | ⚠           |
| PPS                   | ✓                   | ⚠           |
| PEEK                  | ✓                   | ⚠           |
| Silicate glass        |                     |             |
| Stainless steel       |                     |             |
| Ceramic               |                     |             |

Symbols

|   |                       |
|---|-----------------------|
| ✓ | all fulfilled         |
| ✗ | not applicable        |
| ⚠ | partially acceptable  |
| ⚠ | not really acceptable |

Legend

|                                                 |                                                                             |
|-------------------------------------------------|-----------------------------------------------------------------------------|
| Polymer composition                             | Polymer composition, structure & elemental composition; including C         |
| MW, Mn, MWD                                     | molecular weight and oligomer content are used criteria for PLC assessment  |
| Wt-% oligomer                                   | Weight % of oligomers < 1000 Da                                             |
| Electrical charge                               | ter can be: anionic, cationic, amphoteric, nonionic; cationic polymers as:  |
| Reactive functional groups (RFG)                | oms in a chemical structure that is intended or can be reasonable expect    |
| Functional group equivalent weight (FGEW)       | FGEW is defined as the ratio of Mn to the number of functional groups in t  |
| Low MW leachables                               | emical molecules, either inorganic or organic, that migrate (i.e. leach) ou |
| Water/lipid solubility, octanol water partition | extent to which a compound will dissolve in water; negligible water solul   |

|                   |                                                                            |
|-------------------|----------------------------------------------------------------------------|
| Particle size     | reach the deep lung upon inhalation are associated with adverse health     |
| Polymer stability | sformation. Breaking down into smaller particles is ccritical. Molecules v |
| Thermal stability | ised as intended or in extreme temperature during dosposal. Theermal s     |
| Abiotic stability | s are stable, monomers are not. Abiotic degradaton may involve sunlight    |
| Biotic stability  | he polyymmer is degraded by microorganisms under oxygenated (aerobic,      |

| Wt-% oligomer | Electrical charge<br>(=insulating) | Reactive functional groups<br>(RFG) | Functional group<br>equivalent weight<br>(FGEW) |
|---------------|------------------------------------|-------------------------------------|-------------------------------------------------|
|---------------|------------------------------------|-------------------------------------|-------------------------------------------------|

|   |   |   |   |
|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |

|   |   |   |   |
|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |
| ✗ | ✓ | ✗ | ✗ |
| ✗ | ✓ | ✗ | ✗ |
| ✗ | ✓ | ✗ | ✗ |
| ✗ | ✓ | ✗ | ✗ |
|   | ✓ | ✗ | ✗ |
|   | ✓ | ✗ | ✗ |
|   | ✗ | ✗ | ✗ |
|   | ✓ | ✗ | ✗ |

AS no.

. MWD --> polydispersity index

sociated with aquatic toxicity

ted to undeergo facile chemical reaction

he polymer

t of the polymer

oility < 1x10E-6 mg/L = 1 ppt

effects. Polymer particles should be  $> 5 \mu\text{m}$   
with  $M_n < 1000 \text{ Da}$  are capable of crossing cell membranes  
stability testing may involve TGA  
; water or oxygen.  
) or anoxic ( anaerobic) conditions

Low MW leachables

Water/lipid  
solubility,octanol  
water partition

Particle size

Polymer stability

Thermal stability



Abiotic stability    Biotic stability

