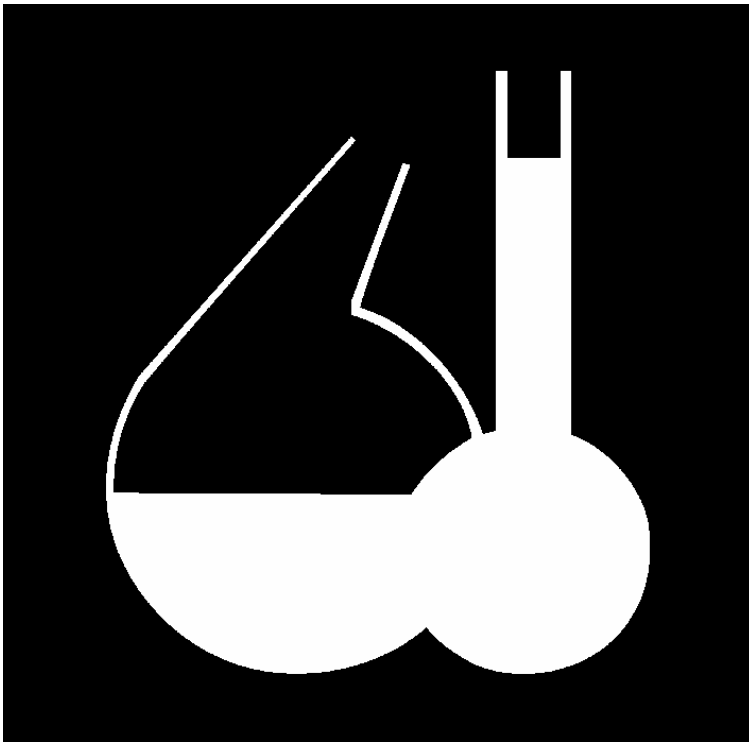


Resistance to stress cracking and chemical influences

PLEXIGLAS® GS

PLEXIGLAS® XT

PLEXIGLAS RESIST® XT



Contents

This brochure provides a summary of the chemical behavior of our semifinished product groups by listing the chemical substances tested on these materials with the aim of assessing their resistance to stress cracking (crazing) and chemical attack.

Remarks

Brief remarks on the resistance to chemicals other than those listed here, some of them branded products, are made in our leaflet entitled "Chemical resistance of PLEXIGLAS® GS and XT" (Ref. No. 211-1).

The physical properties are described in our Product Description leaflets which your stockist holds available for each group of semifinished material.

When using our products you are advised to observe

- the regional Building Regulations and emission laws,
- the applicable standards
- the product liability to VOB (= Contracting rules for award of public works contracts) and BGB (= Civil Code)
- the guidelines of the employers' liability insurance association and others.

Please consult our current sales ranges to see which semifinished products are available in the market.

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1 Introduction

On many occasions, the first question to be asked before choosing PLEXIGLAS® for a particular purpose is whether they are resistant to specific substances or materials. The answer to this question then decides on their use or non-use.

This is normally tested under standard conditions in the laboratory, on the one hand to evaluate the effect of different agents and, on the other hand, to compare the effect of these on different plastics, e.g. PLEXIGLAS®.

1.1 Chemical resistance

The simplest method for investigating such effects consists in bringing the substance concerned into contact with a specimen without applying any additional load, i.e. by immersing the specimen in a liquid or placing a solid substance on its surface. In this context we speak of testing chemical resistance or insensitivity to staining.

Assessment criteria are the changes in appearance, weight and strength after storage. Exposure period, temperature and concentration of the substance in contact with the material have a pronounced influence on results. In order to obtain reliable information, one would have to simulate the conditions in practical use - time, temperature and concentration - most accurately. This effort, however, is only justified in exceptional cases. In order to reduce test periods to a minimum, we increase the test temperature and/or the concentration. In doing so, we rely on our experience that chemical reactions are accelerated at increasing temperatures.

Tests of this type are described in German standard DIN 53 476, 'Determination of the behavior towards liquids' (Fig. 1).

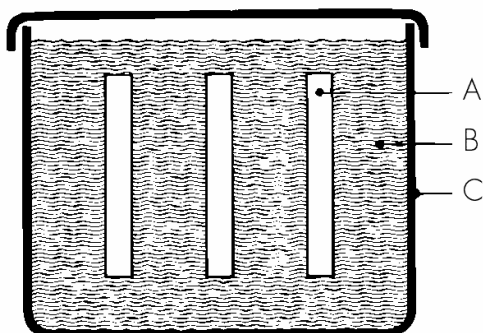
A test period between 1 day, 1 week and 1 month is stated as the time span within which the first changes became visible in the specimen. Short-term testing within 1 minute is performed to identify particularly aggressive substances.

Different types of PLEXIGLAS® show certain variations in chemical resistance. Owing to its increased molecular weight, PLEXIGLAS® GS is somewhat more resistant than PLEXIGLAS® XT or items injection-moulded from PLEXIGLAS® moulding compound. This difference, however, is often very slight, so that the resistance lists for these materials are largely identical.

For more precise information on the chemical resistance of the different grades of PLEXIGLAS® see "2.1 Explanation of symbols."

The test results for chemical resistance apply in particular to permanent exposure of stress-free plastics to the agents mentioned.

Fig. 1: Testing of the chemical resistance to DIN 53 476



A = specimen
B = agent
C = container

1.2 Stress cracking (crazing)

Stress provoked by machining, for example, by thermoforming, screwed fastening, riveting, cold curving or local variations in thermal load, must be allowed for in many fields of application. This stress has to be taken into account when evaluating the behavior of PLEXIGLAS®.

Where plastics exposed to air are stressed or strained beyond a specific limit, they will sooner (high stress/strain) or later (low stress/strain) develop crazes. Simultaneous exposure to certain agents may drastically reduce the time span up to the onset of crazing. This phenomenon is termed "environmental stress cracking" or just "crazing."

As can be shown by a simple test, only tensile stress causes cracking: if we bend a PLEXIGLAS® rod between our hands (Fig. 2) and moisten the stressed convex surface with ethyl alcohol, cracks develop within a short time. The same test on the concave lower surface subjected to compressive stress does not cause crazing even after a long time.

PLEXIGLAS® lends itself to various crazing tests, all of them being fairly demanding as far as the preparation and number of specimens, test procedures and testing equipment are concerned.

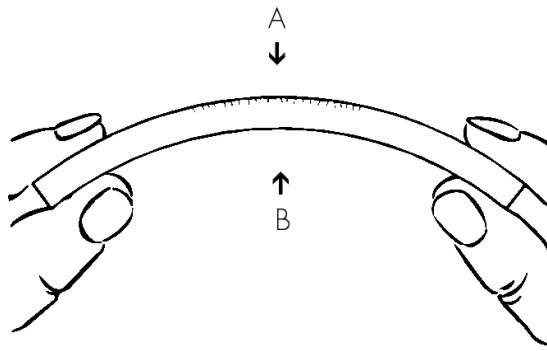
A further difficulty consists in transferring test results to practical conditions, since many users do not have the necessary experience.

A much simpler test method, the so-called "**bending test**," has been successfully used in our company for over 30 years. The stress conditions it simulates are between those of the tensile creep test and the bending strip method according to DIN 53 499.

The surface of a horizontal test bar, which is held on one side only (Fig. 3), is coated with the test medium and loaded at its free end in such a way that a tensile stress $\sigma_{b,m}$ of no more than 30 MPa is generated near the clamping device. This value decreases linearly towards the loaded end, where it reaches zero. A defined tensile stress is assigned to each point along the surface of the test bar. Crazing sets in at the point of maximum tensile stress and progresses within the test period towards the loaded end, up to a certain point. After a test period of 24 hours at a temperature of 23 °C, the bar is visually inspected for crack propagation. A flexural stress at conventional deflection $\sigma_{b,g}$ is calculated for the end point of crazing.

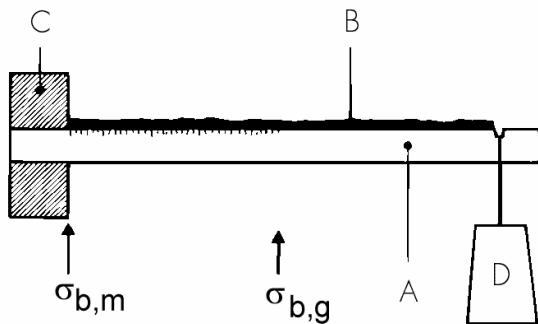
Long-term experience has shown that products which do not develop crazes after 24 hours at a flexural stress of over 25 MPa and a temperature of 23 °C (and/or at over 15 MPa and a temperature of 50 °C) are not prone to stress cracking in practical use, provided our handling instructions are duly observed.

Fig. 2: Manual test of stress cracking



A = tensile stress
B = compressive stress

Fig. 3: Bending test of stress cracking



A = specimen
B = agent
C = clamping device
D = load

2 Test results

2.1 Explanation of symbols

With the results stated in the subsequent lists we use symbols and abbreviations that are in need of explanation:

conc =	concentration of the test medium at maximum possible chemical purity or in aqueous solution
mat =	material, i.e. type of semifinished product, from which the test specimens were obtained
233 =	PLEXIGLAS® GS 233; results also valid for GS 215, 218, 221, 222, 231, 238, 1001, 2458 and PLEXIGLAS SOUNDSTOP® GS. Cross-linked, PLEXIGLAS®, e.g. GS 209 and GS SW 235 (sanitary ware grade) shows much higher resistance
XT =	PLEXIGLAS® XT 20070; results also valid for XT 20080, 24370, 21570 AR, MIRROR XT and PLEXIGLAS SOUNDSTOP® XT

XT-R =	PLEXIGLAS RESIST® XT 41; results also valid for RESIST XT 31 and RESIST XT 21. All RESIST XT grades are more sensitive to chemicals but less prone to crazing than non-modified XT grades.
	Colored PLEXIGLAS® can be expected to behave like the corresponding clear (basic) grades.
RC =	resistance to crazing (Röhm test method 'bending test')
CR =	chemical resistance (similar to DIN 53 476)
EP =	exposure period to the chemical in days; one minute in short-term tests
OE =	overall evaluation , i.e. critical summary of the visual inspections for crazing behavior and chemical resistance

+ = resistant

o = limited resistance

- = not resistant

2.2 Listing of results

Alcohol, mono- and polyhydric

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
1-Butanol							
100%	233	-	-	28	crazing, swelling	no change	-
100%	XT	-	-	7	pronounced swelling, whitening	no change	-
100%	XT-R	-	-	1	softening, whitening, pronounced swelling	no change	-
1-Hexyl alcohol							
98%	233	-	+	28	no change	no change	o
98%	XT	-	o	28	very slight swelling	no change	-
98%	XT-R	-	-	7	swelling, whitening, dulling	no change	-
1-Methoxy-2-propyl alcohol							
99%	233	-	-	1	pronounced swelling, chemical attack	no change	-
99%	XT	-	-	7	pronounced chemical attack	no change	-
99%	XT-R	-	-	1	specimens dissolved	surface haze	-
n-amyl alcohol							
100%	233	-	o	28	crazing, swelling	no change	-
100%	XT	-	-	28	haze, swelling	no change	-
100%	XT-R	-	-	1	softening, whitening, pronounced swelling	no change	-
Isopropyl alcohol							
100%	233	-	-	7	swelling, crazing	no change	-
100%	XT	-	-	7	swelling, whitening, crazing	no change	-
100%	XT-R	-	-	1	swelling, whitening, dulling	no change	-

Cyclohexanol							
99,5%	233	-	+	28	no change	no change	o
99,5%	XT	-	+	28	no change	no change	o
99,5%	XT-R	-	-	7	swelling, whitening, dulling	no change	-
Ethyl alcohol							
100%	233	-	-	7	softening, swelling	no change	-
100%	XT	-	-	1	swelling	no change	-
100%	XT-R	-	-	1	softening, swelling, whitening	no change	-
50%	233	-	-	7	swelling	no change	-
50%	XT	-	-	1	swelling	no change	-
50%	XT-R	+	-	1	swelling, whitening, dulling	no change	-
Ethylene glycol							
100%	233	-	+	28	no change	no change	o
100%	XT	-	+	28	no change	no change	o
100%	XT-R	-	+	28	no change	no change	o
Ethylene glycol (antifreeze)							
50%	233	+	+	28	no change	no change	+
50%	XT	+	+	28	no change	no change	+
50%	XT-R	+	o	28	slight haze	no change	o
Glycerol							
98%	233	+	+	28	no change	no change	+
98%	XT	+	+	28	no change	no change	+
98%	XT-R	+	+	28	no change	no change	+
Methyl alcohol							
100%	233	-	-	1	softening, swelling	no change	-
100%	XT	-	-	1	softening, swelling	no change	-
100%	XT-R	-	-	1	softening swelling, whitening	slight haze	-
Phenol (dissolved in water)							
5%	233	-	-	1	whitening, tackiness, swelling	no change	-
5%	XT	-	-	1	whitening, tackiness, swelling	no change	-
5%	XT-R	-	-	1	whitening, tackiness, swelling	no change	-

Organic solvents, fuels

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Butyl acetate							
99%	233	-	-	1	pronounced swelling, chemical attack	no change	-
99%	XT	-	-	7	pronounced chemical attack	no change	-
99%	XT-R	-	-	1	specimens dissolved	swelling, attack, whitening	-

Acetic ether (ethyl acetate)							
99%	233	-	-	1	pronounced swelling, chemical attack	no change	-
99%	XT	-	-	1	pronounced chemical attack	surface slightly dull	-
99%	XT-R	-	-	1	specimens dissolved	swelling, chemical attack, dulling	-
Pentyl acetate (amyl acetate)							
98%	233	-	-	28	swelling, chemical attack	no change	-
98%	XT	-	-	28	pronounced chemical attack	no change	-
98%	XT-R	-	-	1	specimens dissolved	slight chemical attack, dulling	-
Acetone							
99%	233	-	-	28	pronounced swelling, chemical attack	no change	-
99%	XT	-	-	1	specimens dissolved	slight chemical attack, slight dulling	-
99%	XT-R	-	-	1	specimens dissolved	swelling, chemical attack, whitening	-
Cyclohexanone							
99%	233	-	-	7	specimens severely attacked	no change	-
99%	XT	-	-	28	pronounced chemical attack	no change	-
99%	XT-R	-	-	1	specimens dissolved	dull surface	-
Diethyl ketone							
99%	233	-	-	1	pronounced swelling, chemical attack	no change	-
99%	XT	-	-	1	pronounced chemical attack	slight chemical attack, slight dulling	-
99%	XT-R	-	-	1	specimens dissolved	swelling, chemical attack, whitening	-
Ethyl methyl ketone							
99,5%	233	-	-	1	pronounced swelling, chemical attack	no change	-
99,5%	XT	-	-	1	pronounced chemical attack	slight chemical attack, slight dulling	-
99,5%	XT-R	-	-	1	specimens dissolved	swelling, chemical attack, whitening	-
Cyclohexane							
99,5%	233	-	+	28	no change	no change	o
99,5%	XT	-	+	28	no change	no change	o
99,5%	XT-R	-	-	28	swelling, whitening	no change	-
Isooctane							
99,5%	233	-	+	28	no change	no change	o
99,5%	XT	-	+	28	no change	no change	o
99,5%	XT-R	-	o	28	slight haze	no change	-

n-Heptane							
99%	233	-	+	28	no change	no change	o
99%	XT	-	+	28	no change	no change	o
99%	XT-R	-	-	28	swelling, colour change to opaque white	no change	-
n-Hexan							
99%	233	-	+	28	no change	no change	o
99%	XT	-	+	28	no change	no change	o
99%	XT-R	-	-	28	swelling, whitening	no change	-
Formamide							
99%	233	-	+	28	no change	no change	o
99%	XT	-	+	28	no change	no change	o
99%	XT-R	-	+	28	no change	no change	o
n-Methylformamide							
99%	233	-	-	7	swelling, haze	no change	-
99%	XT	-	-	1	swelling, chemical attack, whitening	no change	-
99%	XT-R	-	-	1	swelling, whitening, dulling	no change	-
Perchloroethylene (tetrachloroethylene)							
99%	233	-	-	28	dulling, softening of surface	no change	-
99%	XT	-	-	1	swelling, slight chemical attack	no change	-
99%	XT-R	-	-	1	pronounced swelling + chemical attack	no change	-
Shellsol T							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	o	28	slight haze	no change	-
Turpentine substitute							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	-	7	swelling, whitening	no change	-
Turpentine oil DAB 7							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	-	7	swelling, whitening	no change	-
Carbon tetrachloride							
99%	233	-	-	1	swelling, slight chemical attack	no change	-
99%	XT	-	-	1	pronounced chemical attack	no change	-
99%	XT-R	-	-	1	partial dissolution	no change	-
Diesel fuel DIN 51601							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	o	28	colour change to transparent brown	no change	-

FAM test fuel DIN 51604 A							
	233	-	-	1	pronounced swelling, tackiness	no change	-
	XT	-	-	1	chemical attack, swelling, whitening	slight dulling, slight chemical attack	-
	XT-R	-	-	1	pronounced swelling, chemical attack	haze, chemical attack, swelling	-
FAM test fuel DIN 51604 B							
	233	-	-	1	chemical attack, swelling	slight haze	-
	XT	-	-	1	chemical attack, swelling	haze, chemical attack, swelling	-
	XT-R	-	-	1	chemical attack, swelling, whitening	haze, chemical attack, swelling	-
FAM test fuel DIN 51604 C							
	233	-	-	1	chemical attack, swelling	no change	-
	XT	-	-	1	chemical attack, swelling	haze, whitening, chemical attack	-
	XT-R	-	-	1	chemical attack, swelling, softening	haze, whitening, chemical attack	-
Fuel No. 1 DIN 53521							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	o	28	slight haze	no change	-
Fuel No. 2 DIN 53521							
	233	-	+	28	no change	no change	o
	XT	-	-	28	slight swelling	no change	-
	XT-R	-	-	1	swelling, whitening	no change	-
Petrol, regular (unleaded)							
	233	-	-	28	swelling, yellowing	no change	-
	XT	-	-	7	swelling, dulling, softening	no change	-
	XT-R	-	-	1	swelling, colour change to brown, dulling	whitening of surface, dulling	-
Petrol, regular (leaded)							
	233	-	-	28	colour change to light brown	no change	-
	XT	-	-	28	swelling, colour change to light brown	no change	-
	XT-R	-	-	1	pronounced swelling, softening, colour change to brown	whitening of surface, dulling	-

Petrol, supergrade (unleaded)							
	233	-	-	28	swelling, yellowing	no change	-
	XT	-	-	7	swelling, dulling, softening	no change	-
	XT-R	-	-	1	swelling, colour change to brown, dulling	whitening of surface, dulling	-
Petrol, supergrade (leaded)							
	233	-	-	7	swelling, softening, yellowing	no change	-
	XT	-	-	1	swelling, dulling, softening	no change	-
	XT-R	-	-	1	very pronounced swelling, whitening	whitening of surface, dulling	-
Petroleum							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	o	28	haze, slight yellowing	no change	-

Acids, organic and inorganic

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Citric acid							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	specimens hazy, whitening	no change	o
38%	233	+	+	28	no change	no change	+
38%	XT	+	+	28	no change	no change	+
38%	XT-R	+	o	28	slight haze	no change	o
Formic acid							
5%	233		+	28	no change	no change	
5%	XT		+	28	no change	no change	
5%	XT-R		o	28	slight haze	no change	
Acetic acid							
100%	233	-	-	1	specimens dissolved	no change	-
100%	XT	-	-	1	specimens dissolved	slight chemical attack	-
100%	XT-R	-	-	1	specimens dissolved	pronounced chemical attack, whitening	-
5%	233	+	+	28	no change	no change	+
5%	XT	+	+	28	no change	no change	+
5%	XT-R	+	o	28	specimens hazy, whitening	no change	o
Hydrofluoric acid							
40%	233	-	-	1	swelling, softening, whitening	slight swelling	-
40%	XT	-	-	1	swelling, softening, whitening	very slight dulling, swelling	-
40%	XT-R	-	-	1	swelling, softening, whitening	slight dulling, slight swelling	-

Lactic acid							
20%	233	-	+	28	no change	no change	o
20%	XT	-	+	28	no change	no change	o
20%	XT-R	-	o	28	haze, whitening	no change	-
90%	233	-	-	7	pronounced swelling, whitening, softening	no change	-
90%	XT	-	-	1	pronounced chemical attack, whitening	no change	-
90%	XT-R	-	-	1	pronounced chemical attack, whitening	no change	-
Oxalic acid							
8,7%	233	+	+	28	no change	no change	+
8,7%	XT	+	+	28	no change	no change	+
8,7%	XT-R	+	o	28	haze, whitening	no change	o
Phosphoric acid							
10%	XT	+	+	28	no change	no change	+
10%	233	+	+	28	no change	no change	+
10%	XT-R	+	o	28	haze, whitening	no change	o
50%	XT	-	+	28	no change	no change	o
50%	233	-	+	28	no change	no change	o
50%	XT-R	+	+	28	no change	no change	+
85%	233	-	-	1	pronounced swelling	no change	-
85%	XT	-	-	1	pronounced swelling, chemical attack	no change	-
85%	XT-R	-	-	1	pronounced swelling, chemical attack	no change	-
Nitric acid							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	yellowing, haze	no change	o
40%	233	-	+	28	no change	no change	o
40%	XT	-	+	28	no change	no change	o
40%	XT-R	-	-	28	colour change to opaque grey	no change	-
65%	233	-	-	1	very pronounced swelling, softening	dulling, whitening, swelling	-
65%	XT	-	-	1	very pronounced swelling, softening	dulling, whitening, swelling	-
65%	XT-R	-	-	1	very pronounced swelling, softening	dulling, whitening, swelling	-
Hydrochloric acid							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	whitening, haze	no change	o
32%	233	+	+	28	no change	no change	+
32%	XT	+	+	28	no change	no change	+
32%	XT-R	+	o	28	color change to grey, slight haze	no change	o

Sulphuric acid							
3%	233	+	+	28	no change	no change	+
3%	XT	+	+	28	no change	no change	+
3%	XT-R	+	o	28	whitening, haze	no change	o
30%	233	+	+	28	no change	no change	+
30%	XT	+	+	28	no change	no change	+
30%	XT-R	+	o	1	slight haze	no change	o
98%	233	-	-	1	pronounced swelling, whitening	dulling, whitening, swelling	-
98%	XT	-	-	1	pronounced swelling	dulling, whitening, swelling	-
98%	XT-R	-	-	1	pronounced swelling, reddening	dulling, whitening, swelling	-
Sulphamic acid (amidosulphonic acid)							
18%	233	+	+	28	no change	no change	+
18%	XT	+	+	28	no change	no change	+
18%	XT-R	+	o	28	haze, whitening	no change	o
Tartaric acid							
50%	233	+	+	28	no change	no change	+
50%	XT	+	+	28	no change	no change	+
50%	XT-R	+	o	28	haze, whitening	no change	o
Oleic acid							
99%	233	-	+	28	no change	no change	o
99%	XT	-	+	28	no change	no change	o
99%	XT-R	-	o	28	slight haze, dulling	no change	-

Alkalis

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Ammonia solution							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	whitening (haze)	no change	o
25%	233	+	+	28	no change	no change	+
25%	XT	+	+	28	no change	no change	+
25%	XT-R	+	o	28	whitening	no change	o
Caustic soda solution							
1%	233	+	+	28	no change	no change	+
1%	XT	+	+	28	no change	no change	+
1%	XT-R	+	o	28	haze, whitening	no change	o
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	+	28	no change	no change	+
30%	233	+	+	28	no change	no change	+
30%	XT	+	+	28	no change	no change	+
30%	XT-R	+	+	28	no change	no change	+

Salts, organic and inorganic (saturated solutions)

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Aluminium chloride							
42%	233	+	+	28	no change	no change	+
42%	XT	+	+	28	no change	no change	+
42%	XT-R	+	o	28	slight haze	no change	o
Ferric sulphate							
21%	233	+	+	28	no change	no change	+
21%	XT	+	+	28	no change	no change	+
21%	XT-R	+	o	28	haze, whitening	no change	o
Ferric chloride							
48%	233	+	o	28	color change to light brown	no change	o
48%	XT	+	o	28	color change to light brown	no change	o
48%	XT-R	+	o	28	yellowing, haze, dulling	no change	o
Aluminium potassium sulphate							
5%	233	+	+	28	no change	no change	+
5%	XT	+	+	28	no change	no change	+
5%	XT-R	+	o	28	haze, whitening	no change	o
Potassium carbonate							
50%	233	+	+	28	no change	no change	+
50%	XT	+	+	28	no change	no change	+
50%	XT-R	+	+	28	no change	no change	+
Potassium chloride							
25%	233	+	+	28	no change	no change	+
25%	XT	+	+	28	no change	no change	+
25%	XT-R	+	+	28	no change	no change	+
Potassium nitrate							
24%	233	+	+	28	no change	no change	+
24%	XT	+	+	28	no change	no change	+
24%	XT-R	+	o	28	haze, whitening	no change	o
Potassium permanganate							
6%	233	+	+	28	dulling, surface turning brown	no change	+
6%	XT	+	+	28	dulling, surface turning brown	no change	+
6%	XT-R	+	+	28	dulling, surface turning black	no change	+
Potassium sulphate							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	slight haze	no change	o
Copper sulphate							
17%	233	+	+	28	no change	no change	+
17%	XT	+	+	28	no change	no change	+
17%	XT-R	+	o	28	haze, whitening	no change	o
Magnesium sulphate							
21%	233	+	+	28	no change	no change	+
21%	XT	+	+	28	no change	no change	+
21%	XT-R	+	+	28	slight haze	no change	o
Sodium acetate							
32%	233	+	+	28	no change	no change	+
32%	XT	+	+	28	no change	no change	+
32%	XT-R	+	+	28	no change	no change	+

Sodium carbonate (soda ash)							
2%	233	+	+	28	no change	no change	+
2%	XT	+	+	28	no change	no change	+
2%	XT-R	+	o	28	specimens hazy, whitening	no change	o
20%	233	+	+	28	no change	no change	+
20%	XT	+	+	28	no change	no change	+
20%	XT-R	+	o	28	specimens hazy	no change	o
Sodium chloride (common salt)							
10%	233	+	+	28	no change	no change	+
10%	XT	+	+	28	no change	no change	+
10%	XT-R	+	o	28	haze, whitening	no change	o
Sodium phosphate							
20%	233	+	+	28	no change	no change	+
20%	XT	+	+	28	no change	no change	+
20%	XT-R	+	o	28	slight haze	no change	o
Sodium dihydrogen phosphate							
50%	233	+	+	28	no change	no change	+
50%	XT	+	+	28	no change	no change	+
50%	XT-R	+	o	28	very slight haze	no change	o
Disodium hydrogen phosphate							
8,5%	233	+	+	28	no change	no change	+
8,5%	XT	+	+	28	no change	no change	+
8,5%	XT-R	+	o	28	haze, whitening	no change	o
Sodium hydrogen sulphate							
40%	233	+	+	28	no change	no change	+
40%	XT	+	+	28	no change	no change	+
40%	XT-R	+	o	28	haze, whitening	no change	o
Sodium nitrate							
45%	233	+	+	28	no change	no change	+
45%	XT	+	+	28	no change	no change	+
45%	XT-R	+	o	28	slight haze	no change	o
Sodium sulphate (Glauber's salt)							
25%	233	+	+	28	no change	no change	+
25%	XT	+	+	28	no change	no change	+
25%	XT-R	+	o	28	haze, whitening	no change	o
Sodium chlorate							
49%	233	+	+	28	no change	no change	+
49%	XT	+	+	28	no change	no change	+
49%	XT-R	+	o	28	haze, whitening	no change	o
Sodium thiosulphate							
41%	233	+	+	28	no change	no change	+
41%	XT	+	+	28	no change	no change	+
41%	XT-R	+	+	28	no change	no change	+
Zinc chloride							
50%	233	o	+	28	no change	no change	o
50%	XT	o	+	28	no change	no change	o
50%	XT-R	+	o	28	haze, whitening	no change	o

Zinc sulphate							
35%	233	+	+	28	no change	no change	+
35%	XT	+	+	28	no change	no change	+
35%	XT-R	+	o	28	haze, whitening	no change	o
Urea							
51%	233	+	+	28	no change	no change	+
51%	XT	+	+	28	no change	no change	+
51%	XT-R	+	+	28	no change	no change	+
Hydroquinone							
6,7%	233	-	o	28	color change to transparent brown	no change	-
6,7%	XT	-	-	28	color change to opaque reddish brown	no change	-
6,7%	XT-R	+	-	28	color change to transparent brown	no change	o

Inorganic compounds

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Hydrazine							
15%	233	+	+	28	no change	no change	+
15%	XT	+	+	28	no change	no change	+
15%	XT-R	+	+	28	no change	no change	+
Hydrogen peroxide (hydrogen dioxide, Perhydrol)							
3%	233	+	+	28	no change	no change	+
3%	XT	+	+	28	no change	no change	+
3%	XT-R	+	o	28	haze, whitening	no change	o
30%	233	+	+	28	no change	no change	+
30%	XT	+	+	28	no change	no change	+
30%	XT-R	+	o	28	haze, whitening	no change	o
Sodium hypochlorite							
12%	233	+	+	28	no change	no change	+
12%	XT	+	+	28	no change	no change	+
12%	XT-R	+	o	28	haze, whitening	no change	o
Water, demineralised							
	233	+	+	28	no change	no change	+
	XT	+	+	28	no change	no change	+
	XT-R	+	+	28	no change	no change	+

Organic compounds

Chemical Conc	Mat	RC	CB	EZ	Evaluation of CR	CR, short-term test	OE
Dibutyl phthalate							
99%	233	-	-	28	chemical attack	no change	-
99%	XT	-	-	28	chemical attack	no change	-
99%	XT-R	-	-	1	swelling, chemical attack, whitening	no change	-

Diisobutyl phthalate							
97%	233		+	28	no change	no change	
97%	XT		-	28	chemical attack	no change	-
97%	XT-R		-	28	pronounced chemical attack, haze, crazing	no change	-
Paraffin, liquid							
100%	233	+	+	28	no change	no change	+
100%	XT	+	+	28	no change	no change	+
100%	XT-R	+	+	28	no change	no change	+
Di(2-ethylhexyl) sebacate (dioctyl sebacate)							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	+	28	no change	no change	o
Triorthocresyl-phosphate							
	233	-	+	28	no change	no change	o
	XT	-	-	28	no change	no change	-
	XT-R	-	-	7	chemical attack, dulling	no change	-
Rizinusöl							
	233	-	+	28	no change	no change	+
	XT	-	+	28	no change	no change	+
	XT-R	-	+	28	no change	no change	o
Sojabohnenöl							
	233	-	+	28	no change	no change	o
	XT	-	+	28	no change	no change	o
	XT-R	-	+	28	no change	no change	o
Triethanolamin							
98%	233	+	+	28	no change	no change	+
98%	XT	-	+	28	no change	no change	o
98%	XT-R	+	+	28	no change	no change	+

Degussa Methacrylates

Röhm GmbH

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