

# TECHNICAL MANUAL

MANUALE TECNICO  
TECHNICAL MANUAL  
MANUEL TECHNIQUE

**ABBREVIAZIONI, TEMPERATURE  
E RESISTENZE CHIMICHE DELLE  
MATERIE PLASTICHE**

La tabella seguente elenca le abbreviazioni delle materie plastiche più comunemente usate per la fabbricazione dei prodotti da laboratorio.

Le temperature tra parentesi rappresentano i limiti tollerati solo per brevi periodi di tempo.

**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.

**ABREVIATIONS, TEMPERATURES  
ET RESISTANCES CHIMIQUES DES  
MATIERES PLASTIQUES**

Le tableau suivant comprend les abréviations plus communes des matières plastiques dans le domaine de la production des articles pour laboratoire.

Les températures entre parenthèses représentent les limites des résistances pendant périodes de temps brefs.

Abbreviazioni DIN - Abbrev. Abbreviations	Denominazione chimica Chemical designation Dénomination chimique	Campo di temperature comunemente tollerato Tolerated temperature range in normal use Résistance températures pour utilisation normale	
		da / from / de	a / to / à
<b>ABS</b>	Acilobutadiene-stirene cop. Acrylobutadiene-styrene copolymer Copolymère Acrylonitrile Butadiène Styrene	- 40°C	+ 85 (100)°C
<b>HDPE</b>	PE Alta Densità High-density PE PE Haute Densité	- 50°C	+ 80 (120)°C
<b>LDPE</b>	PE Bassa Densità Low-density PE PE Basse Densité	- 50°C	+ 75 (90)°C
<b>PA</b>	Poliamide (PA6) Polyamide (PA6) Polyamide (PA6)	- 30°C	+ 80 (140)°C
<b>PC</b>	Policarbonato Polycarbonate Polycarbonate	-100 °C	+135 (140)°C
<b>PE</b>	Polietilene (HDPE/LDPE) PE (cf. HDPE/LDPE) PE (HDPE/LDPE)	- 40°C	+ 80 (90)°C
<b>PMP (Tpx®)</b>	Polimetilpentene Polymethylpentene Polyméthylpentène	0°C	+120 (180)°C
<b>PMMA</b>	Polimetilmetacrilato Polymethylmethacrylate Polyméthacrylate	- 40°C	+ 85 (90)°C
<b>POM</b>	Poliossimetilene Polyoxymethylene Polyoxyméthylène	- 40°C	+ 90 (110)°C
<b>PP</b>	Polipropilene Polypropylene Polypropylène	- 10°C	+120 (140)°C
<b>PS</b>	Polistirene Polystyrene Pstyrene	- 10°C	+ 70 (80)°C
<b>SAN</b>	Stirene-Acrilonitrile Styrene-acrylonitrile Styrene-acrylonitrile	- 20°C	+ 85 (95)°C
<b>SI</b>	Gomma Silicone Silicone rubber Gomme Silicone	- 50°C	+180 (250)°C
<b>PVDF</b>	Fluoruro di Polivinilidene Polyvinylidenefluoride Polyvinylidénfluoride	- 40°C	+105 (150)°C
<b>PTFE</b>	Politetrafluoroetilene Polytetrafluoroethylene Polytétrafluoréthylène	- 200°C	+ 260°C
<b>E-CTFE</b>	Etilene-Clorotrifluoroetilene Ethylene-Chlorotrifluoroethylene Éthylène-Chlorotrifluoréthylène	- 76°C	+150 (170)°C
<b>ETFE</b>	Etilene-Tetrafluoroetilene Ethylene-tetrafluoroethylene Éthylène-Tetrafluoréthylène	- 100°C	+ 150 (180)°C
<b>PFA</b>	Perfluoroalcolossido Perfluoroalkoxy Perfluoroalkoxy	- 200°C	+ 260°C
<b>FEP</b>	Tetrafluoroetilene-Perfluoropropilene Tetrafluoroethylene-perfluoropropylene Tetrafluoréthylène-Perfluorpropylène	- 200°C	+ 205°C
<b>PVC</b>	Cloruro di Polivinile Polyvinylchloride Polyvinylchloride	- 20°C	+ 80°C
<b>PUR</b>	Poliuretano Polyurethane Polyuréthane	-40°C	+90°C

RESISTENZE CHIMICHE DELLE  
MATERIE PLASTICHE PER  
TIPOLOGIE DI PRODOTTI CHIMICILIST OF PLASTICS AND THEIR  
CHEMICAL RESISTANCES TO  
SUBSTANCE GROUPSRESISTANCES CHIMIQUES DES  
MATIERES PLASTIQUES PAR  
TYPOLOGIES DES PRODUITS  
CHIMIQUES

Tipologie di prodotti chimici Substance Group, at +20°C Typologies des substances PFA chimiques	LDPE	HDPE	PP	PMP Tpx®	PTFE FEP PFA	ECTFE ETFE	PA	PA
Alcoli alifatici Alcohols aliphatic Alcools aliphatiques	●	●	●	●	●	●	●	●
Aldeidi Aldehydes Aldehydes	●	●	●	●	●	●	●	●
Alkali Alkalis Alkalis	●	●	●	●	●	●	●	●
Esteri Esters Esters	●	●	●	●	●	●	●	●
Idrocarburi alifatici, Hydrocarbons, aliphatic Hydrocarbures aliphatiques	●	●	●	●	●	●	●	●
Idrocarburi aromatici Hydrocarbons, aromatic Hydrocarbures aromatiques	●	●	●	●	●	●	●	●
Idrocarburi alogenati Hydrocarbons, halogenated Hydrocarbures halogenes	●	●	●	●	●	●	●	●
Ketoni Ketones Ketons	●	●	●	●	●	●	●	●
Ossidanti (acidi) forti Oxidants (oxidizing acids), strong Oxydants (Acides oxydants) forts	●	●	●	●	●	●	●	●
Acidi deboli diluiti Acids, diluted, weak Acides dilués, faibles	●	●	●	●	●	●	●	●
Acidi forti concentrati Acids, conc., strong Acides concentrés, forts	●	●	●	●	●	●	●	●

- Resistenza elevata.  
High resistance.  
Résistance excellent.
- Resistenza buona; nessun o minimo attacco per un'esposizione di oltre 30 giorni.  
Good resistance; no, or only minor, damage resulting from exposures of more than 30 days.  
Bonne résistance; aucun ou attaque minimale après 30 jours d'exposition.
- Resistenza scarsa; un'esposizione prolungata può causare danni ad alcuni tipi di plastica.  
Marginal resistance; for some types of plastics, extended exposure can result in damage (hairline cracks, loss of mechanical strength, discolouration, etc.).  
Résistance insuffisant; l'exposition prolongée peut provoquer des dégâts à certains types de plastique.
- Resistenza nulla; il contatto può causare deformazioni o forte degrado del materiale.  
Non resistant; exposure can lead to deformation or destruction.  
Résistance nulle; le contact peut provoquer déformations ou graves dommages à la matière.

PLASTICHE "PULITE" ED  
ECOLOGICHE

L'innovazione tecnologica ed il progressivo adeguamento ai più elevati standard di eco-compatibilità, ha reso i materiali plastici primari utilizzati da Kartell Labware all'avanguardia. Infatti i materiali plastici utilizzati godono di numerose compatibilità; di seguito ricordiamo alcune delle conformità possedute, in relazione alle loro caratteristiche.

- Idoneità al contatto con alimenti (Direttiva Nazionale ed Europea CE 1935/2004)
- Idoneità al contatto con alimenti (US FDA CFR 170/199)
- PTFE: idoneità al contatto con alimenti (FDA CFR TITLE 177.1550)
- Assenza o limitazione secondo le Direttive Internazionali di: metalli pesanti, bifenili e ftalati
- Idoneità alle Direttive RoHS
- Idoneità alle Direttive relative alla BSE e/o TSE
- Idoneità alle Direttive Atex

Kartell Labware promuove la ricerca nel campo dei materiali plastici, attraverso il contatto diretto con i più affermati Produttori Mondiali e la ricerca di materiali innovativi. Ricordiamo che le plastiche Kartell Labware, se non chimicamente contaminate, sono totalmente riciclabili.

"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 to the International Directives of: heavy metals, biphenyls and phthalates
- 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

PLASTIQUE "PROPRE" ET  
ECOLOGIQUE

L'innovation technologique et la progressive adaptation aux plus élevés standards d'éco-compatibilité, a rendu les matières premières plastiques utilisées par Kartell Labware à l'avant-garde. En effet les matières plastiques utilisées garantissent de nombreuses compatibilités; ci-dessous quelques conformités aux normes internationales liées à leurs caractéristiques.

- Conformité au contact alimentaire (Directives Nationales et Européennes CE 1935/2004)
- Conformité au contact alimentaire (US FDA CFR 170/199)
- PTFE: adapté aux aliments (FDA CFR TITLE 177.1550)
- Absence ou limitation selon les normes internationales de: métaux lourds, biphenyles and phthalates
- Conformité aux Directives RoHS
- Conformité aux Directives BSE et/ou TSE -
- Conformités aux Directives Atex

Kartell Labware promeut la recherche dans le champ des matières plastiques, à travers le contacte directe avec les Producteurs plus affirmés dans le monde et la recherche de matières nouvelles. Nous voudrions souligner que les matières plastiques Kartell, non chimiquement contaminées, sont totalement recyclables

## RÉSISTANCE CHIMIQUE

Les données pour la résistance chimique des sels s'appliquent également à leurs solutés.

	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											●	●					
Chloroacetaldehyd	●	●	●	●	●	●											
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	●	●	●	●	●	●				●					●		

- **Resistenza chimica: eccellente.**  
*Chemical resistance: excellent.*  
*Résistance chimique: excellent.*

- Resistenza chimica: da buona a limitata.  
*Chemical resistance: between good and limited.*  
*Résistance chimique: entre bonne et suffisant.*

- **Resistenza chimica: insufficiente.**  
*Chemical resistance: poor.*  
*Résistance chimique: pauvre.*

[illegible]



- **Resistenza chimica: insufficiente.**  
*Chemical resistance: poor.*  
*Résistance chimique: pauvre.*

[illegible]

## RÉSISTANCE CHIMIQUE

Les données pour la résistance chimique des sels s'appliquent également à leurs solutés.

[illegible]



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*Résistance chimique: pauvre.*

	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

### STERILIZZAZIONE DEI PRODOTTI IN PLASTICA DA LABORATORIO

Prima di sterilizzare qualsiasi articolo verificare che non contenga alcun residuo o tracce di contaminanti, poiché la loro presenza potrebbe danneggiare la plastica durante le operazioni di sterilizzazione o autoclavaggio.

Si raccomanda di togliere qualsiasi tappo, accessorio o coperchio dagli articoli in plastica prima di autoclavarli; i contenitori devono essere autoclavati separatamente dai propri tappi o coperchi di chiusura altrimenti si corre il rischio di causare deformazioni e danneggiamento del contenitore. Tutte le notizie tecniche riportate sono indicative e non implicano alcuna responsabilità da parte di Kartell.

Tutte le notizie relative alle resistenze delle materie plastiche alle alte temperature, alla sterilizzazione e ai trattamenti di lavaggio sono state formulate basandosi sui bollettini dei produttori di materie plastiche, sui dati pubblicati in letteratura e sull'esperienza acquisita nell'uso dei prodotti.

### 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 autoclaved 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 manufacturers, on statements appearing in the literature, plus experience gained in actual practice.

### STERILISATION DES PRODUITS EN PLASTIQUE POUR LABORATOIRE

Avant de stériliser un article, il faut vérifier qu'il ne contienne pas de résidus ou traces de contaminants, car leur présence pourrait abîmer le plastique pendant les opérations de stérilisation ou autoclavage.

Il est conseillé d'enlever tout, bouchon, accessoire ou couvercle des articles en plastique avant de les autoclaver; les Récipients doivent être autoclavés séparément des leurs bouchons ou couvercles pour éviter le risque de déformations ou graves dommages. Toutes les informations techniques mentionnées sont indicatives et n'impliquent aucune responsabilité de la part de Kartell.

Toutes les informations concernant les résistances des matières plastiques aux hautes températures à la stérilisation et aux traitements de lavage, ont été formulées sur la base des fiches des producteurs de matières plastiques, sur les données publiées en littérature et sur l'expérience acquise avec l'utilisation des produits.

Materia Prima Plastics Mat. première	Autoclavabilità* Autoclavable*	Sterilizzazione / Sterilization / Stérilisation				
		Gas (Oss. Etilene) Gas (Ethylene Oxide) Gas (Oxyde Ethylène)	Secco a +160° C Dry at 160° C À sec 160° C	Chimica (in Formal.) Chemical (in Formalin) Chimique (en Formal.)	Radiazioni gamma By Gamma Radiations Gamma	Microonde Microwaves Micro-onde
ABS	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	No / no / no
HDPE	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	Si / yes / oui
LDPE	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	Si / yes / oui
PC	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	Si / yes / oui
PFA/FEP	Si / yes / oui	Si / yes / oui	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui
PMP (TPX)	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui
PP	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	Si / yes / oui
PS	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui	Si / yes / oui	No / no / no
PTFE	Si / yes / oui	Si / yes / oui	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui
ETFE/E-CTFE	Si / yes / oui	Si / yes / oui	Si / yes / oui	Si / yes / oui	No / no / no	Si / yes / oui
PVC	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui	No / no / no	Si / yes / oui
POM	Si / yes / oui	Si / yes / oui	Si / yes / oui	Si / yes / oui	No / no / no	No / no / no

\*Autoclavabile a +121° C per un periodo di 20 minuti / autoclavable at 121° C for 20 minutes / autoclavable à 121° C pendant 20 minutes

### LAVAGGIO DEGLI ARTICOLI IN PLASTICA DA LABORATORIO

Tutte le poliolefine, quali LDPE, HDPE, PP e PMP (Tpx®), come pure le resine fluorurate PTFE, PFA, FEP, ETFE e E-CTFE hanno superfici bagnabili che sono molto resistenti sia alle alte temperature che agli attacchi chimici e quindi facili da lavare. Una leggera contaminazione può essere eliminata mediante lavaggio con detergenti neutri (pH 7). Contaminazioni più consistenti possono essere eliminate mediante l'uso di detergenti alcalini (pH fino a 12).

Si raccomanda di usare solo detergenti neutri (pH7) con articoli in Policarbonato (PC) o Polistirene (PS).

Gli articoli da laboratorio usati per analisi di tracce devono essere lavati con una soluzione di Acido Cloridrico (HCl) 1-N per un massimo di 6 ore e poi risciacquati con acqua distillata per impedire una contaminazione da cationi o anioni.

Nella pulizia degli articoli in plastica da laboratorio evitare sempre l'uso di polveri o spugne abrasive e non usare mai detergenti alcalini con oggetti di Policarbonato.

### 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.

### NETTOYAGE DES ARTICLES EN PLASTIQUE DE LABORATOIRE

Toutes les résines polyoléfiniques comme LDPE, HDPE, PP et PMP (Tpx®), at aussi les résines fluorées comme PTFE, PFA, FEP, ETFE et E-CTFE ont des surfaces à laver qui sont très résistantes soit aux hautes températures que aux attaques chimiques, donc très faciles à nettoyer. Une contamination légère peut être éliminée grace ou lavage avec détergents neutres (pH 7). Contaminations plus graves peuvent être éliminées avec l'utilisation de détergents alcalins (pH jusqu'à 12).

Avec des articles en Polycarbonate (PC) et Polystyrène (PS) il est conseillé d'utiliser seulement des détergents neutres (pH7).

Les articles de laboratoire utilisés pour analyses de traces doivent être lavés avec une solution d'acide chlorhydrique (HCl) 1-N pendant 6 heures max. et après rincés avec de l'eau distillée pour empêcher la contamination des cations et anions.

Pendant le nettoyage des produits de laboratoire en plastique il faut toujours éviter l'utilisation de poudres ou éponges abrasives et jamais laver les objets en Polycarbonate avec des détergents alcalins.

# KARTELL LABWARE

INDICE PER CODICE PRODOTTO  
INDEX BY CATALOGUE REFERENCE  
INDEX DES RÉFÉRENCES

**INDICE PER CODICE  
PRODOTTO**
**INDEX BY CATALOGUE  
REFERENCE**
**INDEX DES RÉFÉRENCES**

ART.	pag.	ART.	pag.	ART.	pag.
130	81	281	30	411	36
131	81	282	30	412	36
134	81	283	30	413	36
135	81	284	30	418	66
139	71	285	30	419	66
140	71	286	30	420	24
142	87	288	30	422	51
143	87	293	86	423	51
145	67	295	81 - 103	424	51
146	67	296	81 - 103	425	51
147	67	297	102	428	28
148	67	298	102	430	28
150	67	300	80	431	28
152	67	301	80	432	28
153	67	302	80	434	18
155	67	303	80	435	18
156	67	305	80	436	18
162	67	306	80	437	66
164	67	307	80	438	66
165	67	308	80	439	66
166	28	315	125	440	66
167	28	316	125	441	66
168	28	317	36	442	66
169	28	319	36	443	66
170	28	323	36	445	66
171	28	324	36	446	18
172	28	325	36	447	18
173	28	326	36	448	18
174	28	327	40	452	27
175	28	328	40	454	27
176	28	329	125	455	27
177	28	330	125	456	27
178	28	334	125	459	16
179	40	340	26	464	16
180	40	342	26	465	16
182	40	343	26	466	16
183	40	345	26	467	16
185	40	346	26	468	16
192	86	347	26	479	43 - 86
198	77	348	26	480	43 - 86
199	77	351	59	481	87
200	76	353	58	482	87
201	86	354	58	497	28
203	27	355	58	498	28
208	76	356	61	499	28
213	70	357	61	500	71
215	74	358	126	501	71
216	61	359	126	503	71
217	74	360	126	510	17
218	74	361	126	511	17
219	74	362	126	512	17
221	74	363	126	513	17
222	74	364	126	514	17
223	74	365	126	515	17
229	65	366	126	525	16
230	64	367	126	526	16
231	64	368	126	527	17
252	76	369	126	528	17
255	75	370	83	529	17
257	86	371	22	530	17
258	30 - 88	374	22	531	17
260	101	375	45	532	17
261	75	376	22	535	18
262	75	379	22	536	18
264	72	380	126	537	18
265	75	383	44	538	18
266	72	388	41	539	18
267	72	389	41	540	57
268	70	391	41	542	30
269	70	392	41	543	30
271	72	393	41	544	30
276	57	395	43	547	31
277	57	396	43	548	29
278	57	408	36	550	64
279	102	409	36	551	64
280	30	410	36	553	64

ART.	pag.	ART.	pag.	ART.	pag.
554	64	699	91	843	66
555	65	704	91	844	66
556	65	705	91	877	17
557	65	710	93	878	17
559	83	712	93	879	17
560	83	717	95	889	83
562	83	718	95	890	83
563	82	720	95	891	83
564*	82	721	95	900	22
565*	82	723	95	901	22
566*	82	730	26	902	22
567*	82	730	26 - 60	903	22
568*	82	731	26 - 60	905	31
569	32 - 84	732	26 - 60	906	31
570	32 - 84	733	26 - 60	907	31
571	23	734	26 - 60	910	26
572	23	735	26 - 60	910	26 - 60
586	87	736	26 - 60	911	26 - 60
589	87	737	26 - 60	912	26 - 60
590	87	744	95	913	26 - 60
591	87	745	95	914	26 - 60
592	75	746	95	916	26 - 60
593	71	747	95	920	56
594	71	748	91	921	56
595	71	749	91	922	57
596	71	750	91	923	57
597	108	751	91	924	57
600	108	756	91	925	57
602	31	757	91	927	56
603	31	758	91	928	56
604	31	763	91	930	56
605	31	764	91	931	56
608	36	766	91	933	103
609	36	767	91	934	103
610	36	768	91	935	112 - 116
611	36	769	91	936	103
612	36	770	92	939	101
613	36	771	92	940	112 - 115
614	36	772	92	941	112 - 117
625	95	773	92	942	112 - 119
627	95	775	92	943	112 - 119
630	95	776	92	944	112 - 115
634	95	777	93	952	29
639	95	778	93	953	29
643	91	779	93	954	29
644	91	780	93	956	112 - 114
645	91	781	93	957	112 - 117
646	91	782	93	958	112 - 115
647	91	783	93	959	112 - 114
650	81	786	93	960	112 - 114
651	81	787	93	961	112 - 116
652	81	788	93	963	112 - 117
654	81	789	93	964	112 - 118
655	81	793	93	965	112 - 118
656	81	794	93	966	112 - 116
657	81	797	93	967	112 - 118
658	81	799	93	968	112 - 115
659	81	811	50	969	112 - 117
672	58	812	50	970	70
673	58	814	49	971	112 - 116
680	40	815	49	978	53
681	40	816	49	979	112 - 114
682	40	817	49	980	114
683	92	818	50	984	118
684	92	819	50	996	76
685	92	820	49	1000	29 - 83
686	92	821	49	1035	94
687	92	822	49	1036	94
688	92	823	49	1037	94
689	92	828	29	1038	94
690	90	835	66	1039	94
691	90	836	66	1040	94
692	90	837	66	1041	94
693	90	838	66	1042	94
694	90	839	66	1043	94
698	91	840	66	1047	91

**INDICE PER CODICE  
PRODOTTO**
**INDEX BY CATALOGUE  
REFERENCE**
**INDEX DES RÉFÉRENCES**

ART.	pag.	ART.	pag.	ART.	pag.
1048	91	1234	24	1354	137
1049	91	1235	24	1355	137
1051	33	1240	52	1356	137
1052	33	1241	52	1360	142
1053	94	1242	52	1361	142
1055	54	1243	52	1368	137
1056	54	1244	52	1369	139
1057	19	1245	52	1370	139
1058	19	1246	52	1371	139
1059	19	1247	52	1372	139
1060	19	1250	16	1373	139
1062	19	1251	16	1374	139
1063	19	1252	16	1375	139
1064	19	1253	16	1376	139
1066	19	1254	16	1377	139
1075	48	1255	16	1378	139
1077	48	1256	16	1387	80
1078	48	1285	141	1388	80
1079	48	1286	141	1395	65
1080	48	1287	141	1396	65
1081	48	1288	141	1398	66
1082	48	1289	141	1399	66
1086	51	1290	141	1400	94
1087	51	1291	141	1405	94
1088	51	1292	141	1410	17
1089	51	1293	141	1411	17
1090	51	1294	141	1412	17
1094	48	1295.10	142	1413	17
1100	59	1296-10	136	1414	17
1101	59	1297.10	143	1415	17
1103	59	1298	102	1416	17
1110	19	1299	102	1417.10	138
1111	19	1300-10	136	1418.10	138
1112	19	1301-10	136	1422	51
1115	72	1303-10	137	1423	51
1115	72 - 77	1304-10	137	1424	51
1129	23	1305-10	137	1425	51
1131	23	1306-10	137	1430	52
1132	23	1307-10	137	1431	52
1133	23	1308-10	137	1432	52
1134	23	1309-10	137	1433	52
1135	23	1310-10	137	1434	52
1136	23	1311-10	137	1435	52
1137	23	1312-10	137	1455	94
1138	23	1313-10	137	1456	94
1139	23	1314	137	1457	94
1140	23	1315	137	1458	94
1142	23	1319-10	136	1460	53
1143	23	1321-10	136	1461	53
1144	23	1322-10	136	1462	53
1145	23	1325-10	136	1463	53
1146	23	1326.10	138	1464	53
1147	23	1328.10	138	1465	53
1148	23	1329-10	136	1475	43
1156	51	1330	50	1476	43
1157	51	1331	50	1477	43
1158	51	1332	49	1480	43
1159	51	1333	49	1481	43
1160	51	1334	49	1482	43
1175	83	1335	49	1484	52
1177	83	1336	49	1485	52
1179	83	1337	49	1486	52
1190	24	1338	49	1487	52
1191	24	1339	49	1488	52
1192	24	1340	137	1489	52
1193	24	1341	137	1500	101
1194	24	1342	137	1501	101
1195	24	1343	137	1534	97
1196	24	1344	137	1535	97
1197	24	1345	137	1536	97
1213	70	1346	137	1537	97
1219	74	1347	137	1538	97
1230	24	1350	137	1539	97
1231	24	1351	137	1540	98
1232	24	1352	137	1541	50
1233	24	1353	137	1542	50

ART.	pag.	ART.	pag.	ART.	pag.
1543	50	1720	50	2488	52
1545	50	1721	50	2489	52
1546	50	1722	50	2490	53
1548	50	1723	50	2491	53
1549	50	1724	50	2492	53
1563	42	1725	50	2493	53
1563	42 - 60	1726	50	2494	53
1564	42 - 60	1727	50	2501*	104
1565	42 - 60	1728	50	2502*	104
1566	42 - 60	1759	21	2503*	104
1567	60	1760	19	2508	104
1568	60	1761	19	2510*	104
1569	60	1762	19	2511*	104
1570	48	1763	19	2512	104
1571	48	1764	19	2514	104
1572	48	1765	19	2560	48
1573	48	1766	19	2561	48
1574	48	1767	19	2562	48
1575	48	1768	19	2563	48
1576	48	1770	46	2564	48
1577	48	1771	46	2565	48
1595	38	1772	46	2566	48
1597	38	1780	46	2567	48
1599	38	1781	46	2570	49
1601	38	1782	46	2571	49
1603	38	1783	46	2572	49
1608	37	1801	50	2573	49
1610	37	1802	50	2574	49
1612	37	1803	50	2575	49
1614	37	1805	50	2576	49
1616	37	1806	50	2577	49
1618	37	1808	50	2580	61 - 110
1621	38	1809	50	2585	61 - 110
1623	38	1816	23	2595	108
1625	38	1821	50	2596	109
1627	38	1822	50	2598	107
1629	38	1823	50	2602	103
1631	38	1824	50	2618	104
1633	41	1825	50	2620 - 2620/S	124
1634	41	1826	50	2621 - 2621/S	124
1637	41	1827	50	2622 - 2622/S	124
1638	41	1937	100	2623 - 2623/S	124
1640	45	1938	100	2630	105
1642	45	1939	100	2631	105
1644	45	1940	100	2647	126
1646	45	1941	100	2648	126
1648	45	1948	100	2650	125
1650	45	1960	100	2651	125
1660	45	1961	100	2652	125
1662	45	1962*	101	2695	108
1664	45	1980	54	2696	109
1666	45	1981	54	2810	130
1671	98	1997	54	2812	130
1672	98	1998	54	2813	130
1673	98	1999	54	2815	130
1674	98	2004	67	2816	130
1675	98	2228	148	2818	130
1677	98	2229	148	2819	130
1678	98	2233	148	2821	130
1683	97	2234	148	2822	130
1684	97	2237	146	2824	130
1685	97	2238	147	2825	130
1686	97	2239	147	2899-03	129
1687	97	2241	149	2900-03	129
1688	96	2244	149	2901-03	129
1689	96	2249	146	2902-03	129
1690	96	2249	146 - 147	2903-03	129
1691	96	2300	80	2904-03	129
1692	96	2302	80	2905-03	129
1693	97	2384	44	2906-03	129
1694	97	2385	44	2907-03	129
1695	97	2386	44	2908-03	129
1696	97	2387	44	2909-03	129
1697	97	2485	52	2910-03	129
1698	97	2486	52	2911-03	129
1699	97	2487	52	2914-03	129

**INDICE PER CODICE  
PRODOTTO**
**INDEX BY CATALOGUE  
REFERENCE**
**INDEX DES RÉFÉRENCES**

ART.	pag.	ART.	pag.	ART.	pag.
2915-03	129	3861	20	5621	108
2916-00	129	3862	20	5622	109
2919	127	3863	20	5623	108
2921	126	3864	20	5630	109
2922-04	127	3865	20	5631	109
2923	128	3866	20	5632	108
2924	128	3867	20	5633	108
2925	127	3868	20	5640	109
2940-00	102	3870	21	5641	109
2940-04	102	3871	21	5642	109
2940-06	102	3872	21	5643	109
2940-13	102	3873	21	5644	109
3300	39	3880	21	5701	30
3301	39	3881	21	5702	30
3302	39	3882	21	5703	30
3303	39	3883	21	5704	30
3304	39	3885	21	5705	30
3305	39	3886	21	5706	30
3306	39	3887	21	5707	30
3307	39	3888	21	5708	30
3308	39	3890	20	5709	30
3360	126	3891	20	5710	30
3371	31	3892	20	5711	30
3372	31	3893	20	5712	30
3373	31	3894	20	5713	30
3705	32	3895	20	5714	30
3706	32	3896	20	5715	30
3707	32	3900	20	6102	27
3800	24	3901	20	6105	27
3801	24	3902	20	6110	27
3802	24	3903	20	6115	27
3803	24	3904	20	6130	27
3804	24	3905	20	6150	27
3805	24	3906	20	6302	27
3806	24	3907	20	6305	27
3807	24	3908	20	6310	27
3808	24	3910	25	6315	27
3809	24	3911	25	6330	27
3810	24	3912	25	6350	27
3811	24	3913	25	8569	32 - 84
3812	24	3914	25	8570	32 - 84
3813	24	3915	26	9585	120
3814	24	3920	20	9605	120
3815	24	3921	20	9615	120
3816	24	3922	20	9624	120
3820	23	3923	20	9629	121 - 123
3821	23	3924	20	9630	121 - 122
3822	23	3925	20	9631	121 - 124
3823	23	3926	20	9632	121 - 123
3824	23	3927	20	9633	121 - 124
3825	23	3928	20	9634	121 - 122
3826	23	3929	20	9635	121 - 123
3827	23	3930	20	9637	121 - 123
3828	23	3931	20	9638	121 - 122
3829	23	4171	28	9639	121 - 122
3830	23	4179	28	9640	116
3831	23	5010	42	9641	114
3832	23	5011	42	9643	115
3833	23	5012	42	9644	116
3834	23	5013	42	9645	117
3835	23	5014	42	9646	114
3836	23	5015	42	9647	116
3840	23	5016	42	9648	118
3841	23	5018	42	9649	118
3842	23	5050	77	9650	114
3843	23	5051	77	9657	114
3844	23	5052	77	9745	114
3845	23	5550	108	9746	114
3846	23	5551	108	9747	114
3847	23	5560	108	9748	116
3848	23	5561	108	9749	114
3849	23	5570	109	9751	115
3850	23	5571	109	9752	116
3851	23	5600	109	9753	117
3852	23	5601	109	9754	116
3860	20	5620	109	9755	119



ART.	pag.	ART.	pag.	ART.	pag.
9755 / L	119	70525	16	84011	107
9756	124	70526	16	84012	107
9756-06	119	70527	17	84013	107
9846	115	70528	17	84014	107
9847	119	70529	17	84015	107
9848	119	70530	17	84016	107
11100/03	128	70531	17	84017	107
11100/09	128	70532	17	84018*	107
11101/03	128	70535	18	88108	106
11101/09	128	70536	18	88200	105
11102/03	128	70537	18	88201	105
11102/09	128	70877	17	88202	105
11103	128	70878	17	88205	105
11104	128	70879	17	88207	105
11105	128	71250	16	88210	105
12960	140	71251	16	88212	105
13000	140	71252	16	88301	106
13010	140	71253	16	88302	106
13190	140	71254	16	88303	105
13210	140	71255	16	88304	105
13220	140	71256	16	88305	106
13250	140	71410	17	88306	106
13290	140	71411	17	88307	106
15700	37	71412	17	88308	106
15701	37	71413	17	88309	106
15702	37	71414	17	88310	106
15703	37	71415	17	88317	106
15704	37	71416	17	88318	106
15710	37	82631*	105	88319	106
15711	37	83002	132	88320	106
15712	37	83005	132	88321	106
15800	39	83010	132	88322	106
15801	38	83011	133	88323	106
15821	38	83011	133 - 135	88324	106
15840	39	83012	133 - 135	88325	106
15841	38	83014	133	88335	125
15861	38	83015	133	88336	125
15880	39	83016	135	88337	125
15881	38	83017	133	88435	110
15901	38	83018	133	88436	110
15950	38 - 53	83019	135	88437	110
15990	38 - 53	83020	133 - 135		
16030	38 - 53	83021	135		
16120	39	83023	133 - 135		
16160	39	83024	133 - 135		
16250	38 - 53	83025	132		
16290	38 - 53	83026	133 - 135		
21308	70	83027	133 - 135		
31019	71	83028	133 - 135		
31423	71	83029	133		
31926	71	83030	133		
32429	71	83050	132		
32932	71	83060	132		
33435	71	83070	133		
34540	71	83071	133		
70434	18	83072	133		
70435	18	83080	133		
70436	18	83081	133		
70459	16	83082	134		
70460	16	83083	134		
70461	16	83084	134		
70462	16	83085	134		
70463	16	83086	134		
70464	16	83087	134		
70465	16	83250	135		
70466	16	84000	107		
70467	16	84001	107		
70468	16	84002	107		
70510	17	84003	107		
70511	17	84004*	107		
70512	17	84005*	107		
70513	17	84006	107		
70514	17	84007	107		
70515	17	84008	107		
70520	16	84009	107		
70521	16	84010	107		

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