CHEMICAL RESISTANCE GUIDE

The following document describes the resistance to chemicals of the following types of PA6 used in ABT, STC and SSC production.

The resistance tests were carried out on ISO standard test bars which were stored in the chemicals at room temperature for up to 12 months. This means that evaluation of material resistance is based on static storage of test specimens in a stress-free state. For deviating conditions in practical use, consultation is recommended. Characteristic properties such as change in weight, length, tensile stress and elongation at break of the test bars after aging in the diverse media served as test criteria.

As resistance to chemicals is primarily dependent on the basis polymer, the information applying to unreinforced grades is also valid for reinforced material groups.

Key for qualitative evaluation of the material resistance PA 6 or nylon:

★★★	Resistant. No or little reversible change in weight and/or dimensions possible.
★★	Limited resistance. Changes in weight, dimension or even irreversible changes to property values possible after longer exposure; consultation recommended.
★	Not resistant. May be used under specific conditions, e.g. short-term contact.
—	Strong attack or soluble.

The concentration values given in the table refer to the maximum concentration of the medium at which the material was tested. It can be assumed that the same or better resistance is achieved with less concentrated reagents.

Some additives may be extracted by the medium. In the case of plasticizers, the loss of flexibility is usually compensated for by uptake of the medium.

Hydrolysis resistance

All polyamides take up water when kept in a moist environment. At room temperature this is a physical process which is reversible. Irreversible chemical damage to the material can only be caused by water or aqueous solutions at high temperatures. This is referred to as hydrolysis.

Water uptake is mainly dependent on the amide concentration of the individual polyamide type. For this reason, polyamide 12 is considerably more resistant to hydrolysis than polyamide 6 and polyamide 66.

The information contained in this publication is based on our present knowledge and experience. The given figures and data are guidance values and do not represent binding material specifications. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are given regarding products, design, data and information. The customer is not released from his obligation to investigate the products fitness and the suitability for the intended application, compliance with legal requirements and intellectual property rights.

We reserve the right to change the information at any time and without prior notice. The information in this publication is not to be considered a contractual obligation and any liability whatsoever is expressly declined. For further questions about our products please contact our experts.

This CELO Document is based on CHEMICAL RESISTANCE GUIDE OF BADAMID GRADES.

Medium and concentration	PA6	Medium and concentration	PA6
Acetaldehyde 40% aqueous solution	★★	Benzaldehyde technical grade	★
Acetamide 50% aqueous solution	★★	Benzoic acid aqueous solution	★
Acetic acid 10% aqueous solution	★	Benzole / Benzene technical grade	★★★
Acetic acid 40% aqueous solution	—	Benzyl alcohol technical grade	★
Acetic acid technical grade	—	Bio-diesel commercial grade	★★★
Acetic anhydride technical grade	—	Bitumen commercial grade	★★★
Acetone technical grade	★★★	Bleaching lye 13% aqueous solution	★
Acetonitrile technical grade	★★★	Boric acid 10% aqueous solution	★★
Acetophenone technical grade	★★★	Brake fluid (DOT) commercial grade	★★★
Acetylene technical grade	★★★	Brandy commercial grade (~ 40%)	★★★
Acetylsalicylic acid aqueous solution	★★★	Bromine, bromine water commercial grade	—
AdBlue® commercial grade	★★	Butane technical grade	★★★
Aliphatic hydro-carbons technical grade	★★★	Butanoic acid technical grade	★★
Allyl alcohol technical grade	★★	Butter commercial grade	★★★
Aluminum salts saturated	★★★	Buttermilk commercial grade	★★★
Amidosulfonic acid 15% aqueous solution	★	Butyl acetate technical grade	★★★
Ammoniac 10% aqueous solution	★★★	Butyl alcohol technical grade	★
Ammoniac gas	★★★	Butylene glycol technical grade	★★★
Amyl alcohol technical grade	★★★	Calcium chloride 10% aqueous solution	★★★
Amylacetate technical grade	★★★	Calcium chloride saturated, aqueous solution	★★
Aniline technical grade	★★	Calcium chloride 20% alcoholic solution	★
Anisole technical grade	★★★	Camphor technical grade	★★★
Anti-freeze technical grade	★★	Carbon tetrachloride technical grade	★★★
Barium salts saturated	★★★	Catechol 6% aqueous solution	—
Battery acid commercial grade	—	Caustic potash 50% aqueous solution	★★★
Beer commercial grade	★★★	Chloracetic acid 10% aqueous solution	—

Medium and concentration	PA6	Medium and concentration	PA6
Chloramines 5% aqueous solution	★	Engine oil commercial grade	★★★
Chlorated lime aqueous solution	★	Ethanol technical grade	★★
Chlorine gas	—	Ethyl acetate technical grade	★★★
Chlorine water 5% aqueous solution	★	Ethylbenzene technical grade	★★★
Chlorobenzene technical grade	★★★	Ethylene chloride technical grade	★★★
Chloroform technical grade	★	Fuel C (Fuel A, B and D) technical grade	★★★
Chromates saturated, aqueous solution	★★★	Furfurol technical grade	★★
Chromic acid 1% aqueous solution	★	Glycerine technical grade	★★★
Chromosulfuric acid aqueous solution	—	Glycol-water 50/50 mixture	★★
Citrus acid concentrated	★★	Halogenated hydrocarbons technical grade	★★
Cocoa commercial grade	★★★	Heating oil commercial grade	★★★
Coffee commercial grade	★★★	Heptane technical grade	★★★
Cola commercial grade	★★★	Hexane technical grade	★★★
Cooking oil and fat commercial grade	★★★	Hydraulic oil commercial grade	★★★
Cooking salt aqueous solution	★★★	Hydrochloric acid 1% aqueous solution	★
Copper salts 10% aqueous solution	★★★	Hydrochloric acid 10% aqueous solution	—
Cresol technical grade	—	Hydrochloric acid 37% aqueous solution	—
Crude oil technical grade	★★★	Hydrofluric acid 40% aqueous solution	—
Cyclohexane technical grade	★★★	Hydrogen peroxide 2% aqueous solution	★
Diesel commercial grade	★★★	Hydrogen peroxide 10% aqueous solution	★
Diethyl ether technical grade	★★★	Hydrogen peroxide 30% aqueous solution	—
Dimethyl formamide technical grade	★★	Hydrogen sulphide gas (< 5%)	★★★
Dimethyl sulfoxide technical grade	★★	Ink commercial grade	★★★
Dimethyl sulphide technical grade	★★★	Iodine tincture, commercial grade	—
Dioctyl phthalate technical grade	★★★	Iron salts 20% aqueous	★★★
Dioxane technical grade	★★★	Iron salts 20% aqueous solution, acidic	★

Medium and concentration	PA6	Medium and concentration	PA6
Isooctane technical grade	★★★	Nickel salts saturated, aqueous	★★★
Isopropanol technical grade	★★	Nitric acid 10% aqueous solution	—
Kerosene commercial grade	★★★	Nitric acid 65% aqueous solution	—
Lactic acid 5% aqueous solution	★★★	Nitro hydrochloric technical grade	—
Lactic acid 90% aqueous solution	★★	Nitro thinner commercial grade	★★★
Lanolin commercial grade	★★★	Nitrobenzene technical grade	★★
Lavender oil commercial grade	★★★	Nitromethane technical grade	★★★
Lead salts saturated, aqueous solution	★★★	Octane technical grade	★★★
Lemon juice commercial grade	★★★	Oils (also IRM commercial grade	★★★
Linseed oil commercial grade	★★★	Oleic acid technical grade	★★★
Liqueur commercial grade	★★★	Oleum, fuming technical grade	—
Lubricating oil, fat, commercial grade	★★★	Olive oil commercial grade	★★★
Magnesium 10% aqueous solution	★★★	Oxalic acid 10% aqueous solution	★★
Magnesium salts 10% aqueous solution	★★★	Oxygen gas	★★★
Mercury technical grade	★★★	Ozone gas (2 ppm)	★★★
Mercury salts aqueous solution	★★★	Paraffin oil technical grade	★★★
Methane gas	★★★	Peanut oil commercial grade	★★★
Methyl alcohol technical grade	★★	Peppermint oil technical grade	★★
Methyl ethyl ketone technical grade	★★★	Petrol, E10 commercial grade	★★★
Methylene technical grade	★★	Petrol, E85 commercial grade	★★
Methylene chloride technical grade	★★	Petrol, lead-free commercial grade	★★★
Milk commercial grade	★★★	Petroleum ether technical grade	★★★
Mineral oil commercial grade	★★★	Phenol aqueous solution	★
MTBE (methyl technical grade	★★★	Phenylethyl alcohol technical grade	★★
Naphthalene technical grade	★★★	Phosphor acid 50% aqueous solution	★
Natural oil commercial grade	★★★	Phosphoric acid 10% aqueous solution	★

Medium and concentration	PA6	Medium and concentration	PA6
Pine-needle oil commercial grade	★★★	Sodium hydroxide 40% aqueous solution	★★★
Plasticizer (phthalate commercial grade based)	★★★	Sodium hypochlorite 5% aqueous solution	★
Potash aqueous solution	★★★	Sodium nitrite 5% aqueous solution	★
Potassium chlorate 7% aqueous solution	★	Sodium perborate 5% aqueous solution	★★
Potassium nitrite saturated, aqueous	★★★	Sodium salts saturated, aqueous solution	★★★
Potassium 1% aqueous solution	—	Soya oil commercial grade	★★★
Propane gas	★★★	Starch aqueous solution	★★★
Propanol technical grade	★★	Stearin, stearic acid technical grade	★★★
Pyridine technical grade	★★★	Styrene technical grade	★★★
R-12 (Frigene 12, technical grade)	★★★	Sugar aqueous solution	★★★
R-22 (Frigene 22, technical grade)	★	Sulphur dioxide gas (< 5%)	★
Resorcinol technical grade	—	Sulphuric acid 2% aqueous solution	★
Resorcinol alcoholic	—	Sulphuric acid 10% aqueous solution	—
Rose oil technical grade	★★★	Sulphuric acid 50% aqueous solution	—
Rum commercial grade (60%)	★★★	Sulphuric acid 96% aqueous solution	—
Sal ammonia saturated, aqueous solution	★★★	Sweat (perspiration)	★★★
Salicylic acid technical grade	★★★	Tallow commercial grade	★★★
Salt (sodium chloride) saturated, aqueous solution	★★★	Tar technical grade	★★★
Sea water	★★★	Tartaric acid 10% aqueous solution	★★★
Silicon oil technical grade	★★★	Tea commercial grade	★★★
Silver salts saturated, aqueous solution	★★★	Tetra hydrofuran technical grade	★★★
Soap suds aqueous solution	★★★	Tetrachlorethylene technical grade	★★★
Soda 50% aqueous solution	★★★	Tetralin technical grade	★★★
Sodium bicarbonate / saturated, aqueous	★★★	Thionyl chloride technical grade	—
bisulfite solution	—	Toluene technical grade	★★★
Sodium chlorite 5% aqueous solution	★	Transformer oil commercial grade	★★★

Medium and concentration	PA6	Medium and concentration	PA6
Trichloroethane technical grade	★★	Vaseline commercial grade	★★★
Trichloroethylene technical grade	★★	Vinegar 5% aqueous solution	★★
Triethanolamine technical grade	★★★	Water technical grade	★★★
Trifluoroacetic acid 10% aqueous solution	—	Wax commercial grade	★★★
Trifluoroacetic acid 99% aqueous solution	—	Wine commercial grade	★★★
Turpentine oil technical grade	★★★	Xylene technical grade	★★★
Urea 20% aqueous solution	★★★	Zinc chloride 10% aqueous solution	★★
Uric acid aqueous solution	★★	Zinc chloride 50% aqueous solution	★★
Urine	★★★		