HDPE

Nan Ya HDPE Pipes

NAN YA PLASTICS CORPORATION

HDPE pipe Characteristics and Applications

Characteristics of HDPE pipes:

1.Has a density of 0.95-0.97, lighter than PVC, and does not require heavy machinery for installation and transportation.
2.Good cold resistance, seismic resistance, impact resistance, and toughness.
3.Good acid and alkali resistance, no scaling, and good chemical resistance, and can be used for chemical and seawater transfer.
4.Good elongation and bending flexibility, and small size pipes can be curled to reduce fettings and leakage.
5.Meets food grade requirements and can be used for milk and edible oil transfer.

Applications of HDPE pipes:

1.Pressure pipes:

- Drinkimg water pipes
- Seawater pipes for aquaculture
- Natural gas medium and low pressure pipes
- Chemical industry pipes
- Recycled water pipes

2.Non-pressure pipes:

- Telecommunications landline optical fiber cable pipes
- Power cable pipes
- Industrial wastewater discharge pipes

Physical properties of HDPE pipes

Item	Unit	Testing method	PE100
Basic physical properties			
Melt flow index (MI) (5kg)	g/10min	ASTM D1238	0.23
Density	g/cm^3	ASTM D1505	0.95~0.96
Thermal properties			
Melting point	°C	DSC	129
Embrittlement temperature	°C	ASTM D746	<-70
Mechanical properties			
Tensile strength at yield	Kg/cm^2	ASTM D638	240
Tensile strength at break	Kg/cm^2	ASTM D638	360
Elongation at break	%	ASTM D638	850
Hardness	Shore D	ASTM D2240	64
ESCR	Hours	ASTM D1693	>1000
Thermal stability (200°C)	Min	ISO/TR 10837	>30
MRS	MPa	ISO 9080	10
Carbon black content	%	ISO 6964	2.3

*The data above is the average during testing and provided for reference only.

HDPE pipe Chemical resistance

1. Unless otherwise specified, all concentration is 100%.
2. For items indicated with ○: The barely usable chemical agent will corrode the HDPE pipe and affect its physical properties, so the pipe material design may need to be changed.

◎ : No effect, has good resistance.
× : Cannot be used.
○ : Barely usable.
— : Unknown.

Chemical.	21 ℃	60 ℃
Acetic Acid 10%	◎	◎
Acetic Acid 10-60%	◎	○
Acetic Acid 80-100%	◎	○
Acetone	○	×
Acrylic Emulsions	◎	◎
Aluminum Chloride-Dilute	◎	◎
Aluminum Chloride Conc.	◎	◎
Aluminum Fluoride Conc.	◎	◎
Aluminum Sulfate Conc.	◎	◎
Alums (All Types) Conc.	◎	◎
Ammonia 100% Dry Gas	◎	◎
Ammonium Carbonate	◎	◎
Ammonium Chloride Sat'd	◎	◎
Ammonium Fluoride 20%	◎	◎
Ammonium Hydroxide 0.8S S.G.	◎	◎
Ammonium Metaphosphate Sat'd	◎	◎
Ammonium Nitrate Sat'd	◎	◎
Ammonium Persulfate Sat'd	◎	◎
Ammonium Sulfate Sat'd	◎	◎
Ammonium Sulfide Sat'd	◎	◎
Ammonium Thiocyanate Sat'd	◎	◎
Amyl Acetate	○	×
Amyl Alcohol 100%	◎	◎
Amyl Chloride 100%	—	×
Aniline 100%	◎	—
Antimony Chloride	◎	◎
Aqua Regia	×	×
Barium Carbonate Sat'd	◎	◎
Barium Chloride	◎	◎
Barium Hydroxide	◎	◎
Barium Sulfate Sat'd	◎	◎
Barium Sulfide Sat'd	◎	◎

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Chemical.	21 ℃	60 ℃
Beer	◎	◎
Benzene	○	×
Benzene Suffonic Acid	◎	◎
Bismuth Carbonate Sat'd	◎	◎
Bleach Lye 10%	◎	◎
Black Liquor	◎	◎
Borax Cold Sat'd	◎	◎
Boric Acid Dilute	◎	◎
Boric Acid Conc.	◎	◎
Bromic Acid 10%	◎	◎
Bromine Liquid 100%	○	×
butanediol 10%	◎	◎
butanediol 60%	◎	◎
butanediol 100%	◎	◎
butyl Alcohol 100%	◎	◎
Calcium Bisulfide	◎	◎
Calcium Carbonate Sat'd	◎	◎
Calcium Chlorate Sat'd	◎	◎
Calcium Chloride Sat'd	◎	◎
Calcium Hydroxide	◎	◎
Calcium Hypochlorite RRGH	◎	◎
Calcium Nitrate 50%	◎	◎
Calcium Sulfate	◎	◎
Camphor Oil	—	×
Carbon Dioxide 100% Dry	◎	◎
Carbon Dioxide 100%Wet	◎	◎
Carbon Dioxide Cold Sat'd	◎	◎
Carbon Disulfide	—	×
Carbon Monoxide	◎	◎
Carbon Tetrachloride	○	×
Carbonic Acid	◎	◎
Castor Oil Conc.	◎	◎
Chlorine Dry Gas 100%	◎	○
Chlorine Moist Gas	○	×

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Chemical.	21 ℃	60 ℃
Chlorine Liquid	○	×
Chlorobenzene	○	×
Chloroform	○	×
Chlorosulfonic Acid 100%	○	×
Chrome Alum Sat'd	◎	◎
Chromic Acid 20%	◎	◎
Chromic Acid Up to 50%	◎	◎
Chromic Acid and Sulfuric Acid	◎	○
Cider	◎	◎
Citric Acid Sat'd	◎	◎
Coconut Oil Alcohols	◎	◎
Cola Concentrates	◎	◎
Copper Chloride Sat'd	◎	◎
Copper Cyanide Sat'd	◎	◎
Copper Fluoride 2%	◎	◎
Copper Nitrate Sat'd	◎	◎
Copper Sulfate Dilute	◎	◎
Copper Sulfate Sat'd	◎	◎
Cottonseed Oil	◎	◎
Crude Oil	◎	○
Cuprous Chloride Sat'd	◎	◎
Cychohexanol	◎	◎
Cyclohexanone	○	×
Detergents Synthetic	◎	◎
Developers, Photographic	◎	◎
Dextrin Sat'd	◎	◎
Dextrose Sat'd	◎	◎
Dibutylphthalate	◎	○
Disodium Phosphate	◎	◎
Diazo Salts	◎	◎
Diethylene Glycol	◎	◎
Diglycolic Acid	◎	◎
Dimethylamine	○	×
Emulsions, Photographic	◎	◎

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Chemical.	21 ℃	60 ℃
Ethyl Acetate 100%	○	×
Ethyl Alcohol 100%	◎	◎
Ethyl Alcohol 35%	◎	◎
Ethyl butyrate	○	×
Ethyl Chloride	○	×
Ethyl Ether	×	×
Ethylene Chloride	×	×
Ethylene Chlorohydrin	×	×
Ethylene Dichloride	○	×
Ethylene Glycol	◎	◎
Ferric Chloride Sat'd	◎	◎
Ferric Nitrate Sat'd	◎	◎
Ferrous Chloride Sat'd	◎	◎
Ferrous Sulfate	◎	◎
Fish Solubles	◎	◎
Fluoboric Acid	◎	◎
Fluorine	◎	×
Fluosilicic Acid 32%	◎	◎
Fluosilicic Acid Conc.	◎	◎
Formaldehyde 40%	◎	—
Formic Acid 0-20%	◎	◎
Formic Acid 20-50%	◎	◎
Formic Acid 100%	◎	◎
Fructose Sat'd	◎	◎
Fruit Pulp	◎	◎
Fuel Oil	◎	×
Furfural 100%	○	×
Furfuryl Alcohol	○	×
Gallic Acid Sat'd	◎	◎
Gas Liquids	◎	○
Gasoline	○	×
Gin	◎	×
Glucose	◎	◎
Glycerine	◎	◎

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Chemical.	21 ℃	60 ℃
Glycol	◎	◎
Glycolic Acid 30%	◎	◎
Grape Sugar Sat'd Aq.	◎	◎
Hexanol, Tert.	◎	◎
Hydrobromic Acid 50¡/O	◎	◎
Hydrocyanic Acid Sat'd	◎	◎
HydrochloricAcld 10%	◎	◎
Hydrochloric Acid 30%	◎	◎
Hydrochloric Acid 35%	◎	◎
Hydrochloric Acid Conc.	◎	◎
Hydrofluoric Acid 40%	◎	◎
Hydrofluoric Acid 60%	◎	◎
Hydrofluoric Acid 75%	◎	◎
Hydrogen 100%	◎	◎
Hydrogen Bromide 10%	◎	◎
Hydrogen Chloride Gas Dry	◎	◎
Hydrogen Peroxide 30%	◎	◎
Hydrogen Peroxide 90%	◎	○
Hydrogen Phosphide 100%	◎	◎
Hydroquinone	◎	◎
Hydrogen Sulfide	◎	◎
Hypochlorus Acid Conc.	◎	◎
Inks	◎	◎
Lodine (Alc. Sol.) Conc.	◎	×
Lactic Acid 10%	◎	◎
Lactic Acid 90¡/O	◎	◎
Latex	◎	◎
Lead Acetate Sat'd	◎	◎
Lube Oil	◎	○
Magnesium Carbonate Sat'd	◎	◎
Magnesium Chloride Sat'd	◎	◎
Magnesium Hydroxide Sat'd	◎	◎
Magnesium Nitrate Sat'd	◎	◎
Magnesium Sulfate Sat'd	◎	◎

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Chemical.	21 ℃	60 ℃
Mercuric Chloride Sat'd	◎	◎
Mercuric Cyanide Sat'd	◎	◎
Mercurous Nitrate Sat'd	◎	◎
Mercury	◎	◎
Methyl Alcohol 100%	◎	◎
Methyl Bromide	○	×
Methyl Chloride	○	×
Methyl Ethyl Ketone 100%	○	×
Methylsulfuric Acid	◎	◎
Methylene Chloride 100%	○	×
Milk	◎	◎
Mineral Oils	◎	×
Molasses Comm.	◎	◎
Nickel Chloride Sat'd	◎	◎
Nickel Nitrate Conc.	◎	◎
Nickel Sulfate Sat'd	◎	◎
Nicotine Dilute	◎	◎
Nicotinic Acid	◎	◎
Nitric Acid 0-30%	◎	◎
Nitric Acid 30-50%	◎	○
Nitric Acid 70%	◎	○
Nitric Acid 95-98%	×	×
Nitrobenzene 100%	×	×
Octyl Cresol	◎	×
Oils and Fats	◎	○
Oleic Acid Conc.	◎	×
Oleum Conc.	×	×
Orange Extract	◎	◎
Oxalic Acid Dilute	◎	◎
Oxalic Acid Sat'd	◎	◎
Ozone 100%	◎	×
PerchloncAcid 10%	◎	◎
Petroleum Ether	×	×
Phenol 90%	×	×

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Chemical.	21 ℃	60 ℃
Phosphoric Acid Up to 30%	◎	◎
Phosphoric Acid Over 30%	◎	◎
Phosphoric Acid 90%	◎	◎
Phosphorous (Yellow) 100%	◎	—
Phosphorus Pentoxide 100%	◎	—
Photographic Solutions	◎	◎
Potassium Bicarbonate Sat'd	◎	◎
Potassium Borate 1%	◎	◎
Potassium Bromate 10%	◎	◎
Potassium Bromide Sat'd	◎	◎
Potassium Carbonate	◎	◎
Potassium Chlorate Sat'd	◎	◎
Potassium Chloride Sat'd	◎	◎
Potassium Chromate 40%	◎	◎
Potassium Cyanide Sat'd	◎	◎
Potassium Dichromate 40%	◎	◎
Potassium Ferri/Ferro Cyanide Sat'd	◎	◎
Potassium Fluoride	◎	◎
Potassium Hydroxide 20%	◎	◎
Potassium Hydroxide Conc.	◎	◎
Potassium Nitrate Sat'd	◎	◎
Potassium Perborate Sat'd	◎	◎
Potassium Perchlorate 10%	◎	◎
Potassium Sulfate Conc.	◎	◎
Potassium Sulfide Conc.	◎	◎
Potassium Sulfite Conc.	◎	◎
Potassium Persulfate Satd	◎	◎
Propargyl Alcohol	◎	◎
Propyl Alcohol	◎	◎
Propylene Dichloride 100%	×	×
Propylene Glycol	◎	◎
Rayon Coagulating Bath	◎	◎
Sea Water	◎	◎
Selenic Acid	◎	◎

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Chemical.	21 ℃	60 ℃
Shortening	◎	◎
Silicic Acid	◎	◎
Silver Nitrate Sol.	◎	◎
Soap Solution Any Conc'n	◎	◎
Sodium Acetate Sat'd	◎	◎
Sodium Benzoate 35%	◎	◎
Sodium Bicarbonate Sat'd	◎	◎
Sodium Bisulfate Sat'd	◎	◎
Sodium Bisulfite Sat'd	◎	◎
Sodium Borate	◎	◎
Sodium Bromide Dilute Sol.	◎	◎
Sodium Carbonate Con.	◎	◎
Sodium Carbonate	◎	◎
Sodium Chlorate Sat'd.	◎	◎
Sodium Chkoride Sat'd	◎	◎
Sodium Cyanide	◎	◎
Sodium Dichromate Sat'd	◎	◎
Sodium Ferncyanide	◎	◎
Sodium Ferrocyanide Sat'd	◎	◎
Sodium Fluoride Sat'd	◎	◎
Sodium Hydroxide Conc.	◎	◎
Sodium Hypochlorite	◎	◎
Sodium Nitrate	◎	◎
Sodium Sulfate	◎	◎
Sodium Sulfide 25%	◎	◎
Sodium Sulfide Sat'd Sol.	◎	◎
Sodium Sulfite Sat'd	◎	◎
Stannous Chloride Sat'd	◎	◎
Stannic Chloride Sat'd	◎	◎
Starch Solution SaUd	◎	◎
Steanc Acid 100%	◎	◎
Sulfuric Acid 0-50%	◎	◎
Sulfuric Acid 70%	◎	○
Sulfuric Acid 80%	◎	×

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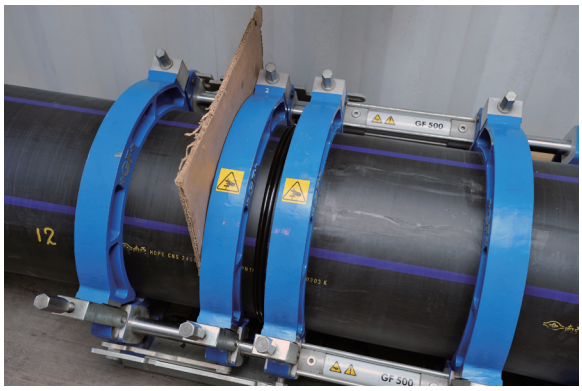
Chemical.	21 ℃	60 ℃
Sulfuric Acid 96%	○	×
Sulfuric Acid 98%	○	×
Sulfuric Acid, Fuming	×	×
Sulfurous Acid	◎	◎
Tallow	◎	○
Tannic Acid 10%	◎	◎
Tanning Extracts Comm.	◎	◎
Tartaric Acid Sat'd	—	—
Tetrahydrofurane	—	×
Titanium Tetrachloride Sat'd	—	×
Toluene	○	×
Transformer Oil	◎	○
Trisodium Phosphate Sat'd	◎	◎
Trichloroethylene	×	×
Urea Up to 30%	◎	◎
Urine	◎	◎
Vinegar Comm.	◎	◎
Vanilla Extract	◎	◎
Wetting Agents	◎	◎
Whiskey	◎	—
Wines	◎	◎
Xylene	○	×
Yeast	◎	◎
Zinc Chloride Sat'd	◎	◎
Zinc Sulfate Sat'd	◎	◎

1. The data is for reference only and does not serve as a guarantee or statement. We cannot be held liable for data use.
2. The data is on the chemical resistance of HDPE pipes, and may not be applicable to parts other than pipes.

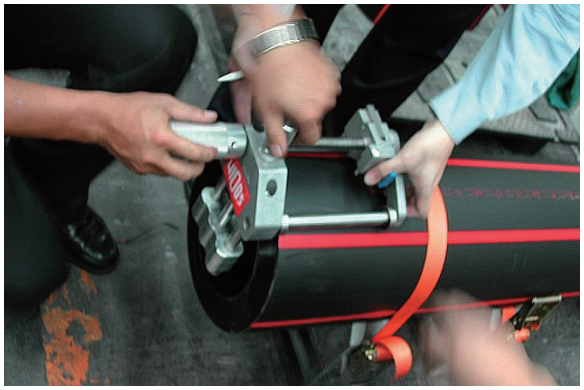
Jointing by Butt Fusion Machines

First shave the ends of two HDPE pipes until they are even to help with the jointing.

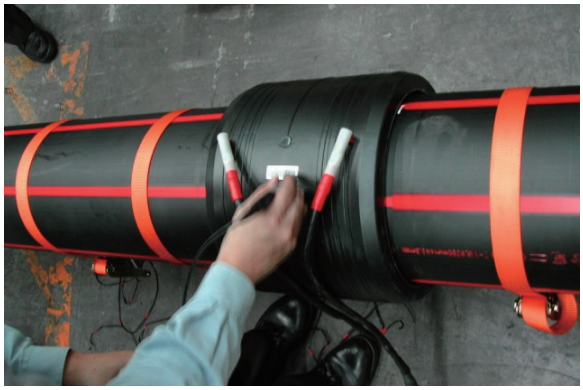


Use a heating plate to heat up the two ends to their melting point, and then carry out jointing.

Jointing by Electrofusion



First shave the ends and surfaces of two HDPE pipes until they are even to help with the jointing.



Insert the two HDPE pipes into the electrofusion, and then connect to electrodes for jointing.

Temperature and working pressure curve

Compensation coefficient of long-term working pressure for HDPE pipes at working temperature of 38-40°C.

Working temperature ℃	Compensation coefficient
4	1.25
10	1.17
15	1.10
23	1.00
27	0.94
32	0.86
38	0.78

Nan Ya HDPE water pipe Specifications table

Standard dimension ratio	SDR17		SDR13.6		SDR11		SDR9	
Pipe system	S8		S6.3		S5		S4	
PE100 Nominal pressure (bar)	PN10		PN12.5		PN16		PN20	
Outside Diameter mm	Thicknes mm	Weight kg/M	Thicknes mm	Weight kg/M	Thicknes mm	Weight kg/M	Thicknes mm	Weight kg/M
16	—	—	—	—	—	—	2.0	0.091
20	—	—	—	—	2.0	0.118	2.3	0.131
25	—	—	2.0	0.152	2.3	0.170	3.0	0.210
32	2.0	0.195	2.4	0.230	3.0	0.277	3.6	0.330
40	2.4	0.301	3.0	0.366	3.7	0.435	4.5	0.509
50	3.0	0.454	3.7	0.556	4.6	0.667	5.6	0.796
63	3.8	0.723	4.7	0.874	5.8	1.061	7.1	1.268
75	4.5	1.020	5.6	1.248	6.8	1.472	8.4	1.773
90	5.4	1.512	6.7	1.774	8.2	2.132	10.1	2.558
110	6.6	2.273	8.1	2.628	10.0	3.180	12.3	3.801
125	7.4	2.783	9.2	3.403	11.4	4.118	14.0	4.916
140	8.3	3.509	10.3	4.242	12.7	5.114	15.7	6.175
160	9.5	4.600	11.8	5.557	14.6	6.761	17.9	8.039
180	10.7	5.768	13.3	7.051	16.4	8.485	20.1	10.148
200	11.9	7.200	14.7	8.620	18.2	10.700	22.4	12.549
225	13.4	9.028	16.6	10.946	20.5	13.244	25.2	15.909
250	14.8	11.064	18.4	13.486	22.7	16.432	27.9	19.551
280	16.6	13.899	20.6	16.896	25.4	20.630	31.3	24.570
315	18.7	17.657	23.2	21.453	28.6	26.188	35.2	31.078
355	21.1	22.403	26.1	27.148	32.2	32.942	39.7	39.463
400	23.7	28.312	29.4	34.482	36.3	41.982	44.7	50.011
450	26.7	35.869	33.1	43.237	40.9	52.957	50.3	62.695
500	29.7	45.500	36.8	53.281	45.4	65.840	55.8	77.312
560	33.2	55.523	41.2	66.914	50.8	80.739	62.5	96.924
630	37.4	70.322	46.3	84.489	57.2	103.720	70.3	122.651
710	42.1	89.369	52.2	107.338	64.5	129.950	79.3	155.966
800	47.4	113.322	58.8	138.600	72.6	164.800	89.3	197.882

1. Quality standards: CNS 2456-2 / ISO 4427-2.
2. Besides the popular HDPE pipe specifications listed above, all CNS 2456-2 / ISO 4427-2, ϕ800mm and under products can be produced as needed.

Nan Ya HDPE gas pipe Specifications table

Standard dimension ratio	SDR17.6	SDR17	SDR13.6	SDR11
Outside Diameter mm	Thickness mm	Thickness mm	Thickness mm	Thickness mm
32	—	—	mm	3.0
40	—	—	3.0	3.7
50	—	3.0	3.7	4.6
63	3.6	3.8	4.7	5.8
75	4.3	4.5	5.6	6.8
90	5.2	5.4	6.7	8.2
110	6.3	6.6	8.1	10.0
125	7.1	7.4	9.2	11.4
140	8.0	8.3	10.3	12.7
160	9.1	9.5	11.8	14.6
180	10.3	10.7	13.3	16.4
200	11.4	11.9	14.7	18.2
225	12.8	13.4	16.6	20.5
250	14.2	14.8	18.4	22.7
280	15.9	16.6	20.6	25.4
315	17.9	18.7	23.2	28.6
355	20.2	21.1	26.1	32.2
400	22.8	23.7	29.4	36.4
450	25.6	26.7	33.1	40.9
500	28.4	29.7	36.8	45.5
560	31.9	33.2	41.2	50.9
630	35.8	37.4	46.3	57.3

1. Quality standards: CNS 12835-2 / ISO 4437-2.
2. Besides the HDPE pipe specifications listed above, all CNS 12835-2 / ISO 4437-2, ϕ630mm and under products can be produced as needed.

Certificate of CNS Mark approval

經濟部標準檢驗局正字標記證書

廠　商　名　稱　南亞塑膠工業股份有限公司
廠　商　地　址　高雄市仁武區竹後里水管路101號
代 表 人 姓 名　吳嘉昭
生產製造工廠名稱　南亞塑膠工業股份有限公司嘉義廠
生產製造工廠地址　嘉義縣太保市南新里北港路2段201號
品管評鑑制度　CNS 12681/ISO 9001:2015
產　品　名　稱　燃氣用塑膠配管系統－聚乙烯(PE)－第2部：管
適用國家標準　總號　12835-2　類號　K3097-2
證　書　號　碼　台正字第　7166　號

上記產品依標準法第11條第1項規定審查合格，核准使用正字標記。

局長 劉明忠

中　華　民　國　93　年　6　月　7　日

品管評鑑制度變更106年7月31日　換發此證

經濟部標準檢驗局正字標記證書

廠　商　名　稱　南亞塑膠工業股份有限公司
廠　商　地　址　高雄市仁武區竹後里水管路101號
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生產製造工廠名稱　南亞塑膠工業股份有限公司嘉義廠
生產製造工廠地址　嘉義縣太保市南新里北港路2段201號
品管評鑑制度　CNS 12681/ISO 9001:2015
產　品　名　稱　聚乙烯塑膠管(自來水用)
適用國家標準　總號　2456-2　類號　K3012-2
證　書　號　碼　台正字第　7287　號

上記產品依標準法第11條第1項規定審查合格，核准使用正字標記。

局長 劉明忠

中　華　民　國　95　年　1　月　26　日

品管評鑑制度變更106年7月31日　換發此證

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