tecnocoat
HOT SPRAY COATINGS

CHEMICAL RESISTANCE LIST

TECNOCOAT P-2049
04/2016

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Tecnopol

general chemical resistance

The company TECNOPOL SISTEMAS S.L., manufacturer and formulator of a waterproofing systems based on pure polyurea, through this report describes the imnmersion method of exposure for his coating TECNOCOAT P-2049 system to chemicals, and some specific contact.

The cured samples of TECNOCOAT P-2049 were immersed into individual chemicals for a period of 1 month (31 days) at 25ºC. The samples were removed and inspected.

water

PRODUCT	FORMULE	RESULT
brine	xxxxxx	Resists
clored water	xxxxxx	Loss of color
deionized water	H_2O	Loss of color
distilled water	H_2O	Loss of color
raw water	H_2O	Resists
sea water	xxxxxx	Resists
softened water	H_2O	Resists

destiled Water

PRODUCT	FORMULE	RESULT
hydrogen sulfide gas	H_2S	Loss of color
methane gas	CH_4	Loss of color
mic (bacterial)	xxxxxx	Loss of color
sewage	xxxxxx	Loss of color
sources treated	xxxxxx	Loss of color

Acids (minimum pH=4)

PRODUCT	FORMULE	RESULT
acetic acid <5%	$C_2H_4O_2$	Loss of color
acrylic	$C_3H_4O_2$	No Resists
butyric <10%	$C_4H_8O_2$	No Resists
chromic <2%	CrO_3	No Resists
cítric	$C_6H_8O_7$	Loss of color
cresylic	$C_{21}H_{24}O_3$	No Resists
formic <50%	CH_2O_2	No Resists
fluorosilicic	H_2SiF_6	No Resists
hydrochloric <20%	HCl	Loss of color
hydrofluoric	HF	No Resists
lactic	$C_3H_6O_3$	Loss of color
display case	$C_4H_6O_2$	No Resists
nitric <5%	HNO_3	No Resists
oleic	$C_{18}H_{34}O_2$	No Resists
phosphoric <70%	H_3PO_4	Loss of color

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stearic	$C_{18}H_{36}O_2$	No Resists
sulfamic	H_3NO_3S	No Resists
sulphuric acid <30%	H_2SO_4	Loss of color

alcalis

PRODUCT	FORMULE	RESULT
ammonium hydroxide <20%	NH_4OH	Loss of color
ammonium hydroxide> 20%	NH_4OH	No Resists
aqueous ammonia	H_3N	Loss of color
calcium hydroxide <30%	CaH_2O_2	Loss of color
calcium hypochlorite <15%	$CaCl_2O_2$	Loss of color
carbon disulfide or	CS_2	Loss of color
detergents	xxxxxx	Loss of color
potassium hydroxide <20%	KOH	Loss of color
soaps	xxxxxx	Loss of color
sodium bicarbonate	$NaHCO_3$	Resists
sodium carbonate	Na_2CO_3	Loss of color
sodium chlorite	$NaClO_2$	No Resists
sodium hydroxide<20%	NaOH	Loss of color
nitric sodium	$NaNO_2$	No Resists
sodium sulfate	Na_2O_4S	Loss of color
trisodium phosphate	Na_3O_4P	Loss of color

salts

PRODUCT	FORMULE	RESULT
calcium bromide	$CaBr_2$	Loss of color
calcium chloride	$CaCl_2$	Loss of color
cuprous chloride	CuCl	Loss of color
ferric chloride	$FeCl_3$	Loss of color
iron sulfate	$Fe_2O_{12}S_3$	Loss of color
ferrous chloride	Cl_2Fe	Loss of color
lithium bromide	BrLi	Loss of color
magnesium chloride	Cl_2Mg	Loss of color
magnesium sulphate	MgO_4S	Loss of color
potassium iodide	Kl	No Resists
potassium monopersulfate	$K^+ {}^-O\text{-}S(=O)_2(\text{-}OOH)$	No Resists
sodium chloride	NaCl	Resists
sodium nitrate	$NaNO_2$	Loss of color
zinc bromide	$ZnBr_2$	Loss of color

detergents

PRODUCT	FORMULE	RESULT
chlorine dioxide	ClO_2	Resists
chlorine	ClNaO	Loss of color
hydrogen peroxide <35%	H_2O_2	Loss of color
phosphorus	P	Loss of color
sodium hypochlorite <18%	NaOCl	Loss of color
sodium silicate	Na_4O_4Si	Loss of color

aromatics

PRODUCT	FORMULE	RESULT
benzene	C_6H_6	No Resists
chlorobenzene	C_6H5_2Cl	No Resists
condensed	xxxxxx	No Resists
ethylbenzene	C_8H_{10}	No Resists
etbe	$C_6H_{14}O$	No Resists
mtbe	$C_5H_{12}O$	No Resists
nitrobenzene	$C_6H_5NO_2$	No Resists
pah's	$C_9H_{10}N_2O_3$	No Resists
phenol	C_6H_5OH	No Resists
styrene	C_8H_8	No Resists
toluene	C_7H_8	No Resists
xylene	$C_{24}H_{30}$	No Resists

alcohols

PRODUCT	FORMULE	RESULT
2-propanol	C_3H_8O	Loss of color
ethanol	C_2H_6O	Loss of color
fa	$C_5H_6O_2$	No Resists
isopropyl	C_3H_7	Loss of color
methanol	CH_3OH	Loss of color

aliphatics

PRODUCT	FORMULE	RESULT
oil	xxxxxx	Loss of color
diesel	xxxxxx	Loss of color
fuel oil #2	xxxxxx	Loss of color
fuel oil #4	xxxxxx	Loss of color
fuel oil #6	xxxxxx	Loss of color
gasoline	xxxxxx	No resists
heptane	C_7H_{16}	Loss of color
exane	C_6H_{14}	Loss of color
hydraulic oils	xxxxxx	Loss of color
jp-4	xxxxxx	No Resists

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jp-5	xxxxxx	Loss of color
kerosene	xxxxxx	Loss of color
mineral spirits	xxxxxx	Loss of color
motor oils	xxxxxx	Loss of color
naphtha	xxxxxx	No Resists
natural gas	xxxxxx	Loss of color
octane	C_8H_{18}	Loss of color
pentane	C_5H_{12}	Loss of color
transformer oils	xxxxxx	Loss of color

ketones

PRODUCT	FORMULE	RESULT
acetone	C_3H_3O	No Resists
methyl amyl ketone	$C_7H_{14}O$	No Resists
methyl isobutyl ketone	$C_6H_{12}O$	No Resists

chlorinated Solvents

PRODUCT	FORMULE	RESULT
trichloroethylene 1'1 '	C_2HCl_3	No Resists
carbon tetrachloride	CCl_4	No Resists
isobutyl chloride metil	$C_5H_{11}Cl$	No Resists
methylene chloride	CH_2Cl_2	No Resists
vinyl tricoluro	$ClCH_2CHCl_2$	No Resists

other Solutions

PRODUCT	FORMULE	RESULT
acetaldehyde	CH_3CHO	No Resists
acrinolitilo	C_3H_3N	No Resists
aluminum	$AlH_{24}KO_{20}S_2$	Loss of color
aniline	$C_6H_5NH_2$	No Resists
animal fat	xxxxxx	Resists
atrazine	$C_8H_{14}ClN_5$	No Resists
coal (low sulfur)	C	Resists
coal (high sulfur)	C	Resists
cyclohexylamine	$C_6H_{11}NH_2$	No Resists
dextrose	$C_6H_{12}O_6$	Resists
dibutyl maleate	$C_{24}H_{38}O_4$	Loss of color
dibutyl phthalate	$C_{12}H_{20}O_4$	No Resists
dibutyl phthalate	$C_{16}H_{22}O_4$	No Resists
diethylene glycol butyl ether	$C_8H_{18}O_3$	Loss of color
dimethylformamide	C_3H_7NO	No Resists
butyl ether, ethylene glycol	$C_6H_{14}O_2$	Loss of color
formaldehyde	CH_2O	No Resists
fructose	$C_6H_{12}O_6$	Resists

PRODUCT	FORMULE	RESULT
hydroquinone	$C_6H_4(OH)_2$	No Resists
kaolin (china clay)	xxxxxx	Resists
methyl acrylate	$C_4H_6O_2$	No Resists
methacrylonitrile	C_4H_5N	No Resists
methyl methacrylate	$C_5H_8O_2$	No Resists
mono-ethanolamine	C_2H_7NO	No Resists
ozone <2 ppm	O_3	No Resists
polypropylene (dry)	C_3H_6	Resists
polystyrene (dry)	C_8H_8	Resists
polytetrafluoroethano (dry)	$(C_2F_4)_n$	Resists
polyvinyl chloride (dry)	C_2H_3Cl	Resists
potash	CK_2O_3	Resists
pulp liquor	xxxxxx	Loss of color
quaternary amines	xxxxxx	No Resists
silage	xxxxxx	Resists
silicone fluids	xxxxxx	Resists
sugar (saturated)	xxxxxx	Resists
sugar syrup	$C_{12}H_{22}O_{11}$	Resists
toluidine	xxxxxx	No Resists
triethyl phosphate	$C_6H_{15}O_4P$	No Resists
triethanolamine	$C_6H_{15}NO_3$	No Resists
urea	CH_4N_2O	Loss of color

Notes:

- These tests are based on laboratory tests and practical experience, however, due to multiple parameter beyond our control during the application, the data can never be used to prove any reponsability of TECNOPOL SISTEMAS S.L.. We reserve the right to change the system specifications without notice.
- The information in these values is based on our own current knowledge and existing laws of EU and national. The product not to be used for purposes other than those specified. It is always your responsibility to take necessary measures to comply with the requirements of existing laws. The information contained in these pages should not be considered as a guarantee of its properties.
- These test results are reported to serve as a guide to the applicability of polyurea TECNOCOAT P-2049 in a variety of applications. It's responsibility of each supplier and end user to assess the suitabilty or polyurea for specific applications.

specific test:crude oil resistance

To provide a general recommendation on the chemical resistance behavior against crude oil of three standard polyurea.

The samples of TECNOCOAT P-2049 were immersed into individual chemicals for a period of 6-8 weeks at 25ºC. The samples were removed and inspected.

The specimen were taken from cured samples and immersed up to 50% in the crude oil. The jars were closed and put in an oven at 50°C.

system	TECNOCOAT P-2049 EL	TECNOCOAT P-2049	TECNOCOAT P-2049HR
1 day	medium swelling medium color change	minor swelling medium color change	minor swelling medium color change
2 days	medium swelling medium color change	minor swelling medium color change	minor swelling medium color change
3 days	medium swelling medium color change	minor swelling medium color change	minor swelling medium color change
1 wk	medium swelling medium color change	medium swelling medium color change	minor swelling medium color change
2 wk	major swelling medium color change	medium swelling medium color change	minor swelling medium color change
4 wk	major swelling medium color change	medium swelling medium color change	minor swelling medium color change minor softening
6 wk	major swelling medium color change	medium swelling medium color change	minor swelling medium color change
8 wk	major swelling major color change	medium swelling major color change	minor swelling major color change minor softening

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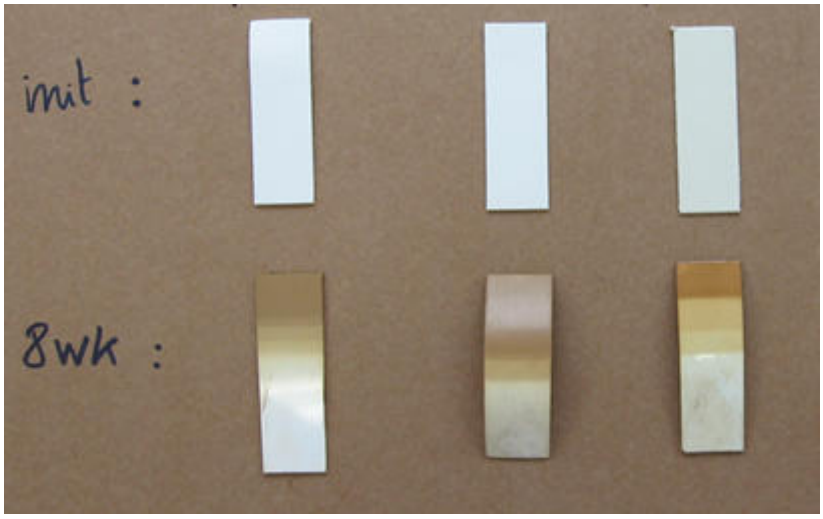
Already after 1 day exposure, all three polyurea show minor swelling and discoloration. This trend continues rapidly except for the Tecnocoat P-2049 HR.

Sporadic and local spillages of the above tested product should not cause any structural damage to the protective coating.

P-2049EL **P-2049** **P-2049HR**



It is not recommended to use the above Tecnocoat polyurea systems as **primary lining** material in storage tanks for crude oil.

TECNOPOL SISTEMAS S.L.

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