Chemical Resistance List

Jotun Protects Property

Issue date: July 2020

			Tankguard CV Pro				
CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
56-81-5	1,2,3-Propanetriol	100%	R				
56-81-5	1,2,3-Trihydroxypropane	100%	R				
107-21-1	1,2-Dihydroxyethane	100%	R				
107-21-1	1,2-Ethanediol	100%	R				
71-36-3	1-Butanol	100%	R				
111-70-6	1-Heptanol	100%	R				
111-27-3	1-Hexanol	100%	R				
111-87-5	1-Octanol	100%	R				
104-72-3	1-Phenyldecane	100%	R				
1459-10-5	1-Phenyltetradecane	100%	R				
123-02-4	1-Phenyltridecane	100%	R				
6742-54-7	1-Phenylundecane	100%	R				
71-23-8	1-Propanol	100%	R				
112-27-6	2,2-Ethylene dioxydiethanol	100%	R	60			
78-92-2	2-Butanol	100%	R				
111-76-2	2-Butoxyethanol	100%	R				
543-49-7	2-Heptanol	100%	R				
626-93-7	2-Hexanol	100%	R				
78-83-1	2-Methyl-1-propanol	100%	R				
78-78-4	2-Methylbutane	100%	R				
123-96-6	2-Octanol	100%	R				
67-63-0	2-Propanol	100%	R				
67-64-1	2-Propanone	100%	R	30			
589-82-2	3-Heptanol	100%	R				
623-37-0	3-Hexanol	100%	R				
123-51-3	3-Methyl-1-butanol	100%	R				

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589-98-0	3-Octanol	100%	R				
67-64-1	Acetone	100%	R	30			
	Alcohols (C4-C6)	100%	R				
	Alcohols (C6+)	100%	R				
	Alkylates	100%	R		1		
71-41-0	Amyl alcohol (n-Amyl)	100%	R				
109-66-0	Amyl hydride	100%	R				
120-12-7	Anthracene oil (coal tar fraction)	100%	R	60			
	Aromatic hydrocarbons, mixed	100%	R				
	Asphalt	100%	R	80	1		
	Asphalt bitumen	100%	R	80	1		
	Asphalt cements	100%	R	80	1		
	Asphalt emulsions	100%	R		1		
	Asphalt solution	100%	R		1		
	Asphaltum	100%	R	80	1		
	Automotive gasoline	100%	R		3		
	Aviation fuel (all grades)	100%	R	50			
	Biodiesel (all grades)	100%	R	50	9		
	Bitumen	100%	R	80	1		
	Brine, salt	All %	R				
	Bunker fuel oil	100%	R	60	1		
	Bunker oil	100%	R	60	1		
71-36-3	Butan-1-ol	100%	R				
78-92-2	Butan-2-ol	100%	R				
71-36-3	Butyl alcohol (see n-butanol)	100%	R				
112-34-5	Butyl carbitol diethylene glycol	100%	R				

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
111-76-2	Butyl glycol	100%	R				
123-95-5	Butyl octadecanoate	100%	R				
123-95-5	Butyl stearate	100%	R				
71-36-3	Butyric alcohol	100%	R				
10043-52-4	Calcium chloride solution	All %	R				
1305-62-0	Calcium hydroxide solution	All %	R	40			
124-38-9	Carbon dioxide gas	All %	R				
	Carbowax	100%	R				
	Carbowax polyethylene glycols	100%	R				
	Caustic blend (aq)	All %	R	40			
1310-58-3	Caustic potash (aq)	All %	R	40			
1310-58-3	Caustic potash solution (aq)	All %	R	40			
1310-73-2	Caustic soda solution (aq)	50%	R	40			
	Coal tar	100%	R				
	Coal tar distillate	100%	R		1		
	Coal tar naphtha	100%	R				
	Crude coal tar	100%	R	50	1		
	Crude naphtha	100%	R		1		
	Crude oil	100%	R	80	1		
	Crude oil/brine mixture	All%	R	60	1		
	Crude solvent coal tar naphta	100%	R		1		
	Crude Sulfate Turpentine	100%	R				
	Crude turpentine	100%	R				
112-30-1	Decanol	100%	R				
	Dechlorinated Brine Storage	All %	R				
112-30-1	Decyl alcohol (all isomers)	100%	R				

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
	Demineralised water	All %	R	60			
109-43-3	Dibutyl sebacate	100%	R				
68476-34-6	Diesel fuel	100%	R				
111-46-6	Diethylene glycol	100%	R				
25167-70-8	Diisobutylene	100%	R				
117-81-7	Dioctyl phthalate	100%	R				
7732-18-5	Distilled water	100%	R	50			
112-41-4	Dodecene	100%	R				
	Drilling brines (salts)	All %	R				
	Drinking water	100%	R	60	12		
	Earth oil	100%	R	60	1		
	Ehtylene crakcer residues	100%	R				
64-17-5	Ethanol	100%	R				
64-17-5	Ethanol	90-95%	R				
64-17-5	Ethanol	95%	R				
64-17-5	Ethyl alcohol	100%	R				
107-21-1	Ethyl glycol	100%	R				
78-78-4	Ethyldimethylmethane	100%	R				
	Ethylene cracker residues	100%	R		1		
107-21-1	Ethylene dihydrate	100%	R				
107-21-1	Ethylene glycol	100%	R				
111-46-6	Ethylene glycol dihydroxydiethyl ether	100%	R				
	Fresh water	100%	R	60			
	Fuel oil	100%	R	60			
	Gas oil	100%	R	60			
	Gasoline (regular)	100%	R	40	3		

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
	Gasoline 15%, Ethanol 85%	100%	R	40	3	8	
	Gasoline 5%, Ethanol 95%	100%	R	40	3	8	
	Gasoline 50%, Ethanol 50%	100%	R	40	3	8	
	Gasoline 80%, MTBE 20%	100%	R	40			
	Gasoline 85%, Ethanol 15%	100%	R	40	3	8	
	Gasoline 85%, MTBE 10%, Ethanol 5%	100%	R	40			
	Gasoline 85%, MTBE 12%, Methanol 3%	100%	R	40			
	Gasoline 85%, MTBE 15%	100%	R	40			
	Gasoline 85%, MTBE 5%, Isopropanol 10%	100%	R	40			
	Gasoline 90%, Ethanol 10%	100%	R	40	3	8	
	Gasoline 90%, Isopropanol 10%	100%	R	40			
	Gasoline 90%, MTBE 10%	100%	R	40			
	Gasoline 95%, Ethanol 5%	100%	R	40			
	Gasoline 97%, Methanol 3%	100%	R	40			
	Gasoline, aircraft	100%	R	40			
	Gasoline, automotive	100%	R	40	3		
	Gasoline, leaded	100%	R	40			
	Gasoline, unleaded	100%	R	40	3		
	Gasoline, with Potassium	100%	R	40			
	Gasoline, with Sodium	100%	R	40			
56-81-5	Glycerin	100%	R	50			
56-81-5	Glycerol	100%	R	50			
	Gum spirits	100%	R				
	Gum turpentine	100%	R				
	Heavy aromatic naptha	100%	R	50			
	Heavy fuel oil	100%	R	60			

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
	Heavy Gas oil	100%	R	60			
	Heavy kerosene	100%	R	40			
	Heavy virgin naphtha (HVN)	100%	R	40			
142-82-5	Heptane	100%	R				
110-54-3	Hexane	100%	R				
	Hydraulic fluid	100%	R				
123-51-3	Isoamyl alcohol	100%	R				
78-83-1	Isobutanol	100%	R				
78-83-1	Isobutyl alcohol	100%	R				
	Isobutyl carbinol	100%	R				
	Isodecyl alcohol	100%	R				
104-76-7	Isooctanol	100%	R				
1330-86-5	Isooctyl adipate	100%	R				
26952-21-6	Isooctyl alcohol	100%	R				
78-78-4	iso-Pentane	100%	R				
67-63-0	Isopropanol	100%	R				
67-63-0	Isopropyl alcohol	100%	R				
110-27-0	Isopropyl myristate	100%	R				
	Jet fuel (all types)	100%	R	50			
	Kerosene	100%	R	50			
	Lamp oil	100%	R	50			
112-53-8	Lauryl alcohol	100%	R				
112-53-8	Lauryl alcohol	100%	R				
	Light virgin naphtha (LVN)	100%	R	40			
	Lime solution, saturated	All%	R	40			
	Liquid caustic potash solution	All %	R	40			

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
	Lubricating oil	100%	R	50			
	Lye solution	50%	R	40			
108-67-8	Mesitylene	100%	R				
67-56-1	Methanol	100%	R	30			
67-56-1	Methyl alcohol	100%	R	30			
108-11-2	Methyl isobutyl alcohol	100%	R				
108-11-2	Methyl isobutyl carbinol (MIBC)	100%	R	30			
1634-04-4	Methyl tert-butyl ether (MTBE)	100%	R				
75-28-5	Methylol propane	100%	R				
	Mineral jelly	100%	R	50			
	Mineral oils	100%	R	50			
	Mineral pitch	100%	R	60	1		
	Mineral wax	100%	R	50			
107-21-1	Monoethylene glycol (MEG)	100%	R				
57-55-6	Monopropylene glycol	100%	R				
	Motor oil	100%	R	50			
	Naphtha	100%	R	50	1		
	Naphtha coal tar	100%	R	60	1		
	Naphtha crude condensate	100%	R	50	1		
	Naphtha petroleum	100%	R				
	Naphtha safety solvent	100%	R				
	Naphtha solvent	100%	R		1		
	Naphtha, aromatic	100%	R				
71-36-3	n-Butanol	All %	R				
71-36-3	n-Butyl alcohol	All %	R				
112-53-8	n-Dodecanol	100%	R				

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
143-08-8	Nonyl alcohol	100%	R				
109-66-0	n-Pentane	100%	R				
6032-29-7	n-Propyl carbinol	100%	R				
	Paraffin	100%	R				
	Paraffin jelly	100%	R	50			
71-41-0	Pentanol	100%	R				
	Petrol	100%	R		3		
	Petrolatum	100%	R	50			
	Petroleum asphalt	100%	R	80	1		
8032-32-4	Petroleum ether	100%	R				
	Petroleum jelly	100%	R	50			
	Petroleum naphtha	100%	R				
	Petroleum oil	100%	R				
	Petroleum ointment	100%	R	50			
	Petroleum pitch	100%	R	80	1		
	Petroleum solvent	100%	R		1		
	Petroleum wax	100%	R	50			
100-41-4	Phenyl ethane	100%	R				
108-88-3	Phenyl methane	100%	R				
100-51-6	Phenyl methyl alcohol	100%	R				
100-41-4	Phenylethane	100%	R				
	Potable water	100%	R	60	12		
7447-40-7	Potassium chloride	All %	R				
	Potassium chloride drilling brine	All %	R				
1310-58-3	Potassium hydrate solution	All %	R				
1310-58-3	Potassium hydroxide solution	50%	R				

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp ˚C	Tn-note	Tn-note2	Tn-note3
71-41-0	Propyl carbinol	100%	R				
57-55-6	Propylene glycol	100%	R				
	Pyrolysis gasoline	100%	R		1		
	Refined glycerine	100%	R	50			
	Road asphalt	100%	R	80	1		
	Road tar	100%	R	80	1		
	Sea water	100%	R	60			
78-92-2	sec-butanol	100%	R				
78-92-2	sec-Butyl alcohol	100%	R				
	Soaplye glycerine	100%	R	50			
497-19-8	Sodium carbonate solution	All %	R				
7647-14-5	Sodium chloride	All %	R				
1310-73-2	Sodium hydroxide solution	50%	R	40			
	Spirits of turpentine	All %	R				
	Steam distilled turpentine	100%	R				
	Sulfate turpentine	100%	R				
	Sulfate wood turpentine	100%	R				
	Sulfonate turpentine crude	100%	R				
	Synthetic paraffinic hydrocarbon	100%	R				
	Tar	100%	R	80	1		
	Terpentine	100%	R				
75-65-0	tert-butanol	100%	R				
1634-04-4	tert-Butyl methyl ether	100%	R				
108-88-3	Toluene	100%	R				
	Transformer oils	100%	R	40			
112-27-6	Triethylene glycol	100%	R	50			

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CAS No	**Chemicals**	Concent	Tn-code	Tn-temp °C	Tn-note	Tn-note2	Tn-note3
112-27-6	Triglycol	100%	R	50			
	Turpentine	100%	R				
	Turpentine oil	100%	R				
	Vaseline	100%	R	50			
	Wax mineral	100%	R	50			
	Wax petroleum	100%	R	50			
	White caustic solution	All %	R				
	White spirit	100%	R				
	White spirit, low aromatic (15-20%)	100%	R				
	Wood turpentine	100%	R				
	Yellow petrolatum	100%	R	50			

Disclaimer

The information given in this brochure is given to the best of our knowledge on laboratory testing and practical experience.
The information is conditional of coating materials being applied and cured according to Jotun's Technical Data Sheets and Jotun recommendation.
We also reserve the right to change the data without notice. June 2020.

Notes to Chemical Resistance List

Keys:

R: **Resistant**

The coating is chemically resistant enough to be used as tank lining for permanent exposure.

NR: **Not Resistant**

The coating is not resistant and is not recommended to be used as tank lining for this chemical

NE: **Not Evaluated**

The coating is not evaluated or practically tested as tank lining for this chemical. Contact Jotun A/S, TSS for more details.

Resistance is based on temperatures not exceeding 40°C. Products that are viscous or solid at normal temperatures can be stored up to 70°C. Exceptions are when there is a maximum temperature given in the Resistance List.

Note 1 **Coating discoloration**
The coating may be discoloured from this cargo. This discolouration will not affect the chemical resistance of the coating.

Note 2 **Beverage and potable liquids**
Although the coatings are resistant to these cargoes, taste or odour from the coating may transmit to the beverages and potable liquids.

Note 3 **Unleaded gasoline**
Many unleaded gasolines may have added considerable amounts of oxygenated solvents, and can vary quite a lot in composition. The European Directive 98/70 has set the following limits:

	Unit	Limits	
		Minimum	Maximum
Hydrocarbon:			
Olefines	% v/v	-	18.0[1)]
Aromatics	% v/v	-	42.0
Benzene	% v/v	-	1.0
Oxygen content	% m/m	-	2.7
Oxygenates:			
Methanol, stabilizing agents must be added	% v/v	-	3
Ethanol, stabilizing agents may be necessary	% v/v	-	5
Isopropyl alcohol	% v/v	-	10
Tert buthyl alcohol	% v/v	-	7
Isobutyl alcohol	% v/v	-	10
Ethers containing > C5	% v/v	-	15
Other oxygenates[2)]	% v/v	-	10
Sulphur content	mg/kg	-	150
Lead content	g/l		0.005

[1)] Except for regular unleaded petrol - minimum motor octane number (MON) of 81 and a minimum research octane number (RON) of 91 - for which the maximum olefin content shall be 21% v/v.

[2)] Other mono-alcohols with a final distillation point no higher than the final distillation point laid down in the national specification or where these do not exist in industrial specifications for motor fuels.

Blending of automotive gasolines with above mentioned additives in the tank are not acceptable.

For unleaded gasoline containing other additives or concentrations of additives than mentioned in this note, Jotun A/S, TSS should be consulted.

Note 4 Palm oil products, animal and vegetable oils and fats

Palm oil products may contain residues of sulphuric acid from the refining process. The palm oil products must comply with the PORIM specification of Malaysia and be absolutely free from mineral acids (e.g. sulphuric acid).

Animal or vegetable oils contain varying amounts of free fatty acids (FFA) according to origin and age of oil. Solid or semi-solid products might be stored at elevated temperatures, and this will increase the acidity. The acid value (ASTM D-1980) should not exceed 4 in tanks coated with Resist GTI or Resist 5 WF, 30 in tanks coated with Tankguard HB or Tankguard SF and 80 in tanks coated with Tankguard Storage.

In addition, the maximum acceptable content of water shall be 1%.

Note 5 Contamination of the product stored

Due to the properties of the coating there is a possibility of a slight zinc pick up in the product stored. The zinc pick up has no effect on the coating but may affect the quality of the product stored.

Note 6 Hydrolysable products and amines

Esters, chlorinated and brominated compounds and amines will react with any moisture present in the tank to form acids or alkalis that will attack the coating. Such products must therefore be free from moisture and stored in completely dry tanks that are protected against water leaks.

Note 7 Crude oil

Crude oil and fuel oil may contain variable amounts of acidic material, and the acid value should be determined and Jotun consulted before crude oil is stored in tanks coated with Tankguard ZN or Resist 5WF. Maximum acceptable neutralisation number is 0.4 (ASTM-664).

Note 8 Automotive fuels - ethanol fuel mixtures

Anhydrous ethanol can be blended with gasoline in varying quantities up to pure ethanol (E5 - E100).

In the EN 15376:2007, ethanol as blending component for petrol, the requirements are stated for such use, and in the table below some limits are set:

	Unit	Limits		Test method
		Minimum	Maximum	
Ethanol content + higher saturated alcohols	% (m/m)	98,7		EC/2870/2000 Method I, Appendix II, Method B
Higher saturated (C3-C5) mono alcohols content	% (m/m)	-	2.00	EC/2870/2000 Method III
Methanol content	% (m/m)		1.00	EC/2870/2000 Method III
Water content	% (m/m)	-	0.30	EN 15489
Sulphur content	mg/kg	-	10.0	EN 15489

The gasoline used has to be according to the requirements set in note 3.

Note 9 Automotive fuels - fatty acid methyl ester (FAME) for diesel engines

Fatty acid methyl esters can vary wildly in composition. Before these products are stored, the tank coating should be fully cured.

The requirements for these types of automotive fuels are stated in EN 14214, with some of the requirements given in the following table:

	Unit	Limits		Test method
		Minimum	Maximum	
Water content	mg/kg	-	500	EN ISO 12937
Acid value	Mg KOH/g	-	0.5	EN 14104
Methanol content	% (m/m)	-	0.2	EN 14110

Note 10 Mineral acids

The upper layer of Chemflake Special may cure insufficiently when inhibited by the oxygen in the air. This uncured layer may again react with certain mineral acids, like hydrochloric acid, nitric acid, phosphoric acid, sulphuric acid etc. The reaction product has a strong red colour and will discolour the acid into a pink colour.

Note 11 Aviation fuel

The coating is chemically resistant, but does not have the approvals required for use inside tanks for storage of aviation fuel.

Note 12 No certification exists for this product

The coating is chemically resistant, but does not have the approvals required for use inside tanks for storage of potable water.