

OECD polymer of low concern (PLC) criteria and additional customer related criteria

OECD = Organisation for Economic Co-operation and Development

	Polymer composition	MW, Mn, MWD
Polymers currently in use		
Fluoropolymer	✓	✓
PTFE	✓	✓
TFM-PTFE	✓	✓
PFA	✓	✓
FEP	✓	✓
Fluoropolymer Coating	✓	✓
Alternative Materials (just as examples)		
UHMW-PE	✓	✓
PEEK	✗	✗
PA 1014	✗	✗
PMMA	✗	✗
PPS	✓	✓
PI	✓	✓
Glass	✓	✓

Symbols



Meaning

Accept

Not fulfilled

Accept with limitations

Nearly not fulfilled

Legend

Polymer composition	, structure & elemental composition; including CAS number
MW, Mn, MWD	Number content are used criteria for PLC assessment. MW
Wt-% oligomer	Weight % of oligomers < 1000 Da
Electrical charge	ionic, amphoteric, nonionic; cationic polymers associated
Reactive functional groups (RFG)	Atom or associated group of atoms in a chemical structure
Functional group equivalent weight (FGEW)	FGEW is defined as the ratio of Mn to the number of functional groups
Low MW leachables	inorganic or organic, that migrate (i.e. leach) out of the polymer
Water/lipid solubility, octanol water partition	Water solubility = extent to which a compound will dissolve in water
Particle size	Particle sizes > 10 µm in inhalation are associated with adverse health effects
Polymer stability	Stability against degradation into smaller particles is critical. Molecules with high molecular weight are more stable
Thermal stability	Thermal stability is critical during disposal. The thermal stability of the polymer is critical during disposal
Abiotic stability	Abiotic degradation may involve sunlight, water, and oxygen
Biotic stability	Biodegradation may involve microorganisms under oxygenated (aerobic) or anaerobic conditions
Acid resistance	In presence of acid media the polymer may not change its properties
Caustic resistance	In presence of caustic media the polymer may not change its properties

Solvent resistant

In presence of solvents the polymer may not change

Wt-% oligomer	Electrical charge	Reactive functional groups (RFG)	Functional group equivalent weight (FGEW)
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓
✗	✓	✗	✗
✗	✓	✗	✗
✗	✗	✗	✗
✗	✓	✓	✓
✗	✓	✓	✓
✓	✓	✗	✓

its properties significantly

Low MW leachables	Water/lipid solubility, octanol water partition	Particle size	Polymer stability	Thermal stability
-------------------	---	---------------	-------------------	-------------------

[illegible]

