

Guide to the suitability of plastic piping for industrial systems

Background

The UK still enjoys a wide variety of manufacturing and process industries across a diverse range of sectors. Operations vary in scale conveying liquids and gases of all kinds. Anything that is not utility gas or water supply, drainage, or domestic building services can be considered as an 'industrial system'.

Examples include:

- Water treatment
- Effluent treatment
- Sewage treatment
- Ultrapure water
- Process water
- Slurries
- Pharmaceuticals
- Foods and beverages
- Swimming pools
- Textiles and dyeing

Wherever fluids and gases need to be transported, there is a potential application for light, durable and easy to install plastic pipework.

This short guide provides information on the suitability of plastic piping for a wide range of industrial applications.

Applications with recommended pipework systems

End use application	ABS	PVC-U	PVC-C	PP	PE	PVDF
Anaerobic digestion		YES			YES	
Chemical distribution and processing		YES	YES	YES	YES	YES
Potable water	YES	YES	YES		YES	
Compressed gases	YES				YES	
Desalination		YES	YES			
Effluent treatment	YES	YES		YES	YES	YES
Film processing	YES	YES	YES	YES		
Fish farms	YES				YES	
Foodstuffs and beverages	YES	YES		YES		YES
Gas scrubbers		YES	YES	YES	YES	YES
Glass lens and lamp manufacture				YES		
Heated potable water			YES			
Industrial cooling water	YES	YES		YES	YES	
Irrigation and agriculture		YES			YES	
Pharmaceuticals	YES	YES				YES
Power plants		YES	YES	YES	YES	
Printing inks				YES		
Refrigeration	YES				YES	
Sewage treatment	YES	YES			YES	
Ships including ballast water,	YES	YES	YES	YES	YES	
Slurries	YES				YES	
Swimming pools	YES	YES				
Textiles / dyeing				YES		
Ultrapure water						YES
Water treatment	YES	YES		YES	YES	

System attributes and key strengths

Attributes	ABS	PVC-U	PVC-C	PP	PE	PVDF
Weak acids and alkalis	YES	YES	YES	YES	YES	YES
Strong / concentrated acids and	NO	YES	SOME	YES	SOME	YES
Compressed gases	YES	NO	NO	NO	YES	-
Minimum working temperature (°C)	-50	0	0	0	-50	-20
Maximum working temperature (°C)	60	60	80	80	60	140
Solvent welded joints available	YES	YES	YES	NO	NO	NO
Heat welded joints available	NO	NO	NO	YES	YES	YES
Mechanical joints available	YES	YES	YES	YES	YES	YES

Note:

The values for minimum and maximum working temperatures are typical for these pipe materials. The performance limits for specific products should be checked with the manufacturer.

Advice on system selection, design, installation and jointing

The manufacturer should be consulted for help and guidance on selecting designing, installing or operating any plastics pipework system for industrial applications. A list of BPF Pipes Group members is provided on the BPF Pipes Group website, <https://bfpipesgroup.com/members/member-listings>.