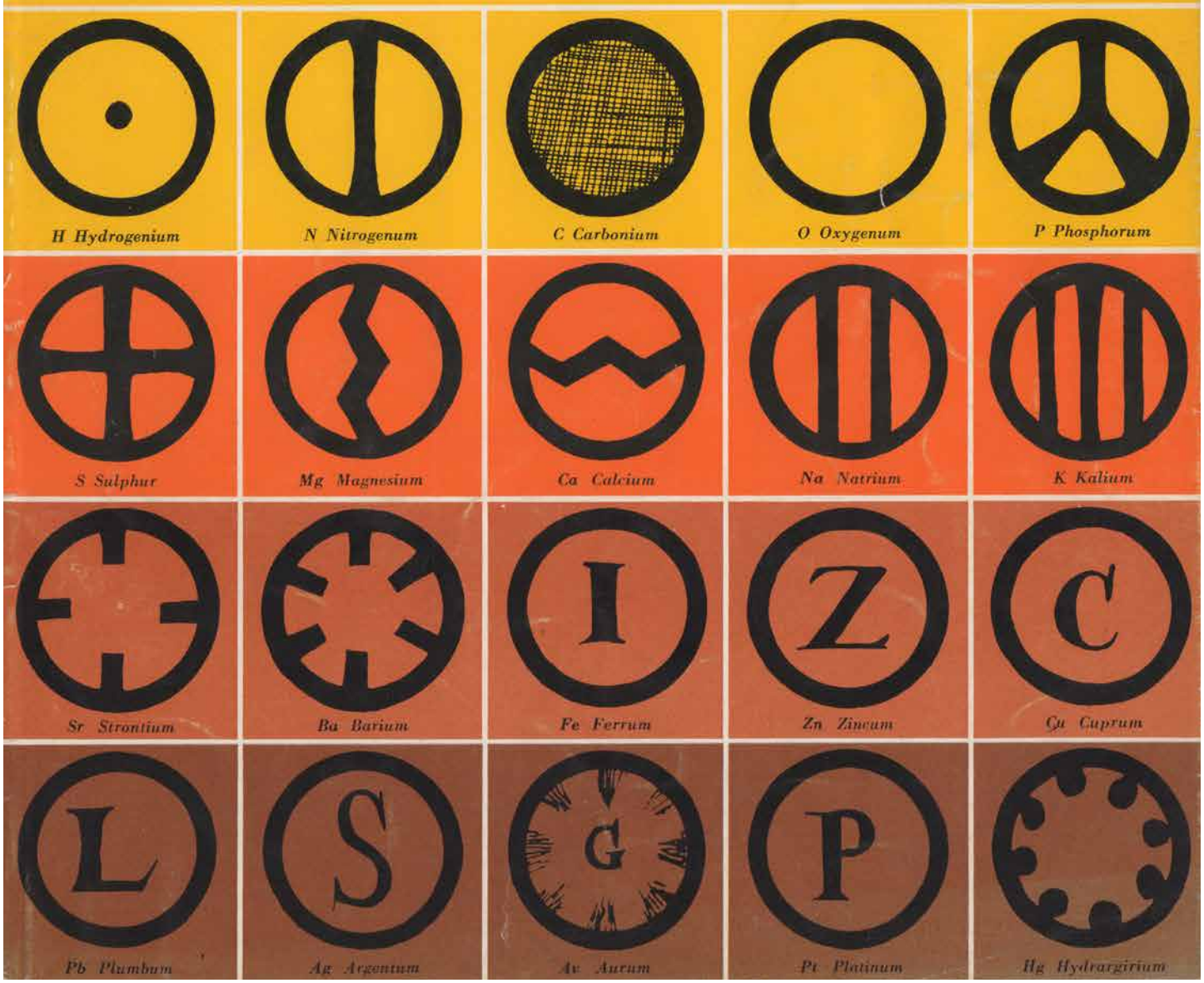
TECHNICAL MANUAL

Kartell



プラスチック素材の略語、耐熱温度および耐薬品性

右表に実験室用品の製造に使用される一般的なプラスチック素材の一覧を示します。

カッコ内の温度は、短時間のみ耐久する限界温度です。

TECHNICAL MANUAL

ABBREVIATIONS, TEMPERATURE AND CHEMICAL RESISTANCE OF PLASTICS

The table below lists commonly used abbreviations for plastics. This list covers plastics commonly employed in the manufacture of plastic laboratory ware.

Temperatures appearing in parentheses: limits tolerated for intervals only.

TECHNICAL MANUAL

塑料缩写、温度及耐化学性

下表列出了常用塑料的缩写形式，此目录涵盖了塑料实验室耗品生产中常用的塑料名称。

出现在圆括号内的温度仅为间隔耐受极限

略語 DIN - Abbrev. 缩写	化学名 Chemical designation 化学名称	通常の耐久温度範囲 Tollerated temperature range in normal use 常用耐受温度范围	
		from	to
ABS	アクリロブタジエン-スチレン共重合合成樹脂 Acrylobutadiene-styrene copolymer 丙丁烯-苯乙烯共聚物	- 40°C	+ 85 (100)°C
HDPE	高密度ポリエチレン High-density PE 高密度聚乙烯	- 50°C	+ 80 (120)°C
LDPE	低密度ポリエチレン Low-density PE 低密度聚乙烯	- 50°C	+ 75 (90)°C
PA	ポリアミド樹脂（PA6） Polyamide (PA6) 聚酰胺（PA6）	- 30°C	+ 80 (140)°C
PC	ポリカーボネート樹脂 Polycarbonate 聚碳酸酯	-100 °C	+135 (140)°C
PE	ポリエチレン（HDPE/LDPE） PE (cf.HDPE/LDPE) 聚乙烯（HDPE/LDPE）	- 40°C	+ 80 (90)°C
PMP (Tpx®)	ポリメチルペンテン樹脂 Polymethypentene 聚甲基戊烯	0°C	+120 (180)°C
PMMA	ポリメチルメタクリレート樹脂 Polymethylmethacrylate 聚甲基丙烯酸甲酯	- 40°C	+ 85 (90)°C
POM	ポリオキシメチレン Polyoxymethylene 聚甲醛	- 40°C	+ 90 (110)°C
PP	ポリプロピレン Plypropylene 聚丙烯	- 10°C	+120 (140)°C
PS	ポリスチレン Polystyrene 聚苯乙烯	- 10°C	+ 70 (80)°C
SAN	スチレンアクリロニトリル Styrene-acrylonitrile 苯乙烯丙烯腈	- 20°C	+ 85 (95)°C
SI	シリコンゴム Silicon rubber 硅橡胶	- 50°C	+180 (250)°C
PVDF	ポリビニリデンフルオライド Polyvinylidenfluoride 聚氟乙烯	- 40°C	+105 (150)°C
PTFE	ポリテトラフルオロエチレン Polytetrafluoroethylene 聚四氟乙烯	- 200°C	+ 260°C
E-CTFE	エチレン・クロロトリフルオロエチレン共重合体 Ethylene-Chlorotrifluoroethylene 乙烯-三氟氯乙烯	- 76°C	+150 (170)°C
ETFE	エチレン・テトラフルオロエチレン共重合体 Ethylene-tetrafluoroethylene 乙烯-四氟乙烯	- 100°C	+ 150 (180)°C
PFA	パーフルオロアルコキシ樹脂 Perfluoroalkoxy 过氟烷氧基	- 200°C	+ 260°C
FEP	テトラフルオロエチレン・パーフルオロプロピレン Tetrafluoroethylene-perfluoropropylene 四氟乙烯-六氟丙烯	- 200°C	+ 205°C
PVC	ポリ塩化ビニル Polyvinylchloride 聚氯乙烯	- 20°C	+ 80°C
PUR	ポリウレタン Polyurethane 聚氨酯	-40°C	+90°C

化学物質の種類別プラスチック素材の耐性

LIST OF PLASTICS AND THEIR CHEMICAL RESISTANCES TO SUBSTANCE GROUPS

塑料及其对物质组的耐化学性

化学物質の種類, +20°C Substance Group, at +20°C + 20° C 时的物质组	LDPE	HDPE	PP	PMP Tpx®	PTFE FEP PFA	ECTFE ETFE	PA	PA
脂肪族アルコール Alcohols aliphatic 脂族酸酯	🟢	🟢	🟢	🟢	🟢	🟢	🔵	🔴
アルデヒド Aldehydes 醛	🔵	🔵	🔵	🔵	🟢	🟢	🟡	🟡
アルカリ Alkalis 碱金属	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🟡
エステル Esters 酯	🔵	🔵	🔵	🔵	🟢	🟢	🔴	🟢
脂肪族炭化水素 Hydrocarbons, aliphatic 烃，脂肪族	🟡	🔵	🔵	🟡	🟢	🟢	🟡	🟢
芳香族炭化水素 Hydrocarbons, aromatic 烃，芳香族	🟡	🔵	🟡	🟡	🟢	🟢	🔴	🟢
ハロゲン化炭化水素 Hydrocarbons. halogenated 烃，卤化物	🔴	🟡	🟡	🔴	🟢	🟢	🔴	🔵
ケトン Ketones 酮	🔵	🔵	🔵	🟡	🟢	🔵	🔴	🟢
強酸化剤（酸） Oxidants (oxidizing acids), strong 氧化剂（氧化性酸）强	🟡	🟡	🟡	🟡	🟢	🟡	🔴	🔴
希釈弱酸 Acids, diluted, weak 酸，稀释，弱	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡
濃縮強酸 Acids, conc., strong 酸，浓缩，强	🟢	🟢	🟢	🟢	🟢	🔵	🔴	🔴

🟢 非常に優れた耐久性。
High resistance.
高耐化学性

🔵 優れた耐久性。物質と30日間以上接触しても皆無または最小限の影響しか起こらない。
Good resistance; no, or only minor, damage resulting from exposures of more than 30 days.
高耐化学性耐化学性好，或者 暴露30天以上只有轻微损坏.

🟡 耐久性不十分。一部のプラスチック 素材は、物質との長期接触により傷 む可能性あり。
Marginal resistance; for some types of plastics, extended exposure can result in damage (hairline cracks, loss of mecha nical strength, discolouration, etc.).
边缘耐化学性，一 些类型的塑 料延长暴露时间会导致损坏 （细线裂缝、机械强度损失、变 色等

🔴 耐久性なし。物質との接触により変形または著しく劣化が起こることがある。.
Non resistant; exposure can lead to deformation or destruction.
无耐化学性，暴露会导致变形 或破坏

「クリーン」で環境に優しいプラスチック素材

近年ますます高度化する環境保全基準への適応を続けつつ新技術を開発することにより、Kartell Labwareで原料として使用されるプラスチック素材は非常に進歩的なものとなっています。実際、使用プラスチック素材は、様々な条件に適合しています。素材の特性により取得した適合性の一部を以下に挙げます。

- 食品用途への適合性（イタリア国内および欧州法令）
- 食品用途への適合性（FDA指令）
- 国際法令による次の物質の含有禁止/含有量制限についての適合性：重金属、ビフェニル類、フタル酸類
- RoHS指令への適合性
- BSE/TSEに関する指令への適合性
- ATEX指令への適合性

Kartell Labwareでは、数々の世界的有力メーカーとの直接のコンタクトを通じて、プラスチック素材や革新的素材の研究を推進しています。Kartell Labwareに使用されているプラスチック素材は、科学的汚染の危険性がないものであれば、完全にリサイクル可能です。

"CLEAN" AND ECOLOGICAL PLASTICS

Thanks to technological innovation and progressive adaptation to the most elevated eco-compatibility standards, Kartell plastic raw material are of excellent quality. In fact the used plastic materials grant wide compatibilities; hereunder you can find some standards conformities related to their characteristics.

- Foodstuff contact suitable (National and European Directive CE 1935/2004)
- Foodstuff contact suitable (US FDA CFR 170/199)
- PTFE: foodstuff contact suitable (FDA CFR TITLE 177.1550)
- Absence or limitation according the International Directives of: heavy metals, biphenyls and phtalates
- RoHS Directives Conformity
- BSE and/or TSE Directives Conformity
- Atex Directives Conformity

Kartell Labware promotes the research in the field of the plastic materials, through the direct contact with the most important worldwide raw materials manufacturers and the research of innovative materials. We would like to underline that Kartell Labware materials, if not chemically contaminated, are totally recyclable

无污染及生态塑料

多亏技术的改革及对大部分高层生态兼容性标准的逐步调整，Kartell塑料原材料有着优良的品质。实际上所用的塑料原料允许广泛的兼容性，下面你会发现一些与材料特点相关的标准符合性：

- 食品员工合适的接触（国家及欧洲指示）
- 食品员工合适的接触（FDA指示）
- 根据国际重金属、联苯化合物及临苯二甲酸盐指示不含有或受限制
- ROHS指示符合性
- BSE和/或TSE指示符合性
- Atex指示符合性

通过与大多数重要的世界范围的原材料制造商们进行接触并对新材料进行研究，Kartell实验室耗品推进了在塑料原料领域的研究工作。如果没有化学污染，我们可以强调说Kartell实验室耗品是完全可回收的。

耐薬品性

塩類の耐薬品性データは、水溶液についても適用されます。

CHEMICAL RESISTANCE

Data for the chemical resistance of salts also apply to their aqueous solutions.

耐化学性

盐的耐化学性数据也适用于它们的水溶液。

	PS		SAN		PMMA		PC		PVC		POM		PE-LD		PE-HD	
	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C
Acetaldehyde	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🟢	🟢	🔴	🟢	🟡
Acetic acid 50%	🟡	🟡	🟢	🟡	🔴	🔴	🟢	🟡	🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢
Acetic acid (glacial) 100%	🔴	🔴					🔴	🔴			🔴	🔴	🟢	🟡	🟢	🟢
Acetic anhydride	🔴	🔴					🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🟡
Acetone	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟡	🔴	🟢	🟢
Acetonitrile	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢		🟢	🟡	🟢	🟡
Acetophenone	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢		🔴	🔴	🟡	🟡
Acetylacetone	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢		🟢		🟢	
Acetylchloride	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🟢		🟢	
Acrylic acid	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢		🟢	
Acrylonitrile	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Adipic acid	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Allyl alcohol	🟢	🟡	🔴	🔴	🔴	🔴	🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Aluminium chloride	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟢
Aluminium hydroxide	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Amino acids	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Ammonium chloride	🟢	🟢	🟢	🟢	🟡	🟡	🟡	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Ammonium fluoride	🟢	🟢	🟢	🟢	🟡	🟡	🟡	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Ammonium hydroxide 30%	🟡	🔴	🟢	🟡	🟢	🟢	🔴	🔴	🟢	🟡	🟡	🟡	🟢	🟢	🟢	🟢
Ammonium sulphate	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
n-Amyl acetate	🔴	🔴	🔴	🔴	🟢	🟢	🔴	🔴	🔴	🔴	🟢	🟢	🟡	🔴	🟢	🟡
n-Amyl alcohol (Pentanol)	🟡	🟡	🟢	🟢			🟢	🟢	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Amyl chloride	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🔴	🔴	🔴	🔴
Aniline	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡	🟡	🟢	🟡	🟢	🟢
Aqua regia	🟡	🔴	🟡	🔴	🔴	🔴	🔴	🔴	🟡	🟡	🔴	🔴	🔴	🔴	🔴	🔴
Barium chloride	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Benzaldehyde	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Benzene (Benzol)	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🟡	🔴	🟢	🟢
Benzine (Gasoline)	🔴	🔴	🔴	🔴	🟢		🟡	🔴	🟡	🔴	🟢	🟢	🟡	🔴	🟢	🟢
Benzoyl chloride	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🟡	🔴	🟢	🟢
Benzyl alcohol	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🟡	🟡	🟡	🟢	🟢	🟡	🔴	🟡	🔴
Benzyl chloride	🔴	🔴									🟢					
Benzylamine	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢		🟡	🔴	🟡	
Boric. acid, 10%	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Bromide	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Bromobenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴
Bromoform	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Bromonaphthalene	🔴	🔴	🔴	🔴												
Butanediol	🔴	🔴	🔴	🔴							🟢	🟢	🟢	🟢	🟢	🟢
1-Butanol (Butyl alcohol)	🟡	🔴	🟢	🟡	🟡	🔴	🟡	🟡	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢
n-Butyl acetate	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🟡	🟡	🟢	🟢
Butylamine	🔴	🔴	🔴	🔴							🟢	🟢				
Butyl methyl ether	🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴	🟢	🟢	🔴	🔴	🟡	🔴
Butyric acid	🔴	🔴	🔴	🔴			🟡	🔴					🔴	🔴	🟡	🔴
Calcium carbonate	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Calcium chloride	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Calcium hydroxid	🟢	🟡	🟢	🟡	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Calcium hypochlorite	🟢	🟢	🟢	🟢	🟡	🟡	🟡	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Carbon disulphide	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🔴	🔴	🔴	🔴
Carbon tetrachloride	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🔴	🔴	🟡	🟡	🔴	🔴	🟡	🔴
Chloro naphthalene											🔴	🔴				
Chloroacetalaldehyd	🔴	🔴	🔴	🔴	🔴	🔴										
Chloroacetic acid	🔴	🔴	🔴	🔴	🟡	🔴	🟡	🔴	🟢	🟡	🔴	🔴	🟢	🟢	🟢	🟢
Chloroacetone	🔴	🔴	🔴	🔴												
Chlorobenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴
Chlorobutano	🔴	🔴	🔴	🔴	🔴	🔴										
Chloroform	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡
Chlorosulfonic acid											🔴	🔴				
Chromic acid 10%	🔴	🔴	🔴	🔴	🟡	🔴	🟢	🟡	🟢	🟡	🟡	🟡	🟢	🟢	🟢	🟢
Chromic acid 50%	🔴	🔴	🟡	🟡	🔴	🔴	🟡	🔴	🟢	🔴	🔴	🔴	🟢	🟡	🟢	🟡
Chromosulphuric acid	🟡	🟡	🟡	🟡	🔴	🔴	🔴	🔴	🟢	🟡	🔴	🔴	🟢	🔴	🟢	🔴
Copper sulfate	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Cresol	🔴	🔴					🔴	🔴	🔴	🔴			🔴	🔴	🟡	🔴
Cumene (Isopropyl benzene)	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🔴	🟡	🔴	🟢	🟡
Cyclohexane	🔴	🔴					🟢	🟡	🔴	🔴	🟢	🟢	🟡	🔴	🟡	🔴
Cyclohexanone	🔴	🔴					🔴	🔴	🔴	🔴			🔴	🔴	🟡	🔴
Cyclopentane	🔴	🔴					🔴	🔴	🔴	🔴			🔴	🔴	🟡	🔴
Decane							🟡		🟡		🟢				🟡	🔴
Decanol	🟡		🟡				🟡		🟢		🟢				🟢	
Dibenzyl ether	🔴	🔴	🔴	🔴	🔴	🔴					🟢				🟢	

● 耐薬品性:抜群
Chemical resistance: excellent.
耐化学性：优秀

● 耐薬品性:良好～中程度
Chemical resistance: between good and limited.
耐化学性：介于好和有限之间

● 耐薬品性:低
Chemical resistance: poor.
耐化学性：差

PP		PMP		ECTFE/ETFE		PTFE		FEP/PFA		FKM		EPDM		NR		SI		
20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●			Acetaldehyde
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Acetic acid 50%
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	Acetic acid (glacial) 100%
●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	Acetic anhydride
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	Acetone
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Acetonitrile
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●			Acetophenone
●		●		●	●	●	●	●	●	●	●	●		●	●			Acetylacetone
●				●	●	●	●	●	●	●		●	●	●	●			Acetylchloride
●		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	Acrylic acid
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Acrylonitrile
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Adipic acid
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Allyl alcohol
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Aluminium chloride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Aluminium hydroxide
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Amino acids
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Ammonium chloride
●	●	●	●	●	●	●	●	●	●	●		●	●					Ammonium fluoride
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	Ammonium hydroxide 30%
●	●	●	●			●	●			●	●	●		●		●		Ammonium sulphate
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	n-Amyl acetate
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	n-Amyl alcohol (Pentanol)
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Amyl chloride
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Aniline
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Aqua regia
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Barium chloride
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	Benzaldehyde
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Benzene (Benzol)
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Benzine (Gasoline)
●	●	●	●	●	●	●	●			●		●	●	●	●	●	●	Benzoyl chloride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Benzyl alcohol
				●	●	●	●			●		●	●	●	●	●	●	Benzyl chloride
●		●		●	●	●	●	●	●	●		●		●	●	●		Benzylamine
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Boric. acid, 10%
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Bromide
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Bromobenzene
●	●	●	●	●	●	●	●	●	●					●	●	●	●	Bromoform
				●	●	●	●	●	●									Bromonaphthalene
●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	Butanediol
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	1-Butanol (Butyl alcohol)
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	n-Butyl acetate
				●	●	●	●			●	●	●	●	●	●			Butylamine
●	●	●	●	●	●	●	●	●	●									Butyl methyl ether
●	●			●	●	●	●	●	●	●		●	●	●	●			Butyric acid
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Calcium carbonate
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Calcium chloride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Calcium hydroxid
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Calcium hypochlorite
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Carbon disulphide
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Carbon tetrachloride
				●	●	●	●			●		●	●	●	●			Chloro naphthalene
				●	●	●	●											Chloroacetalaldehyd
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Chloroacetic acid
				●	●	●	●			●	●	●		●				Chloroacetone
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Chlorobenzene
				●	●	●	●	●	●	●	●	●	●	●	●	●	●	Chlorobutano
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Chloroform
				●	●	●	●	●	●	●	●	●	●	●	●	●	●	Chlorosulfonic acid
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Chromic acid 10%
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Chromic acid 50%
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Chromosulphuric acid
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Copper sulfate
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●			Cresol
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Cumene (Isopropyl benzene)
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Cyclohexane
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			Cyclohexanone
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Cyclopentane
●		●		●	●	●	●	●	●	●		●	●	●	●	●	●	Decane
●		●		●	●	●	●	●	●	●		●		●		●		Decanol
●		●		●	●	●	●	●	●	●	●	●		●	●			Dibenzyl ether

TECHNOKARTELL

TECHNOKARTELL

耐薬品性

塩類の耐薬品性データは、水溶液についても適用されます。

CHEMICAL RESISTANCE

Data for the chemical resistance of salts also apply to their aqueous solutions.

耐化学性

盐的耐化学性数据也适用于它们的水溶液。

	PS		SAN		PMMA		PC		PVC		POM		PE-LD		PE-HD	
	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C
Dibromoethane																
Dibutyl phthalate	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟡	🔴	🟡	🔴
Dichlorobenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🟡	🔴	🟡	🔴
Dichloromethane (Methylene chloride)	🔴	🔴					🔴	🔴	🔴	🔴			🟡	🔴	🟡	🔴
Dichloroacetic acid	🟡	🔴					🟡	🔴	🟡	🔴			🟡	🔴	🟡	🟡
Dichloroethane																
Diesel oil	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡		🟢	🟢	🟡	🔴	🟢	🟡
Diethanolamine	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴							🟡	
Diethyl ether	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🔴	🔴	🟡	🔴
Diethylamine	🟡	🟡					🔴	🔴	🔴	🔴			🔴	🔴	🟡	🔴
Diethylbenzene	🔴	🔴					🟡	🔴	🔴	🔴			🔴	🔴	🟡	🔴
Diethylene glycol	🟡	🔴	🟢	🟢	🔴	🔴	🟡	🟡	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Dimethylaniline	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴								
Dimethylformamide (DMF)	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Dimethyl sulfoxide (DMSO)	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🟢	🟢	🟢	🟢
1.4 Dioxane	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🟡	🔴	🔴	🟡	🟡	🟢	🟡	🟢	🟢
Diphenyl ether	🔴	🔴	🔴	🔴	🔴	🔴					🟡					
Ethanol (Ethyl alcohol)	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Ethanolamine																
Ethyl acetate	🔴	🔴					🔴	🔴	🔴	🔴			🟢	🟢	🟢	🟢
Ethyl methyl ketone	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Ethylbenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴
Ethylene chloride	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🔴	🔴
Ethylene glycol (Glycol)	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Ethylene oxide	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🟡	🔴	🟢	🟢	🟡	🟡	🟡	🟡
Fluoroacetic acid	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴				
Formaldehyde 40%	🔴	🔴	🟢	🟢	🔴	🔴	🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Formamide											🔴	🔴	🟢	🟢	🟢	🟢
Formic acid 98-100%	🟢	🟡	🟡	🟡	🔴	🔴	🟢	🟡	🔴	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Glycerol	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🟢	🟢
Glycolic acid 70%													🟢	🟢	🟢	🟢
Heating oil	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡	🔴	🟢	🟢	🟡	🔴	🟢	🟡
Heptane	🔴	🔴			🟡	🔴	🟢	🟡	🔴	🔴			🟡	🔴	🟡	🟡
Hexane	🟡	🔴	🟢	🟢	🟡	🟡	🔴	🔴	🟡	🔴	🟢	🟢	🔴	🔴	🟢	🟡
Hexanoic acid					🟢											
Hexanol					🟢								🟢	🟢	🟢	🟢
Hydriodic acid													🟢	🟢	🟢	🟢
Hydrobromic acid	🟡	🔴					🟢	🟢			🔴	🔴	🟢	🟢	🟢	🟢
Hydrochloric acid 10%	🟢	🟢	🟡	🔴	🟡	🔴	🔴	🔴	🟢		🔴	🔴	🟢	🟢	🟢	🟢
Hydrochloric acid 20%	🟢	🟢	🟡	🔴	🟡	🔴	🟡	🟡	🟡		🔴	🔴	🟢	🟢	🟢	🟢
Hydrochloric acid 37%	🟡	🟡	🟡	🔴	🟡	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Hydrofluoric acid 40%	🟢	🟢	🟢	🟡	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Hydrofluoric acid 70%	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🔴	🟢	🟡
Hydrogen peroxide 35%	🟢	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟡	🟢	🔴	🟢	🟢	🟢	🟢
Iodine / potassium iodine solution	🟡	🔴	🟡	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡	🟡	🔴	🔴	🔴	🔴
Iso octane	🟡	🔴	🟡	🔴			🟡									
Isoamyl alcohol											🟢	🟢	🟢	🟢	🟢	🟢
Isobutanol (Isobutyl alcohol)	🟡	🟡	🟡	🔴	🟡	🔴	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Isopropanol (2-Propanol)	🟡	🟡	🟢	🔴	🟡	🔴	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Isopropyl ether	🔴	🔴					🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴
Lactic acid	🟢	🟢	🟢	🟢	🟡	🔴	🟢	🟢	🟡	🟡	🟢	🔴	🟢	🟢	🟢	🟢
Mercury	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Mercury chloride	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡	🟡	🟢	🟢	🟢	🟢
Methanol	🟡	🔴	🟡	🔴	🔴	🔴	🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟡	🟢	🟢
Methoxybenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🟡					
Methyl butyl ether	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡		🔴	🔴	🟡	🔴
Methyl formate	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴			🟢					
Methyl propyl ketone	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟢	🟡	🟢	🟢
Methylene chloride (Dichloro methane)	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴
Minerale oil (Engine oil)	🟢		🟢		🟢	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢
Monochloroacetic acid	🔴	🔴	🔴	🔴	🟡	🔴	🟡	🔴	🟢	🟡	🔴	🔴	🟢	🟢	🟢	🟢
Nitric acid 10%	🔴	🔴	🟢	🟡	🟢	🟡	🟢	🟡	🟢	🟡	🔴	🔴	🟢	🟢	🟢	🟢
Nitric acid 30%	🔴	🔴	🟡	🔴	🟡	🟡	🟢	🟡	🟡	🔴	🔴	🔴	🟡	🟡	🟡	🔴
Nitric acid 70%	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Nitrobenzene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡	🔴
Oleic acid	🔴	🔴	🔴	🔴	🔴	🔴										
Oxalic acid	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Ozone	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🟢	🟢	🟢	🟢
n-Pentane																
Peracetic acid							🔴	🔴			🔴	🔴				

● 耐蒙品性:拔群
Chemical resistance: excellent.
耐化学性：优秀

● 耐蒙品性:良好～中程度
Chemical resistance: between good and limited.
耐化学性：介于好和有限之间

● 耐蒙品性:低
Chemical resistance: poor.
耐化学性：差

PP		PMP		ECTFE/ETFE		PTFE		FEP/PFA		FKM		EPDM		NR		SI		
20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	
				🟡		🟢	🟢	🟢										Dibromoethane
🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟡		🔴	🔴	🟡	🔴	Dibutyl phthalate
🟡	🔴	🔴	🔴	🟢	🟡	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Dichlorobenzene
🟡	🔴	🟡	🔴	🟡	🟡	🟢	🟢	🟢	🟢	🟡		🔴	🔴	🔴	🔴	🔴	🔴	Dichloromethane (Methylene chloride)
🟡	🔴	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Dichloroacetic acid
						🟢	🟢			🟡		🔴	🔴	🔴	🔴	🔴	🔴	Dichloroethane
🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Diesel oil
🟡						🟢	🟢					🟡						Diethanolamine
🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Diethyl ether
🟡	🔴	🟡	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🔴	🔴	🟡		🟡		🟡		Diethylamine
🔴	🔴	🔴	🔴	🟢	🟡	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Diethylbenzene
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢	🟢	🟢	🟢	Diethylene glycol
				🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟡		🔴	🔴	🟡		Dimethylaniline
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡		🔴	🔴	🟢	🟢	Dimethylformamide (DMF)
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢							🟢	🟢	Dimethyl sulfoxide (DMSO)
🟢	🟡	🟡	🟡	🟢	🟡	🟢	🟢	🟢	🟢					🔴	🔴	🔴	🔴	1.4 Dioxane
						🟢	🟢			🟡		🔴	🔴	🔴	🔴	🔴	🔴	Diphenyl ether
🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟢		🟢	🟢	🟢	🟢	Ethanol (Ethyl alcohol)
🟢				🟢	🟢	🟢	🟢	🟢	🟢									Ethanolamine
🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡		🔴	🔴			Ethyl acetate
🟢	🟡	🔴	🔴	🟡	🟡	🟢	🟢	🟢	🟢	🔴	🔴	🟡	🔴	🔴	🔴			Ethyl methyl ketone
🔴	🔴	🔴	🔴	🟡	🟡	🟢	🟢	🟢	🟢			🔴	🔴	🔴	🔴	🔴	🔴	Ethylbenzene
🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Ethylene chloride
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🔴	🔴	🟢	🟢	🟢	🟢	Ethylene glycol (Glycol)
🟡	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢					🔴	🔴	🔴	🔴	Ethylene oxide
						🟢				🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Fluoroacetic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟢		🟢	🟢			Formaldehyde 40%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟡		🟢				Formamide
🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡		🟢	🟢	🟢	🟢	Formic acid 98-100%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟢		🟢	🟢	🟢	🟢	Glycerol
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟢		🟢		🟢		Glycolic acid 70%
🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Heating oil
🟡	🟡	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Heptane
🟢	🟡	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Hexane
						🟢	🟢											Hexanoic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🟡		🟡		Hexanol
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢						Hydriodic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟡		🟡				Hydrobromic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟡	🔴	Hydrochloric acid 10%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟡		🔴	🔴	Hydrochloric acid 20%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🟢	🟡	🟡	🔴	🔴	🔴	Hydrochloric acid 37%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢					🟡	🟡	🔴	🔴	Hydrofluoric acid 40%
🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟡	🟢	🟢					🔴	🔴	🔴	🔴	Hydrofluoric acid 70%
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢					🔴	🔴	🟡	🟡	Hydrogen peroxide 35%
🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🔴	🔴			Iodine / potassium iodine solution
				🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	Iso octane
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟡		🟡		Isoamyl alcohol
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢		🟢		Isobutanol (Isobutyl alcohol)
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢	🟢	🟢	🟢	Isopropanol (2-Propanol)
🔴	🔴	🔴	🔴	🟢	🟡	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴			Isopropyl ether
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟡		🟡	🟡	🟡	🟡	Lactic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢	🟢			Mercury
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢	🟢			Mercury chloride
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	Methanol
				🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴			Methoxybenzene
🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Methyl butyl ether
				🟢	🟢	🟢	🟢	🟢	🟢			🟡	🔴	🔴	🔴	🟡	🔴	Methyl formate
🟢	🟡	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢					🔴	🔴	🟡	🔴	Methyl propyl ketone
🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🔴	🔴	🔴	🔴	🔴	🔴	Methylene chloride (Dichloro methane)
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🟢	🟡	Minerale oil (Engine oil)
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡		🟡		🔴	🔴	🔴	🔴	Monochloroacetic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🟡	🔴	🔴	🔴	🔴	🔴	Nitric acid 10%
🟡	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Nitric acid 30%
🔴	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Nitric acid 70%
🔴	🔴	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	Nitrobenzene
				🟢	🟢	🟢	🟢	🟢	🟢	🟡		🔴	🔴	🔴	🔴	🔴	🔴	Oleic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🟢		🟢	🟢	🟢	🟢	Oxalic acid
🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴		🔴	🔴	🟡	🟡	Ozone
				🟢	🟢	🟢	🟢	🟢	🟢	🟢		🔴	🔴	🔴	🔴	🔴	🔴	n-Pentane
				🟢	🟢	🟢	🟢	🟢	🟢							🔴	🔴	Peracetic acid

耐薬品性

塩類の耐薬品性データは、水溶液についても適用されます。

CHEMICAL RESISTANCE

Data for the chemical resistance of salts also apply to their aqueous solutions.

耐化学性

盐的耐化学性数据也适用于它们的水溶液。

	PS		SAN		PMMA		PC		PVC		POM		PE-LD		PE-HD	
	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C
Perchloric acid	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟢	🔴	🟢	🔴
Perchloroethylene	🔴	🔴	🟡	🟡	🟡	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🔴	🔴	🔴	🔴
Petroleum	🔴	🔴			🟢		🟡	🟡	🟢	🔴	🟢	🟢	🔴	🔴	🔴	🔴
Petroleum ether	🔴	🔴			🟢				🟡	🔴	🟢	🟢				
Phenol	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟡	🟢	🟢
Phenylethanol															🟡	
Phenylhydrazine															🟡	
Phosphoric acid 85%	🟢	🟡	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟡	🟢	🔴	🟢	🟢	🟢	🟢
Piperidine															🟢	
Potassium chloride	🟡	🟡	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Potassium dichromate																
Potassium hydroxide	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢
Potassium permanganate	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🟢	🟢
Propanediol (Propylene glycol)	🟢	🟢	🔴	🔴			🟢	🟡	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Propanol	🟡		🟢	🟢	🟡		🟡		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Propionic acid	🟡	🔴					🔴	🔴	🟡	🔴	🔴	🔴	🟡	🔴	🟢	🟡
Pyridine	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🟢	🟡	🟢	🟡	🟢	🟡
Salicyl acid	🟢	🟢	🟢	🟢					🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Salicylaldehyde	🔴	🔴	🔴	🔴			🟡	🟡	🔴	🔴			🟢	🟢	🟢	🟢
Silver acetate	🟡	🟡	🟡	🟡	🟡	🟡	🟢	🟢	🟡	🟡	🟡	🟡	🟢	🟢	🟢	🟢
Silver nitrate	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟡	🟡	🟢	🟢	🟢	🟢
Sodium acetate	🟢	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🟡	🟡	🟢	🟡	🟢	🟢	🟢	🟢
Sodium chloride	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Sodium dichromate	🟢	🟡	🟢	🟡	🟢	🟡	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Sodium fluoride	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Sodium hydroxide	🟢	🟢	🟢	🟢			🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Sulphuric acid 60%	🔴	🔴	🟢	🟡	🔴	🔴	🟡	🟡	🟡	🔴	🔴	🔴	🟢	🟢	🟢	🟢
Sulphuric acid 98%	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🟡	🔴
Tartaric acid	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Tetrachloroethylene																
Tetrahydrofuran	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🟡	🔴	🔴	🟡	🔴
Tetramethylammonium hydroxide							🔴	🔴			🔴	🔴				
Toulene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟡	🔴	🟡	🟡
Trichloroacetic acid	🟡	🔴					🟡	🔴	🟡	🔴			🟡	🔴	🟡	🟡
Trichlorobenzene	🔴	🔴					🔴	🔴	🔴	🔴			🔴	🔴	🔴	🔴
Trichloroethane	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴	🟡	🔴
Trichloroethylene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴
Trichlorotrifluoro ethane	🔴	🔴	🔴	🔴												
Triethanolamine	🔴	🔴	🔴	🔴												
Triethylene glycol	🟢	🟡	🟢	🟢	🟡	🟡	🟢	🟡	🟡	🔴	🟢	🟡	🟢	🟢	🟢	🟢
Trifluoro ethane	🔴	🔴	🔴	🔴												
Trifluoroacetic acid (TFA)	🔴	🔴	🔴	🔴							🔴	🔴				
Tripropylene glycol	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟡	🟡	🔴	🟢	🟡	🟢	🟢	🟢	🟢
Turpentine	🔴	🔴	🟡	🟡	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟢	🟡	🔴	🟡	🔴
Urea	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🟡	🔴	🟢	🟢	🟢	🟢	🟢	🟢
Xylene	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟡	🔴	🟡	🔴
Zinc chloride	🟢	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢	🟢	🟢
Zinc sulphate	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢

● 耐蒙品性:拔群
Chemical resistance: excellent.
耐化学性：优秀

● 耐蒙品性:良好～中程度
Chemical resistance: between good and limited.
耐化学性：介于好和有限之间

● 耐蒙品性:低
Chemical resistance: poor.
耐化学性：差

PP		PMP		ECTFE/ETFE		PTFE		FEP/PFA		FKM		EPDM		NR		SI		
20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	20° C	50° C	
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Perchloric acid
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Perchloroethylene
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		Petroleum
				●	●	●	●	●	●	●		●	●	●	●	●		Petroleum ether
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Phenol
●				●	●	●	●	●	●									Phenylethanol
●				●	●	●	●	●	●	●		●	●	●				Phenylhydrazine
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Phosphoric acid 85%
●				●	●	●	●	●	●	●	●	●	●	●	●			Piperidine
●	●	●	●	●	●	●	●	●	●					●	●	●	●	Potassium chloride
						●	●			●		●		●				Potassium dichromate
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	Potassium hydroxide
●	●	●	●	●	●	●	●	●	●	●		●		●	●			Potassium permanganate
●	●	●	●	●	●	●	●	●	●	●		●		●				Propanediol (Propylene glycol)
●	●	●	●	●	●	●	●	●	●	●		●		●		●		Propanol
●	●	●	●	●	●	●	●	●	●	●		●		●	●			Propionic acid
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Pyridine
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Salicyl acid
●	●	●	●	●	●	●	●	●	●									Salicylaldehyde
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Silver acetate
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Silver nitrate
●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	Sodium acetate
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Sodium chloride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●		Sodium dichromate
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Sodium fluoride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Sodium hydroxide
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Sulphuric acid 60%
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Sulphuric acid 98%
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Tartaric acid
				●		●	●	●		●		●	●	●	●			Tetrachloroethylene
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Tetrahydrofuran
				●	●	●	●	●	●	●		●						Tetramethylammonium hydroxide
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Toulene
●	●	●	●	●	●	●	●	●	●	●	●	●		●				Trichloroacetic acid
●	●	●	●	●	●	●	●	●	●									Trichlorobenzene
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Trichloroethane
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Trichloroethylene
				●	●	●	●	●	●									Trichlorotrifluoro ethane
						●	●	●	●	●	●	●	●	●	●	●	●	Triethanolamine
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Triethylene glycol
						●	●	●	●	●		●	●	●	●	●	●	Trifluoro ethane
						●	●	●	●	●	●							Trifluoroacetic acid (TFA)
●	●	●	●	●	●	●	●	●	●					●	●	●	●	Tripropylene glycol
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Turpentine
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Urea
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	Xylene
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Zinc chloride
●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	Zinc sulphate

プラスチック製実験用品の滅菌方法

滅菌を行う前に、必ず汚染物質の残滓等が入っていないことを確認してください。残滓等があると、滅菌作業やオートクレーブ作業中にプラスチック素材を傷める可能性があります。

オートクレーブ滅菌を行う場合は、プラスチック製品から蓋、キャップ、付属品等を必ず外してください。容器とキャップ、栓、蓋は、必ず別々に滅菌してください。これを守らないと、容器が変形したり傷んだりすることがあります。

本書の記載内容はあくまでも参考としての情報であり、Kartell社は一切の責任を負いかねます。プラスチック素材の耐熱温度や滅菌耐久性や洗浄処理の耐久性に関する情報は、いずれもプラスチック素材製造者の公開情報、発表文献のデータ及び製品の使用によって得られた経験に基づいています。

STERILISING PLASTIC LABORATORY WARE

Before sterilising any items of plastic laboratory ware, verify that no contamination or residues are present. Their presence could destroy plastics during sterilisation or autoclaving.

Observe the tolerated temperature ranges of plastic when autoclaving plastic laboratory ware. Remove any stoppers, fittings, or caps from plastic laboratory ware prior to autoclaving. Plastic vessels should be auclaved separately from their closures and other fitting. Autoclaving vessels with their closures in place can lead to deformation and destruction of the vessels. All statements are advisory only, and imply no liability on the part of Kartell.

All statements relating to the resistances of plastic laboratory ware to high temperatures, chemicals, and to sterilisation and cleaning procedures have been cautiously formulated, based on statements of raw material manufactures, on statements appearing in the literature, plus experience gained in actual practice.

实验室塑料耗品灭菌

对实验室塑料耗品进行灭菌之前，要证明不存在污染和残留物。因为在杀菌或高压灭菌过程中污染和残留物的存在可能破坏塑料。

在对实验室耗品进行高压灭菌时要观察塑料的温度耐受范围，灭菌前取下塑料耗品的塞子、配件或盖子。塑料容器要与它们的盖和其它配件分开进行杀菌。容器进行高压灭菌时若盖未去掉，可能导致容器变形或破坏。上述所有说明都只是建议性的，就Kartell来说并不表明有任何义务。

有关实验室塑料耗品耐高 温、耐化学性、灭菌及清洗的所有说明都是警示性的，是在原材料生产说明、文献中出现的声明及实际操作中获得经验的基础上提出的。

Plastics	Autoclavable*	Sterilization				
		Gas (Ethylene Oxide)	Dry at 160° C	Chemical (in Formalin)	By Gamma	Microwaves
ABS	No	Yes	No	Yes	Yes	No
HDPE	No	Yes	No	Yes	Yes	Yes
LDPE	No	Yes	No	Yes	Yes	Yes
PC	Yes	Yes	No	Yes	Yes	Yes
PFA/FEP	Yes	Yes	Yes	Yes	No	Yes
PMP (TPX)	Yes	Yes	No	Yes	No	Yes
PP	Yes	Yes	No	Yes	Yes	Yes
PS	No	Yes	No	Yes	Yes	No
PTFE	Yes	Yes	Yes	Yes	No	Yes
ETFE/E-CTFE	Yes	Yes	Yes	Yes	No	Yes
PVC	No	Yes	No	Yes	No	Yes
POM	Yes	Yes	Yes	Yes	No	No

*Autoclavable at 121° C for 20 minutes.

プラスチック製実験用品の洗浄について

LDPE、HDPE、PP、PMP （TPX®）などのポ リオレフィン類は、PTFE、PFA、FEP、ETFE、E-CTFEなどのフッ素樹脂同様に、表面が高温や化学薬品に対する耐久性に優れているため、簡単に洗浄することができます。軽度の汚染は、中性洗剤（pH7）で洗浄すれば除去できます。汚染が激しい場合は、アルカリ性洗剤（最大pH12まで）で洗浄してください。

ポリカーボネート（PC）やポリスチレン（PS）には中性（pH7）洗剤以外は使用しないでください。

洗浄にはKartell Cleanilab LM1、LM2、LA2の使用が推奨されます。ポリカーボネート樹脂(PC) やポリスチレン(PS)の製品には 、必ず中性洗剤(pH7)をお使いください。

微量検出の試験に使用した器具は、1N塩酸(HCl)水溶液で最大6時間まで洗浄を行ってから、陽イオンや陰イオンの汚染を防ぐため、蒸留水で濯いでください。

プラスチック製実験用具を洗浄する際には、粉末状洗剤や目の粗いスポンジの使用は避け、ポリカーボネート製製品の洗浄には絶対にアルカリ性洗剤を使用しないでください。

CLEANING PLASTIC LABORATORY WARE

All polyolefins, such as LDPE, HDPE, PP and PMP (Tpx®), as well as the fluorinated hydrocarbons PTFE, PFA, FEP, ETFE and E-CTFE, have wettable surfaces that are both highly resistant to high temperatures and chemical attack and easy to clean. Slight contamination can be removed using a chemically neutral (pH 7) cleaning agent. Heavy contamination can be removed using an alkaline (pH up to 12) cleaning agent.

Use only chemically neutral (pH7) cleaning agents on polycarbonate (PC) or Polystyrene (PS).

Laboratory ware used in trace analyses should be cleaned in a 1-N hydrochloric acid (HCl) solution for periods of not more than 6 hours and then rinsed in distilled water in order to preclude contamination by cations or anions.

Never use scouring powders or abrasive sponges when cleaning plastic laboratory ware. Use no alkaline cleaning agents on polycarbonate (PC) laboratory ware.

实验室塑料耗品的清洗

所有的聚烯烃，如LDPE、HDPE、PP及PMP（TPX）和氟化烃PTFE、PFA、FEP、ETFE及E-CTFE一样都具有可湿性表面，既耐高温又耐化学腐蚀且容易清洗。轻微的污染可用一种中性化学（PH7）清洁剂除掉。 重度污染可用碱性（PH值达12）清洁剂清洗。我们推荐使用Kartell清洁实验室的清洁剂LM1，LM2和LA2。中性化学清洁剂仅用于清洗聚碳酸酯PC或聚苯乙烯PS。

在聚碳酸酯（PC）或聚苯乙烯（PS）材质的产品上只可用中性清洁剂（pH7）进行清洁。

用于跟踪分析的实验室耗品应该在盐酸（HCL）溶液中进行清洗且时间不超过6小时，然后在蒸馏水中冲洗以防止阳离子或阴离子污染。

当清洗实验室塑料耗品时一定不要使用擦洗粉或磨料海绵。聚碳酸酯（PC）实验室耗品不要使用碱性清洗剂。