

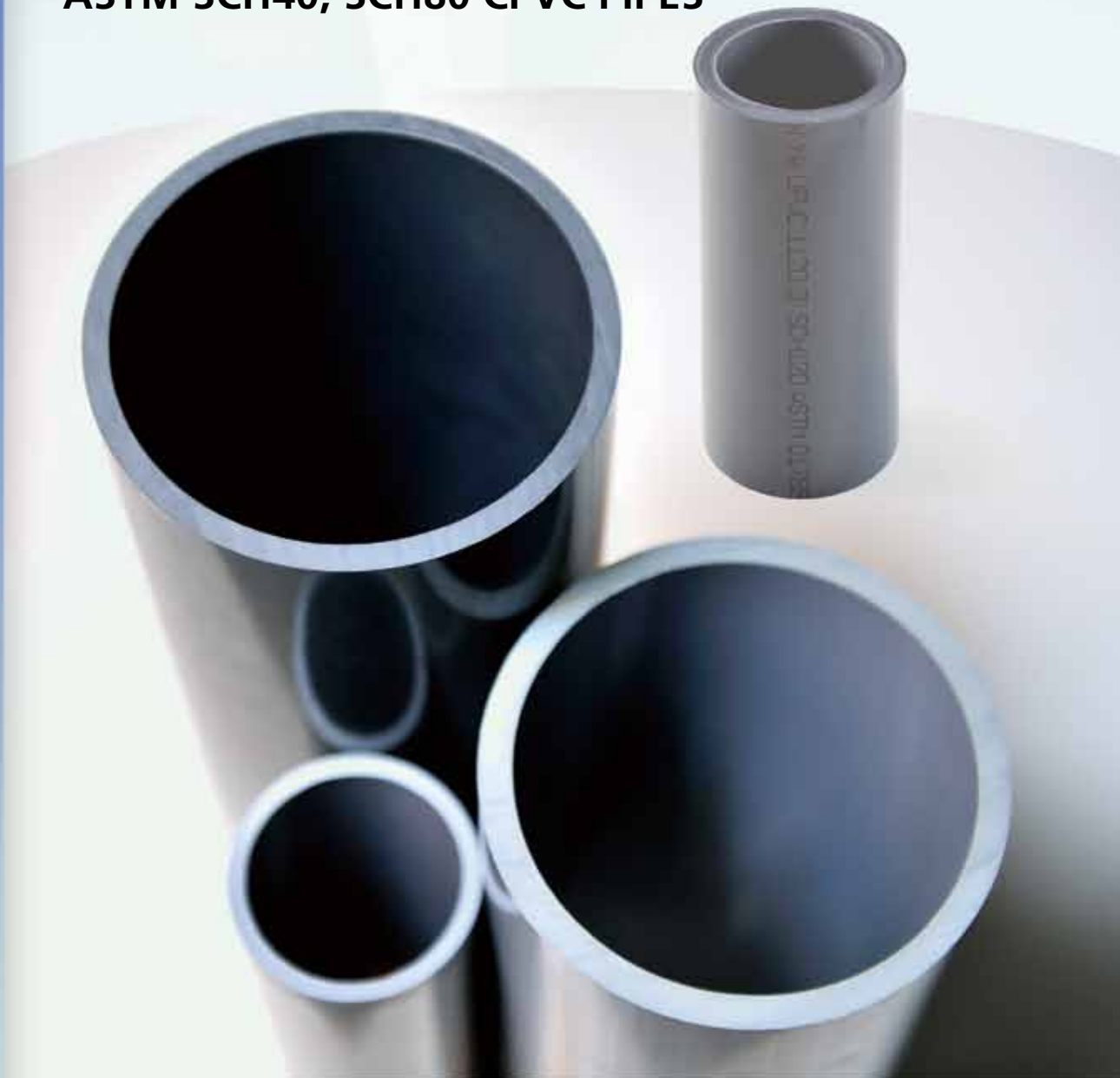


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M** 標準之

**SCH40、SCH80、SCH120 UPVC管及  
SCH40、SCH80 CPVC管**

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**ASTM SCH40, SCH80, SCH120 UPVC PIPES &  
ASTM SCH40, SCH80 CPVC PIPES**



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**ASTM規格UPVC管**

**ASTM UPVC PIPES**

# 1 前言 Preface

南亞塑膠公司自西元1958年創立以來，即致力生產UPVC管、接頭，由於產品品質優異、規格齊全與交期準時，近年來又開發CPVC管、接頭，滿足客戶需求，因而普獲業界極佳評價。南亞UPVC管、接頭提供符合CNS標準、ASTM標準、ISO標準與JIS標準等規格產品，其中UPVC管包括ASTM SCH40、SCH80、SCH120、ISO給水與排水用管、JIS VP（厚管）與VU（薄管）；UPVC射出接頭部份包括符合ISO、JIS等標準，CPVC管包括ASTM SCH40、SCH80、JIS VP（厚管）與VU（薄管）、CNS；CPVC射出接頭部份包括符合JIS、CNS等標準，規格、種類齊全，可滿足客戶需求。南亞擁有國內最具規模與最新的UPVC管、接頭及CPVC管、接頭製造生產設備，構成強大的生產力銷售網路，涵蓋全世界。南亞亦將秉持著服務的熱忱，依照市場的需求，繼續開發品質優良的新產品，維持準時的交期，並提供客戶最佳的服務。

產品 Products	材質符合標準 Materials standard	尺度、成品物性符合標準 Outlines dimensional spec. & physical properties	尺度範圍 Sizes
SCH40, SCH80 UPVC管 SCH40, SCH80 UPVC Pipes	Cell classification 12454-B ASTM D-1784	ASTM D-1785	3/8"-24"
SCH120 UPVC管 SCH120 UPVC Pipes			1/2"-12"
SCH40, SCH80 CPVC管 SCH40, SCH80 CPVC Pipes	Cell classification 23447 ASTM D-1784	ASTM F-441	3/8"-16"

Nan Ya Plastics Corporation was established in 1958 and was at once engaged in the production of UPVC pipes and fittings, CPVC Pipes and fittings. On account of excellent quality, complete specifications and punctual delivery, the products have received good comment and reputation from the plastic circle. Our UPVC pipes and fittings fulfill the set standards specifications by either CNS or ASTM, ISO, JIS; the Pipes and fittings includes ASTM SCH40, SCH80, SCH120 and JIS VP, VU and CNS, also for thickness and thin wall pipes by JIS. At present, we have the largest and newest equipment for producing UPVC pipes and fittings CPVC Pipes and fittings in Taiwan. Our productivity is the strongest and our distributing network covers the whole world. We shall continue to develop new quality products to meet market demand, maintain punctual delivery and offer best services to our customers.



# 2

## ASTM標準SCH40/SCH80/SCH120規格UPVC管物性表

### ◆UPVC硬管SCH40、SCH80、SCH120規格成品物性表

試驗項目	品質標準
長期水壓試驗 Sustained Pressure	符合ASTM D-1785，如下表所示
爆破水壓試驗 Burst Pressure	符合ASTM D-1785，如下表所示
壓扁試驗 Flattening	符合ASTM D-1785，加壓內徑變形至原來40%時，不破裂
膠化試驗 Extrusion Quality	符合ASTM D-1785

### ◆UPVC硬管SCH40、SCH80、SCH120規格之各種耐水壓力值比較表： 單位Unit：PSI(MPa)

標準管徑 Size	SCH40			SCH80			SCH120		
	長期水壓試驗值 Sustained Pressure	爆破水壓試驗值 Burst Pressure	使用操作壓力 Water Pressure Ratings	長期水壓試驗值 Sustained Pressure	爆破水壓試驗值 Burst Pressure	使用操作壓力 Water Pressure Ratings	長期水壓試驗值 Sustained Pressure	爆破水壓試驗值 Burst Pressure	使用操作壓力 Water Pressure Ratings
3/8"	1310(9.03)	1990(13.72)	620(4.27)	1930(13.31)	2940(20.27)	920(6.34)	-	-	-
1/2"	1250(8.62)	1910(13.17)	600(4.14)	1780(12.27)	2720(18.76)	850(5.86)	2130(14.69)	3250(22.41)	1010(6.96)
3/4"	1010(6.96)	1540(10.62)	480(3.31)	1440(9.93)	2200(15.17)	690(4.76)	1620(11.17)	2470(17.03)	770(5.31)
1"	950(6.55)	1440(9.93)	450(3.10)	1320(9.10)	2020(13.93)	630(4.34)	1510(10.41)	2300(15.86)	720(4.96)
1 1/4"	770(5.31)	1180(8.14)	370(2.55)	1090(7.52)	1660(11.45)	520(3.59)	1250(8.62)	1900(13.10)	600(4.14)
1 1/2"	690(4.76)	1060(7.31)	330(2.28)	990(6.83)	1510(10.41)	470(3.24)	1130(7.79)	1720(11.86)	540(3.72)
2"	580(4.00)	890(6.14)	280(1.93)	850(5.86)	1290(8.89)	400(2.76)	990(6.83)	1510(10.41)	470(3.24)
2 1/2"	640(4.41)	970(6.69)	300(2.07)	890(6.14)	1360(9.38)	420(2.90)	980(6.76)	1490(10.27)	470(3.24)
3"	590(4.07)	840(5.79)	260(1.79)	790(5.45)	1200(8.27)	370(2.55)	930(6.41)	1420(9.79)	440(3.03)
4"	470(3.24)	710(4.90)	220(1.52)	680(4.69)	1040(7.17)	320(2.21)	900(6.21)	1380(9.51)	430(2.96)
5"	410(2.83)	620(4.27)	190(1.31)	610(4.21)	930(6.41)	290(2.00)	830(5.72)	1260(8.69)	400(2.76)
6"	370(2.55)	560(3.86)	180(1.24)	590(4.07)	890(6.14)	280(1.93)	780(5.38)	1190(8.20)	370(2.55)
8"	330(2.28)	500(3.45)	160(1.10)	520(3.59)	790(5.45)	250(1.72)	760(5.24)	1160(8.00)	380(2.62)
10"	300(2.07)	450(3.10)	140(0.97)	490(3.38)	750(5.17)	230(1.59)	770(5.31)	1170(8.07)	370(2.55)
12"	280(1.93)	420(2.90)	130(0.90)	480(3.31)	730(5.03)	230(1.59)	710(4.90)	1090(7.52)	340(2.34)
14"	270(1.89)	410(2.87)	130(0.90)	470(3.29)	720(4.97)	220(1.54)	-	-	-
16"	270(1.89)	410(2.87)	130(0.90)	470(3.29)	710(4.90)	220(1.54)	-	-	-
18"	270(1.89)	410(2.87)	130(0.91)	460(3.22)	700(4.90)	220(1.54)	-	-	-
20"	260(1.82)	390(2.73)	120(0.84)	460(3.22)	700(4.90)	220(1.54)	-	-	-
24"	250(1.75)	380(2.66)	120(0.84)	450(3.15)	680(4.76)	210(1.47)	-	-	-

註：(1)以上資料來源：ASTM D-1785

(2)試驗溫度為73°F(23°C)。

(3)SCH80、SCH120之使用操作壓力係指無螺牙之管線。

Remarks：(1) The above data comes from ASTM D-1785.

(2) Testing temperature is 73°F(23°C).

(3) SCH 80, SCH 120 Water Pressure rating means unthread piping.

### ◆UPVC管線/CPVC管線之使用溫度與操作壓力對照表

#### Temperature Pressure De-rating For Thermoplastic Materials

Elevated temperature fluid mediums require a de-rating of thermoplastic pipe maximum internal pressure ratings at 73°F. To determine the maximum internal pressure rating at an elevated temperature, simply multiply the product pressure rating at 73°F by the percentage specified for the desired temperature.

本表係以常溫73°F(23°C)時，UPVC管線/CPVC管線之使用操作壓力為100%，隨著使用溫度升高，其操作壓力殘餘的百分比。

System Operating Temperature °F °C	73 (23)	80 (27)	90 (32)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
管線使用溫度															
UPVC	100%	90%	75%	62%	50%	40%	30%	22%	-0-	-0-	-0-	-0-	-0-	-0-	-0-
CPVC	100%	100%	91%	82%	73%	65%	57%	50%	45%	40%	32%	25%	22%	20%	-0-

註：有螺牙的管線，UPVC部份不得超過110°F(43°C)；CPVC部份不得超過150°F(66°C)。

NOTE: Threaded products should not be used at temperatures above 110°F(43°C) for UPVC, and 150°F(66°C) for CPVC.

## 3

# UPVC管之化學性質

## Chemical Properties of UPVC Pipes

### (二) 化學性質 Chemical Properties

下列為化學抗性術語中所用之代表字。

- ⊙：有良好的抗性，不起作用可使用。  
○：略加注意可使用。  
×：不能使用。

The followings are the marks for the Technical terms of Chemical Resistance.

- ⊙：Fine resistance, no action, usable.  
○：Usable with care.  
×：Unusable.

化學品 CHEMICAL	23°C 60°C	化學品 CHEMICAL	23°C 60°C
乙醛 Acetaldehyde	× ×	鋇鹽 Barium salts	⊙ ⊙
乙醛 40°C水溶液 Acetaldehyde, aq 40%	○ ×	啤酒 Beer	⊙ ⊙
乙醯胺 Acetamide	— —	甜菜糖溶液 Beet sugar liquor	⊙ ⊙
醋酸蒸氣 Acetic acid, vapor	⊙ ⊙	苯甲醛10%溶液 Benzaldehyde, 10%	⊙ ×
冰醋酸 Acetic acid, glacial	⊙ ×	苯甲醛10%以上 Benzaldehyde, above 10%	× ×
20%醋酸 Acetic acid, 20%	⊙ ⊙	苯 Benzene(benzol)	× ×
80%醋酸 Acetic acid, 80%	⊙ ○	苯磺酸10% Benzene sulfonic acid, 10%	⊙ ⊙
醋酸酐 Acetic anhydride	× ×	苯磺酸 Benzene sulfonic acid	× ×
丙酮 Acetone	× ×	苯甲酸(安息香酸) Benzoic acid	⊙ ⊙
乙炔(電石氣) Acetylene	○ ○	黑液(紙廠) Black liquor-paper	⊙ ⊙
己二酸 Adipic acid	⊙ ⊙	漂液12.5%有效氯 Bleach, 12.5% active chlorine	⊙ ⊙
丙烯醇 Alcohol, allyl	⊙ ○	漂液5.5%有效氯 Bleach, 5.5% active chloride	⊙ ⊙
丁基苯甲醇 Alcohol, butyl benzyl	× ×	硼砂 Borax	⊙ ⊙
丁醇(正丁醇) Alcohol, butyl (n-butanol)	⊙ ⊙	硼酸 Boric acid	⊙ ⊙
丁醇(丁醇-2) Alcohol, butyl (2-butanol)	⊙ ×	三氟化硼 Boron trifluoride	⊙ ⊙
乙醇 Alcohol, ethyl	⊙ ⊙	溴酸 Bromic acid	⊙ ⊙
六烷醇 Alcohol, hexyl	⊙ ⊙	液溴 Bromine, liquid	× ×
異丙醇(丙醇-2) Alcohol, isopropyl (2-propanol)	⊙ ⊙	25%溴氣 Bromine, gas, 25%	⊙ ⊙
甲醇 Alcohol, methyl	⊙ ⊙	溴水 Bromine, aq	⊙ ⊙
丙醇 Alcohol, propyl (1-propanol)	⊙ ⊙	丁二烯 Butadiene	⊙ ⊙
氯丙烯 Allyl chloride	× ×	丁烷 Butane	⊙ ⊙
明礬 Alums	⊙ ⊙	丁四醇 Butantetrol(erythritol)	⊙ ×
氣氨 Ammonia, gas	⊙ ⊙	丁二醇 Butanediol	⊙ ⊙
液氨 Ammonia, liquid	× ×	醋酸丁酯 Butyl acetate	× ×
氨水 Ammonia, aq	⊙ ⊙	丁基酚 Butyl phenol	⊙ ×
銨鹽(除氟化物) Ammonium salts, except fluoride	⊙ ⊙	丁烯 Butylene	⊙ ⊙
氟化銨25% Ammonium fluoride, 25%	⊙ ○	丁酸 Butyric acid	⊙ ×
醋酸戊酯 Amylacetate	× ×	鈣鹽水溶液 Calcium Salts aq	⊙ ⊙
苯胺 Aniline	× ×	次氯酸鈣 Calcium hypochlorite	⊙ ⊙
氯化苯胺 Aniline chlorohydrate	× ×	氫氧化鈣 Calcium hydroxide	⊙ ⊙
苯胺鹽酸鹽 Aniline hydrochloride	× ×	蔗糖液 Cane sugar liquors	⊙ ⊙
苯胺染(素)料 Aniline dyes	× ×	二硫化碳 Carbon bisulfide	× ×
蒽醌料 Anthraquinone	⊙ ⊙	二氧化碳 Carbon dioxide	⊙ ⊙
蒽醌磺酸 Anthraquinone sulfonic acid	⊙ ⊙	二氧化碳水溶液 Carbon dioxide, aq	⊙ ⊙
三氯化銻 Antimony trichloride	⊙ ⊙	一氧化碳 Carbon monoxide	⊙ ⊙
王水 Aqua regia	○ ×	四氯化碳 Carbon tetrachloride	⊙ ×
砷酸80% Arsenic acid, 80%	⊙ ⊙	酪蛋白 Casein	⊙ ⊙
苯基磺酸 Aryl-sulfonic acid	⊙ ⊙	蓖麻油 Castor oil	⊙ ⊙

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## UPVC管之化學性質

## Chemical Properties of UPVC Pipes

化學品 CHEMICAL	23°C 60°C	化學品 CHEMICAL	23°C 60°C
苛性鉀 (氫氧化鉀) Caustic potash (potassium hydroxide)	⊙ ⊙	鄰、苯二甲酸二丁酯 Dibutyl phthalate	× ×
苛性鈉 (氫氧化鈉) Caustic Soda (sodium hydroxide)	⊙ ⊙	癸二酸二丁酯 Dibutyl sebacate	○ ×
賽璐蘇 Cellosolve	⊙ ○	二氯化苯 Dichlorobenzene	× ×
醋酸纖維素賽璐蘇溶液 Cellosolve acetate	⊙ —	二氯乙烯 Dichloroethylene	× ×
三氯乙醛水化物 Chloral hydrate	⊙ ⊙	醚類 Ethers	× ×
氯胺 Chloramine	⊙ —	乙酯類 Ethyl esters	× ×
20%氯酸 Chloric acid, 20%	⊙ ⊙	鹵化乙烷類 Ethyl esters	× ×
氯氣 (乾) Chlorine, gas, dry	○ ×	鹵化乙烯類 Ethylene halides	× ×
氯氣 (濕) Chlorine, gas, wet	× ×	乙二醇 Ethylene glycol	⊙ ⊙
液氯 Chlorine, liquid	× ×	環氧乙烷 Ethylene oxide	× ×
氯水 Chlorine water	⊙ ⊙	脂肪酸 Fatty acids	⊙ ⊙
氯化醋酸 Chloroacetic acid	⊙ ⊙	鐵鹽 Ferric salts	⊙ ⊙
氯苯 Chlorobenzene	× ×	氟氣 (乾) Fluorine, dry gas	○ ×
氯化氯甲苯 Chlorobenzyl chloride	× ×	氟氣 (濕) Fluorine, wet gas	○ ×
氯仿 (三氯甲烷) Chloroform	× ×	氟硼酸25% Fluoboric acid, 25%	⊙ ⊙
氯磺酸 Chlorosulfonic acid	⊙ ×	氟矽酸 Fluosilicic acid	⊙ ⊙
鉻酸10% Chromic acid, 10%	⊙ ⊙	甲醛 Formaldehyde	⊙ ⊙
鉻酸30% Chromic acid, 30%	⊙ ○	蟻酸 Formic acid	⊙ ×
鉻酸40% Chromic acid, 40%	⊙ ○	冷媒—F11, F12, F113, F114 Freon-F11, F12, F113, F114	⊙ ⊙
鉻酸50% Chromic acid, 50%	× ×	冷媒—F21, F22 Freon-F21, F22	× ×
檸檬酸 Citric acid, 20%	⊙ ⊙	小果汁及果肉 Fruit juices and pulps	⊙ ⊙
椰子油 Coconut oil	⊙ ⊙	燃料油 Fuel oil	○ ×
煉碳爐氣 Coke oven gas	⊙ ⊙	呋喃醛 Furfural	× ×
銅鹽水溶液 Copper salts, aq	⊙ ⊙	煤氣 Gas, coal, manufactured	× ×
玉米油 Corn oil	⊙ ⊙	天然瓦斯、甲烷 Gas, natural, methane	⊙ ⊙
玉米甜漿 Corn syrup	⊙ ⊙	汽油 Gasolines	○ ○
棉花子油 Cottonseed oil	⊙ ⊙	明膠 (動物膠) Gelatin	⊙ ⊙
甲酚 Cresol	× ×	甘油 (丙三醇) Glycerine (Glycerol)	⊙ ⊙
甲基苯甲酸 Cresylic acid, 50%	⊙ ⊙	二醇類 Glycols	⊙ ⊙
乙醛巴豆 Croton aldehyde	× ×	動物膠 Glue, animal	⊙ ⊙
天然油 (原油) Crude oil	⊙ ⊙	羥化醋酸 HOCH <sub>2</sub> COOH Glycolic acid	⊙ ⊙
環己烷 Cyclohexane	× ×	綠液二紙廠 Green liquor, paper	⊙ ⊙
環己醇 Cyclohexanol	× ×	沒食子酸 Gallic acid	⊙ ⊙
環己酮 Cyclohexanone	× ×	庚烷 Heptane	⊙ ⊙
重氮鹽 Diazo salts	⊙ ⊙	己烷 Hexane	⊙ ○
柴油 Diesel fuels	⊙ ⊙	20%氫溴酸 Hydrobromic acid, 20%	⊙ ⊙
二乙基胺 Diethyl amine	× ×	鹽酸 Hydrochloric acid	⊙ ⊙
鄰、苯二甲酸、二辛酯 Dioctyl phthalate	× ×	10%氫溴酸 Hydrobromic acid, 10%	⊙ ○
磷酸二鈉 Disodium phosphate	⊙ ⊙	60%氫溴酸 Hydrobromic acid, 60%	⊙ ○
乙二胺酸鹽 Diglycolic acid	⊙ ⊙	100%氫溴酸 Hydrobromic acid, 100%	⊙ ○
1,4-二噁烷 dioxane-1,4	× ×	氫氰酸 Hydrocyanic acid	⊙ ⊙
二甲基胺 Dimethylamine	⊙ ⊙	氫 Hydrogen	⊙ ⊙
二甲基甲醯胺 Dimethyl formamide	× ×	50%過氧化氫 Hydrogen peroxide, 50%	⊙ ⊙
清潔劑水溶液 Detergents, aq	⊙ ⊙	90%過氧化氫 Hydrogen peroxide, 90%	⊙ ⊙
		硫化氫水溶液 Hydrogen sulfide, aq	⊙ ⊙

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# UPVC管之化學性質

## Chemical Properties of UPVC Pipes

化學品 CHEMICAL	23°C 60°C	化學品 CHEMICAL	23°C 60°C
硫化氫、乾 Hydrogen sulfide, dry	⊙ ⊙	甲基磺酸 Methyl sulfonic acid	⊙ ⊙
對苯二酚 Hydroquinone	⊙ ⊙	二溴甲烷 Methylene bromide	× ×
脛胺醯酸鹽 Hydroxylamine sulfate	⊙ ⊙	二氯甲烷 Methylene chloride	× ×
聯胺 Hydrazine	× ×	二碘甲烷 Methylene iodine	× ×
二次氯酸 Hypochlorous acid	⊙ ⊙	牛奶 Milk	⊙ ⊙
3%碘—碘化鉀水溶液 Iodine, in KI, 3%,aq	○ ×	礦物油 Mineral oil	⊙ ⊙
碘酒精溶液 Iodine, alc	× ×	混合酸（硫酸及硝酸）Mixed acids (sulfuric & nitric)	○ ×
10%碘水溶液 Iodine, aq, 10%	× ×	混合酸（硫酸及磷酸）Mixed acids (sulfuric & phosphoric)	⊙ ⊙
噴射燃料JP-4和JP-5 Jet fuels, JP-4 and JP-5	⊙ ⊙	糖蜜 Malasses	× ×
煤油 Kerosene	⊙ ⊙	一氯化苯 Monochlorobenzene	× ×
酮類 Ketones	× ×	乙醇—胺 Monoethanolamine	× ×
牛皮紙溶液 Kraft paper liquor	⊙ ⊙	機車油 Motor oil	⊙ ⊙
漆溶劑類 Lacquer thinners	○ ×	石油精 Nophta	⊙ ⊙
乳酸25% Lactic acid, 25%	⊙ ⊙	萘 Naphthalene	× ×
豬油 Lard oil	⊙ ⊙	鎳鹽 Nickel salts	⊙ ⊙
十二酸 Lauric acid	⊙ ⊙	尼古丁 Nicotine	⊙ ⊙
氯化十二烷 Lauryl chloride	⊙ ⊙	尼古丁酸 Nicotinic acid	⊙ ⊙
硫酸化十二烷 Lauryl sulfate	⊙ ⊙	硝酸0至50% Nitric acid, 0 tp 50%	⊙ ○
鉛鹽 Lead salts	⊙ ⊙	硝酸60% Nitric acid,60%	⊙ ○
石灰硫磺 Lime sulfur	⊙ ⊙	硝酸70% Nitric acid,70%	⊙ ○
亞麻仁油酸 Linoleic acid	⊙ ⊙	硝酸80% Nitric acid,80%	○ ○
亞麻仁油 Linseed oil	⊙ ⊙	硝酸90% Nitric acid,90%	○ ×
甜酒 Liqueurs	⊙ ⊙	硝酸100% Nitric acid,100%	× ×
酒 Liqueurs	⊙ ⊙	發煙硝酸 Nitric acid , fuming	× ×
鋰鹽 Lithium salts	⊙ ⊙	硝化苯 Nitrobenzene	× ×
潤滑油 Lubricating oils	⊙ ⊙	硝化甘油 Nitroglycerine	× ×
機油 Machine Oil	⊙ ⊙	亞硝酸 Nitrous acid	⊙ ○
鎂鹽 Magnesium salts	⊙ ⊙	一氧化二氮、氣 Nitrous oxide, gas	⊙ ○
馬來酸 Maleic acid	⊙ ⊙	硝化二醇 Nitroglycol	× ×
蘋果酸 Malic acid	⊙ ⊙	硝化丙烷 Nitropropane	○ ○
硫酸錳 Manganese sulfate	⊙ ⊙	蔬菜油 Oils, vegetable	⊙ ⊙
汞鹽 Mercuric salts	⊙ ⊙	油及脂肪 Oils abd fats	⊙ ⊙
水銀（汞） Mercury	⊙ ⊙	油酸 Oleic acid	⊙ ⊙
異丙二烯丙酮 Mesityl oxide	× ×	發煙硫酸 Oleum	× ×
金屬皂水溶液 Metallic soaps, aq	⊙ ⊙	橄欖油 Olive oil	○ —
甲烷 Methane	⊙ ⊙	草酸 Oxalic acid	⊙ ⊙
醋酸甲酯 Methyl acetate	× ×	氧氣 Oxygen, gas	⊙ ⊙
溴化甲烷 Methyl bromide	× ×	臭氧氣 Ozone, gas	⊙ ○
甲基溶料劑 Methyl cellosolve	× ×	棕櫚酸10% Palmitic acid, 10%	⊙ ⊙
氯化甲烷 Methyl chloride	× ×	棕櫚酸70% Palmitic acid, 70%	⊙ ×
甲基甲仿 Methyl chloroform	× ×	石蠟 Paraffin	⊙ ⊙
甲基環己酮 Methyl cyclohexanone	× ×	戊烷 Pentane	○ ○
甲基丙烯酸甲酯 Methyl methacrylate	⊙ —	40%過氯酸 Peracetic acid, 40%	⊙ ×
水楊酸甲酯 Methyl salicylate	⊙ ⊙	10%過氯酸 Peracetic acid, 10%	⊙ ○
硫酸甲酯 Methyl sulfate	⊙ ○	70%過氯酸 Peracetic acid, 70%	⊙ ×



## 3

# UPVC管之化學性質

## Chemical Properties of UPVC Pipes

化學品 CHEMICAL	23°C 60°C	化學品 CHEMICAL	23°C 60°C
四氯乙烯 Perchloroethylene	○ ○	亞硫酸鹽溶液 Sulfite liquor	◎ ◎
石油、粗品 Petroleum, sour	◎ ◎	硫磺 Sulfur	◎ ◎
酚 Phenol	○ ×	糖溶液 Sugars, aq	◎ ◎
苯肼碳 Phenylcarbinol	× ×	二氧化硫、乾 Sulfur dioxide, aq	◎ ◎
苯肼 Phenylhydrazine	× ×	二氧化硫、濕 Sulfur dioxide, wet	◎ ○
苯肼 HCl Phenylhydrazine HCl	○ ×	三氧化硫、乾 Sulfur dioxide, aq	◎ ◎
光氣液態氣態 Phosgene, liquid, gas	◎ ○	三氧化硫、濕 Sulfur dioxide, wet	◎ ○
液化光氣 Phosgene, liquid	× ×	硫酸至70% Sulfuric acid, up to 70%	◎ ◎
磷酸 Phosphorus, acid	◎ ◎	硫酸70%~90% Sulfuric acid, 70 to 90%	◎ ○
黃磷 Phosphorus, yellow	◎ ○	硫酸90%~100% Sulfuric acid, 90 to 100%	○ ×
紅磷 Phosphorus, red	◎ ◎	亞硫酸 Sulfurous acid	○ ×
五氧化二磷 Phosphorus pentoxide	◎ ○	妥爾油 Tall oil	◎ ◎
三氯化磷 Phosphorus trichloride	× ×	丹寧酸 Tannic acid	◎ ◎
照片化學藥品水溶液 Photographic chemicals, aq	◎ ◎	丹寧酒 Tanning liquors	◎ ◎
鄰-苯二甲酸 Phthalic acid	○ ○	酒石酸 Tartaric acid	◎ ◎
苦味酸 Picric acid	× ×	四氯化乙烷 Tetrachloroethane	○ ○
金屬溶劑 Plating solutions, metal	◎ ○	四乙鉛 Tetraethyl lead	◎ ○
鉀鹽水溶液 Potassium salts, aq	◎ ◎	四氫呋喃 Tetrahydrofuran	× ×
過錳酸鉀25% Potassium permanganate, 25%	○ ○	二氯化硫(SOCl <sub>2</sub> ) Thionyl chloride	× ×
烷磺酸鉀 Potassium alkyl xanthates	◎ ×	線切油 Thread cutting oils	◎ -
丙烷 Propane	◎ ◎	一烯帖醇(香油腦) Terpeneol	○ ○
二氯丙烷 Propylene dichloride	× ×	四氯化鈦 Titanium tetrachloride	○ ×
丙二醇 Propylene glycol	◎ ◎	甲苯 Toluene	× ×
環氧丙烷 Propylene oxide	× ×	磷酸三丁酯 Tributyl phosphate	× ×
吡啶 Pyridine	× ×	檸檬酸三丁酯 Tributyl citrate	◎ -
焦性沒食子酸 Pyrogallic acid	○ ○	磷酸三甲酚酯 Tricresyl phosphate	× ×
嫫榮凝結浴液 Rayon coagulation bath	◎ ◎	三氯化醋酸 Trichloroacetic acid	◎ ◎
海水 Sea water	◎ ◎	三氯乙烯 Trichloroethylene	× ×
水楊酸 Salicylic acid	◎ ◎	三乙醇胺 Triethanolamine	◎ ○
水楊醛 Salicylaldehyde	○ ○	三乙基胺 Triethylamine	◎ ◎
石西酸 Selenic acid	◎ ◎	松節油 Turpentine	◎ ◎
下水道之污物住宅區 Sewage, residential	◎ ◎	尿素 Urea	◎ ◎
矽酸 Silicic acid	◎ ◎	尿 Urine	◎ ◎
矽油 Silicone oil	◎ ×	凡士林 Vaseline	× ×
銀鹽 silver salts	◎ ◎	蔬菜油 Vegetable oils	◎ ◎
肥皂 Soaps	◎ ◎	醋 Vinegar	◎ ◎
鈉鹽、溶液 Sodium salts, aq, except	◎ ◎	醋酸乙烯 Vinyl acetate	× ×
氯化鈉(食鹽) sodium chloride	◎ ◎	蒸餾水 Water, distilled	◎ ◎
氯酸鈉 Sodium chlorate	◎ ○	活水 Water, fresh	◎ ◎
重鉻酸鈉、酸 Sodium dichromate, acid	◎ ◎	地下水 Water, mine	◎ ◎
過硼酸鈉 Sodium perborate	◎ ◎	鹽水 Water, salt	◎ ◎
氯化錫 Stannic chloride	◎ ◎	龍頭水 Water, tap	◎ ◎
二氯化錫 Stannous chloride	◎ ◎	威士忌 Whiskey	◎ ◎
澱粉 Starch	◎ ◎	酒 Wines	◎ ◎
硬脂酸 Stearic acid	◎ ◎	二甲苯 Xylene	× ×
斯多德爾溶劑 Stoddard solvent	× ×	鋅鹽 Zinc salts	◎ ◎

※化學抗性資料僅提供參考用

## 4

# ASTM標準SCH40/SCH80/SCH120 UPVC管規格表

## ASTM SCH40/SCH80/SCH120 UPVC PIPES SPECIFICATION

單位 /Unit : Ginch(m/m)

ASTM D1785標準										
規格	外徑及公差 吋(mm)	SCH 40			SCH 80			SCH 120		
		厚度及公差 吋(mm)	23°C許可 操作壓力 psi (kg/cm <sup>2</sup> )	參考重量 (kg/M)	厚度及公差 吋(mm)	23°C許可 操作壓力 psi (kg/cm <sup>2</sup> )	參考重量 (kg/M)	厚度及公差 吋(mm)	23°C許可 操作壓力 psi (kg/cm <sup>2</sup> )	參考重量 (kg/M)
3/8"	0.675±0.004 (17.14±0.10)	0.091+0.020 (2.31+0.51)	620 (43.66)	0.167	0.126+0.020 (3.20+0.51)	920 (64.79)	0.211	—	—	—
1/2"	0.840±0.004 (21.34±0.10)	0.109+0.020 (2.77+0.51)	600 (42.25)	0.248	0.147+0.020 (3.73+0.51)	850 (59.86)	0.309	0.170+0.020 (4.32+0.51)	1,010 (71.13)	0.343
3/4"	1.050±0.004 (26.67±0.10)	0.113+0.020 (2.87+0.51)	480 (33.80)	0.329	0.154+0.020 (3.91+0.51)	690 (48.59)	0.419	0.170+0.020 (4.32+0.51)	770 (54.23)	0.452
1"	1.315±0.005 (33.40±0.13)	0.133+0.020 (3.38+0.51)	450 (31.69)	0.483	0.179+0.021 (4.55+0.53)	630 (44.37)	0.615	0.200+0.024 (5.08+0.61)	720 (50.70)	0.674
1 1/4"	1.660±0.005 (42.16±0.13)	0.140+0.020 (3.56+0.51)	370 (26.06)	0.653	0.191+0.023 (4.85+0.58)	520 (36.62)	0.850	0.215+0.026 (5.46+0.66)	600 (42.25)	0.941
1 1/2"	1.900±0.006 (48.26±0.15)	0.145+0.020 (3.68+0.51)	330 (23.24)	0.779	0.200+0.024 (5.08+0.61)	470 (33.10)	1.032	0.225+0.027 (5.72+0.68)	540 (38.03)	1.142
2"	2.375±0.006 (60.32±0.15)	0.154+0.020 (3.91+0.51)	280 (19.72)	1.045	0.218+0.026 (5.54+0.66)	400 (28.17)	1.428	0.250+0.030 (6.35+0.76)	470 (33.10)	1.611
2 1/2"	2.875±0.007 (73.02±0.18)	0.203+0.024 (5.16+0.61)	300 (21.13)	1.650	0.276+0.033 (7.01+0.84)	420 (29.58)	2.177	0.300+0.036 (7.62+0.91)	470 (33.10)	2.343
3"	3.500±0.008 (88.90±0.20)	0.216+0.026 (5.49+0.66)	260 (18.31)	2.160	0.300+0.036 (7.62+0.91)	370 (26.06)	2.916	0.350+0.042 (8.89+1.07)	440 (30.99)	3.346
4"	4.500±0.009 (114.30±0.23)	0.237+0.028 (6.02+0.71)	220 (15.49)	3.074	0.337+0.040 (8.56+1.02)	320 (22.54)	4.264	0.437+0.052 (11.10+1.32)	430 (30.28)	5.387
5"	5.563±0.010 (141.30±0.25)	0.258+0.031 (6.55+0.79)	190 (13.38)	4.169	0.375+0.045 (9.52+1.14)	290 (20.42)	5.915	0.500+0.060 (12.70+1.52)	400 (28.17)	7.687
6"	6.625±0.011 (168.28±0.28)	0.280+0.034 (7.11+0.86)	180 (12.68)	5.414	0.432+0.052 (10.97+1.32)	280 (19.72)	8.139	0.562+0.067 (14.27+1.70)	370 (26.06)	10.345
8"	8.625±0.015 (219.08±0.38)	0.322+0.039 (8.18+0.99)	160 (11.27)	8.154	0.500+0.060 (12.70+1.52)	250 (17.61)	12.364	0.718+0.086 (18.24+2.18)	380 (26.76)	17.249
10"	10.750±0.015 (273.5±0.38)	0.365+0.044 (9.27+1.12)	140 (9.86)	11.579	0.593+0.071 (15.06+1.80)	230 (16.20)	18.362	0.843+0.101 (21.41+2.56)	370 (26.06)	25.423
12"	12.750±0.015 (323.85±0.38)	0.406+0.049 (10.31+1.24)	130 (9.15)	15.280	0.687+0.082 (17.45+2.08)	230 (16.20)	25.223	1.000+0.120 (25.40+3.05)	340 (23.94)	35.715
14"	14.000±0.015 (355.60±0.38)	0.437+0.053 (11.10+1.35)	130 (9.15)	18.086	0.750+0.090 (19.05+2.29)	220 (15.49)	30.260	—	—	—
16"	16.000±0.019 (406.40±0.48)	0.500+0.060 (12.70+1.52)	130 (9.15)	23.627	0.843+0.101 (21.41+2.57)	220 (15.49)	38.902	—	—	—
18"	18.000±0.019 (457.20±0.48)	0.562+0.067 (14.27+1.70)	130 (9.15)	29.861	0.937+0.112 (23.80+2.84)	220 (15.49)	48.670	—	—	—
20"	20.000±0.023 (508.00±0.58)	0.593+0.071 (15.06+1.80)	120 (8.45)	35.082	1.031+0.124 (26.19+3.15)	220 (15.49)	59.566	—	—	—
24"	24.000±0.031 (609.60±0.79)	0.687+0.082 (17.45+2.08)	120 (8.45)	48.826	1.218+0.146 (30.94+3.71)	210 (14.79)	84.506	—	—	—

註：

1. PVC管材質符合ASTM D1784標準PVC 1120 = Cell Classification 12454。
2. PVC管尺度、成品物性符合ASTM D1785標準。
3. 用途說明：
  - (1)在溫度60°C以下之耐腐蝕工程管線。可耐大多數酸、鹼、鹽、脂肪族溶液、氧化劑和鹵素等，運用於電子廠化工業、電鍍、飲用水、廢水處理等涉及腐蝕性流體輸送的工業應用。
  - (2)SCH120壓力範圍340psi(23.94kgf/cm<sup>2</sup>)~1,010psi(71.13kgf/cm<sup>2</sup>)，管壁提供了多種鑽孔，攻絲等加工製造足夠的壁厚。
1. The material used in the manufacture of the pipe shall be domestically produced rigid polyvinyl chloride (PVC) compound, with a Cell Classification of 12454 (PVC 1120) as defined in ASTM D1784.
2. PVC pipes shall be manufactured in accordance to the requirements of ASTM D1785 for physical dimensions and tolerances.
3. Application:
  - (1) Pressure corrosion resistant pipes for use at temperatures up to and including 60°C (140° F). Typical applications include: chemical processing, plating, high purity applications, potable water systems, water and wastewater treatment, and other industrial applications.
  - (2) Schedule 120 pressure rating 340 psi (23.94kgf/cm<sup>2</sup>) to 1,010 psi (71.13kgf/cm<sup>2</sup>), heavy wall dimensions provide sufficient wall thickness suitable for many drilling, tapping, and other custom machining/fabrication operations.

# 5

## 南亞硬質UPVC膠合劑 NAN YA Vinyl Adhesive

南亞牌硬質UPVC膠合劑是硬管、接頭等硬質UPVC專用的粘著劑，因具有優異的粘著強度，可適用於各種氣溫下之UPVC管線施工，其產品品質、物性，皆可符合CNS 6224標準之水準。粘著施工後，24小時內即可通水，但氣溫在5°C以下之低溫施工時，膠合施工後，需經48小時後再通水。

\* 禁止食用

NAN YA Vinyl Adhesive was reserved for the uses of rigid UPVC products, as UPVC pipe, PVC fitting etc. It suits the installation of UPVC pipe lines during different temperatures, by the way the product's qualities and physical properties are all apply to standard CNS 6224.

When the UPVC pipe lines were installed by NAN YA Vinyl Adhesive, the UPVC pipe lines will start to transfer water after wait for 24 hours. But if the temperature is under 5°C, the UPVC pipe lines need to keep 48 hours waiting after installed, then start to transfer water.

\* No Eating

### ■ 包裝類別/ PACKING CATEGORY :

180KG, 15KG, 1KG, 500G

### VINYL ADHESIVE for RIGID VINYL PRODUCTS

#### ◆ CHARACTERISTICS :

- Colorless and transparent
- Excellent adhesion for rigid PVC
- PVC serves as main material. After the applied adhesive is coagulated, it still maintains its characteristics
- May cause adhesive applied surface a swelling state to achieve adhesion effect
- Easy coating
- Quantity for coating : 0.02g/cm<sup>2</sup>

#### ◆ APPLICATIONS :

- On PVC pipes
- On PVC vent ducts
- On PVC pipes and their accessories
- On PVC plates
- Rigid or semi-rigid PVC products

MATERIAL AND PHYSICAL TEST CORRESPONDS  
TO ASTM STANDARD



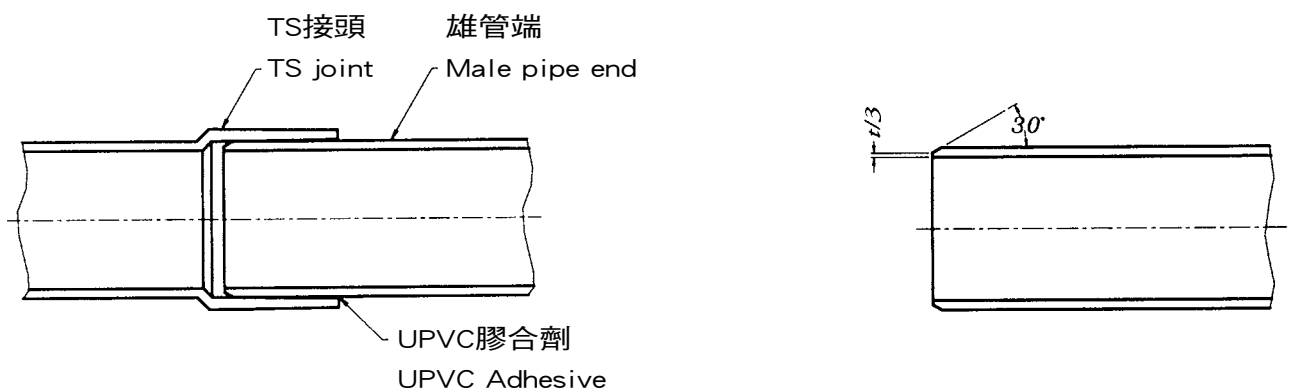
# 6

## UPVC管之施工法 Installation of UPVC Pipes

### TS冷接法 TS unheating connection method :

1. 雄管端削外角：以銼刀(粗目)削角為最常用的方法，但在大口徑之情況，因銼削速度較慢，工作效率低，故大口徑最理想之方法，可先以噴燈將管端作局部之加熱，使之呈半軟化狀態，再以小刀沿圓周逐次切削，至全圓周切削完妥為止，而斜面稍有不平之處，再以銼刀修整。另一方式係採用刀輪削角，但此方式乃廠內專業性之作業，工地較少採用。切削之角度須沿 $30\sim 45^\circ$ 角，其預留之尖端厚度為 $1/3t$ （如下圖所示）。
2. 每支TS單放口管出廠前，雄管端均有畫上一條黑色參考線，供施工時承插之參考，此黑線並非承插長度，承插時應儘量往內插到緊為原則。
3. 管材在工地有裁切過，雄管端之承插長度參考線應事先以油性色筆作記號。
4. 接頭承口內壁及管端外壁插入範圍，先以酒精或乾布擦拭乾淨，然後雌雄管內外側插入範圍各塗上適量的硬質膠合劑，若因氣溫高，膠合劑乾的速度快，應即補充膠合劑，待部份溶劑揮發而膠著性增強時，則一口氣用力插入，插到緊為原則，小管子可旋轉 $90^\circ$ （大口徑管不必旋緊），使膠合劑之分佈更為均勻。中、大口徑管子插入後，管端可墊以厚木板或木角材，用木槌擊入或以鐵棒撬入，使插接更為密著。
5. 管線完成TS冷接法施工後，膠合強固期間不能移動，待膠合劑完全乾涸後即可通水。

1. On outside of pipe use a beveling tool to produce a  $t/3$ ,  $30^\circ$  chamfer.
2. Each UPVC pipes mark line for the depth of the socket onto the pipe with reference.
3. Clean, wipe with a clean and dry rag.
4. Using applicator aggressively apply a full even layer of UPVC adhesive equal to the depth of the socket onto the pipe. Then aggressively apply a medium layer of UPVC adhesive into the fitting socket. Immediately while UPVC adhesive is still wet or tacky, assemble the piper into the fitting. Do not assemble if UPVC adhesive coatings are hardened.
5. Newly assembled joints must not be handled during set time and handled very carefully during cure time.



## ASTM規格CPVC管

## ASTM CPVC PIPES

# 1

## 前言 Preface

- CPVC管具有優異的耐酸、耐鹼、耐腐蝕性、強度高，流體阻力小，不影響水質，質輕，搬運施工簡便，更具有耐熱特性，可廣泛應用於家庭熱水、溫泉水、化工熱流體輸送、工業熱廢水排放及半導體電子工廠的熱水與熱溫化學藥液輸送等工程的配管與消防配管。
- 本公司生產的CPVC管與接頭，品質優良，其成品各種規格、物理與化學特性均符合CNS 14664 CPVC管、ASTM F441 CPVC管SCH40、SCH80的標準要求，CPVC管材質符合ASTM D-1784的23447之標準要求，深獲業界一致的好評與愛用。
- 目前本公司擁有全國規模最大，最新式的CPVC管與CPVC接頭的生產設備，其產能高居全國之冠，銷售市場亦遍佈全球，在國內亦可利用密集的經銷網來作最佳的售後服務。
- Featuring excellent acid, alkali and corrosion resistance, high rigidity, minimum fluid resistance and no influence on water quality, the heat-resistant CPVC is a lightweight material for easy handling and installation. It meets a wide range of applications that include household hot water, hot spring water, chemical engineering works, heated fluid supply in semiconductor Fab. or chemical factories; industrial heated waste water drainage as well as fire fighting works.
- As best-selling products, the CPVC pipes and fittings produced by NAN YA feature a full range of both physical and chemical properties that meet CNS 14664, ASTM F441 for SCH40, SCH80 standards. CPVC material meet cell classification 23447 of ASTM D-1784.
- Currently, we have the largest and finest production equipment for CPVC pipes and fittings in Taiwan. The overall output, which is second to none in the local industry, is sold worldwide. At the same time, the intensive local marketing network is delivering satisfactory service as well.



# 2

## CPVC管特性 Characteristics of HT-CPVC Pipe and Fitting

1. 耐熱性高：  
可應用於93°C以下的熱水，化工熱溫流體的輸送。
2. 耐腐蝕性，耐化學藥品性優良：  
耐酸、耐鹼、耐腐蝕性優異，熱水熱溫化學藥液配管均很適合。
3. 具有優異的保溫性：  
熱傳導率很小，約為鋼管的1/360，對於管內流體有保溫作用。
4. 不附著水垢：  
管壁光滑，不會附著水垢，與同口徑之金屬管比較，其流量較大。
5. 不影響水質：  
長期使用，不會影響水質，可符合溶解試驗的各項要求。
6. 富有電氣絕緣性：  
電氣絕緣性良好，可應用於高壓電耐熱電力用管。
7. 施工簡便：  
與一般之PVC管相同，施工簡便，施工費用低廉。

1. Optimal heat resistance:  
This makes the product apt for the supply of heated water or heated chemical fluids, which under 93°C.
2. Good pharmacopoeia and corrosion resistance:  
The optimal resistance to acids, alkalis and corrosion makes the product apt for piping works for hot water and heated chemical fluids.
3. Optimal heat insulation:  
At minimum heat transmittance: The minimum heat transmittance that is rated at approximately 1/360 that of steel pipes, delivers heat insulation to the fluid inside the pipe.
4. No incrustation:  
Thanks to the glossy wall that invites n incrustation, the pipe delivers larger flow when compared with metal pipes of identical diameters.
5. No impacts on water quality:  
When used for long period of time, the pipe does not produce impacts on the water quality and it meets all solution requirements.
6. Good electrical insulation:  
The god electrical insulation makes the pipe apt for high-voltage and heat-resistant applications.
7. Easy installation:  
As other UPVC pipes, this pipe is installable by using a simple method at minimum cost.

### ◆PVC管線/CPVC管線之使用溫度與操作壓力對照表

#### Temperature Pressure De-rating For Thermoplastic Materials

Elevated temperature fluid mediums require a de-rating of thermoplastic pipe maximum internal pressure ratings at 73°F. To determine the maximum internal pressure rating at an elevated temperature, simply multiply the product pressure rating at 73°F by the percentage specified for the desired temperature.

本表係以常溫73°F(23°C)時，UPVC管線/CPVC管線之使用操作壓力為100%，隨著使用溫度升高，其操作壓力殘餘的百分比。

System Operating Temperature °F °C 管線使用溫度	73 (23)	80 (27)	90 (32)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
UPVC	100%	90%	75%	62%	50%	40%	30%	22%	-0-	-0-	-0-	-0-	-0-	-0-	-0-
CPVC	100%	100%	91%	82%	73%	65%	57%	50%	45%	40%	32%	25%	22%	20%	-0-

註：有螺牙的管線，UPVC部份不得超過110°F(43°C)；CPVC部份不得超過150°F(66°C)。

NOTE: Threaded products should not be used at temperatures above 110°F(43°C) for UPVC, and 150°F(66°C) for CPVC.



## 3

# CPVC管化學性質表

## CPVC Chemical Properties

CPVC管對大部分的酸、鹼、鹽具有優良抗化學藥品性，但是如用於有機溶劑時，物性將顯著降低。

CPVC pipes shows an excellent chemical resistance to most acids, alkaline and salts. But when it is used for organic solvents, it is remarkably swelled and physical properties fall down.

化學品/Chemicals	濃度/Concentration	20°C/68°F	60°C/140°F	80°C/176°F
鹽酸/Hydrochloric acid	20%	Excellent	Excellent	Good
鹽酸/Hydrochloric acid	35%	Excellent	Excellent	Good
硝酸/Nitric acid	40%	Excellent	Fair	Fair
硝酸/Nitric acid	60%	Good	Fair	Not good
硫酸/Sulfuric acid	30%	Excellent	Good	Good
硫酸/Sulfuric acid	50%	Excellent	Good	Not Good
亞硫酸/Sulphurous acid	100%	Good	Not good	Not good
醋酸/Acetic acid	60%	Excellent	Fair	Fair
醋酸/Acetic acid	95%	Good	Not good	Not good
碳酸/Carbonic acid	100%	Excellent	Fair	Fair
苛性鈉(氫氧化鈉)/Caustic soda	40%	Excellent	Excellent	Good
苛性鈉(氫氧化鈉)/Caustic soda	60%	Excellent	Excellent	Good
氯化鈉(食鹽)/Sodium chloride	Saturate/高飽合度	Excellent	Excellent	Good
碳酸鈉/Sodium carbonate	Saturate/高飽合度	Excellent	Excellent	Good
硫酸鈉/Sodium sulfate	Saturate/高飽合度	Excellent	Excellent	Good
過氧化氫/Hydrogen peroxide	Less than 30%/ 30%以下	Excellent	Good	Not good
碳酸銨/Ammonium carbonate	Saturate/高飽合度	Excellent	Excellent	Good
甲醇/Methanol	100%	Excellent	Fair	Unavailable
乙醇/Ethanol	100%	Excellent	Good	Unavailable
異丙醇/Isopropanol	100%	Excellent	Good	Good
丁醇/Butanol	100%	Excellent	Good	Fair
甘油(丙三醇)/Glycerine	100%	Excellent	Excellent	Excellent
丙酮/Acetone	100%	Unavailable	Unavailable	Unavailable
乙酮/Methyl ethyl ketone	100%	Unavailable	Unavailable	Unavailable
甲苯/Toluene	100%	Unavailable	Unavailable	Unavailable

# 4

## CPVC管用途 Applications of CPVC Pipe and Fitting

1. 家庭、餐廳、大飯店等建築物的熱水用管。
  2. 一般工廠的熱水用管。
  3. 化學工廠的熱溫化學藥液輸送用管與熱溫廢水排放用管。
  4. 溫泉配管。
  5. 消防用管。
  6. 空調系統，熱水循環配管。
  7. 高壓電纜，耐熱性電力用管。
  8. 半導體電子工廠的熱水與熱溫化學藥品輸送配管。
  9. 電鍍工廠的熱溫電鍍藥液配管。
  10. 埋地式高壓電力電纜用套管。
  11. 其他各種熱溫液體輸送配管。
1. Hot water piping for households, restaurants and hotels.
  2. Hot water piping works for manufacturing plants.
  3. Delivery pipe for heated chemical fluids and wastewater in chemical plants.
  4. Hot spring piping
  5. Fire fighting pipes
  6. A/C systems, hot water circulation piping system
  7. High-voltage cable and heat-resistant power pipes
  8. Piping for transfer heated water or heated chemical fluids in semi-conductor Fab.
  9. Piping for heated chemical fluids in electroplating plant.
  10. Buried piping for high voltage power cable.
  11. Other types of heated fluid delivery pipes.



熱水用管 Hot water piping



石化工廠 Petrochemical plant



溫泉配管 Hot Spring piping



半導體廠 Semi-conductor Fab.

### 1. CPVC管ASTM標準SCH40規格：(CNS 14664)

#### ASTM Specification for SCH40 CPVC Pipes：

單位：吋(mm) Unit：Incs(mm)

標稱管徑 Nominal Pipe Size	外徑及許可差 <sup>(1)</sup> Outside Diameter and Tol- erance <sup>(1)</sup>	SCH 40厚度 Wall Thickness		質量(kg/m) <sup>(2)</sup> (參考) Approx. Weight (Kg/m) <sup>(2)</sup>
		最小 Minimum	許可差 Tolerance	
3/8"	0.675 ± 0.004 (17.14 ± 0.10)	0.091 (2.31)	+0.020 (+0.51)	0.179
1/2"	0.840 ± 0.004 (21.34 ± 0.10)	0.109 (2.77)	+0.020 (+0.51)	0.265
3/4"	1.050 ± 0.004 (26.67 ± 0.10)	0.113 (2.87)	+0.020 (+0.51)	0.351
1"	1.315 ± 0.005 (33.40 ± 0.13)	0.133 (3.38)	+0.020 (+0.51)	0.517
1 1/4"	1.660 ± 0.005 (42.16 ± 0.13)	0.140 (3.56)	+0.020 (+0.51)	0.699
1 1/2"	1.900 ± 0.006 (48.26 ± 0.15)	0.145 (3.68)	+0.020 (+0.51)	0.833
2"	2.375 ± 0.006 (60.32 ± 0.15)	0.154 (3.91+)	+0.020 (+0.51)	1.117
2 1/2"	2.875 ± 0.007 (73.02 ± 0.18)	0.203 (5.16)	+0.024 (+0.61)	1.763
3"	3.500 ± 0.008 (88.90 ± 0.20)	0.216 (5.49)	+0.026 (+0.66)	2.309
4"	4.500 ± 0.009 (114.30 ± 0.23)	0.237 (6.02)	+0.028 (+0.71)	3.285
5"	5.563 ± 0.010 (141.30 ± 0.25)	0.258 (6.55)	+0.031 (+0.79)	4.456
6"	6.625 ± 0.011 (168.28 ± 0.28)	0.280 (7.11)	+0.034 (+0.86)	5.787
8"	8.625 ± 0.015 (219.08 ± 0.38)	0.322 (8.18)	+0.039 (+0.99)	8.716
10"	10.750 ± 0.015 (273.5 ± 0.38)	0.365 (9.27)	+0.044 (+1.12)	12.377
12"	12.750 ± 0.015 (323.85 ± 0.38)	0.406 (10.31)	+0.049 (+1.24)	16.332
14"	14.000 ± 0.015 (355.60 ± 0.38)	0.437 (11.10)	+0.053 (+1.35)	19.333
16"	16.000 ± 0.019 (406.40 ± 0.48)	0.500 (12.70)	+0.060 (+1.52)	25.256

註/ Note：

1. 外徑係指任意垂直兩方向之外徑算術平均值。
  2. 質量之計算係以最小厚度加厚度許可差之1/2為計算厚度，並以比重為1.52而計算者。
  3. 材質符合ASTM D-1784 23447標準。
  4. 尺度、成品 符合ASTM F-441標準。
1. Outer diameter shall refer to the arithmetic mean value of any 2 given O.D. at the right angle to each other.
  2. Approximate weight shall be estimated by adding the minimum thickness to 1/2 of the allowable thickness tolerance at the specific gravity of 1.52.
  3. Material meet the cell classification 23447 of ASTM D-1784.
  4. The outlines dimensional specifications and physical properties meet the ASTM F-441.

### 2. CPVC管ASTM標準SCH80規格：(CNS 14664)

#### ASTM Specification for SCH80 CPVC Pipes：

單位：吋(mm) Unit：Incs(mm)

標稱管徑 Nominal Pipe Size	外徑及許可差 <sup>(1)</sup> Outside Diameter and Toerance <sup>(1)</sup>	SCH80厚度 Wall Thickness		質量(kg/m) <sup>(2)</sup> (參考) Approx. Weight (Kg/m) <sup>(2)</sup>
		最小 Minimum	許可差 Tolerance	
3/8"	0.675±0.004 (17.14±0.10)	0.126 (3.20)	+0.020 (+0.51)	0.226
1/2"	0.840±0.004 (21.34±0.10)	0.147 (3.73)	+0.020 (+0.51)	0.330
3/4"	1.050±0.004 (26.67±0.10)	0.154 (3.91)	+0.020 (+0.51)	0.448
1"	1.315±0.005 (33.40±0.13)	0.179 (4.55)	+0.021 (+0.53)	0.657
1 1/4"	1.660±0.005 (42.16±0.13)	0.191 (4.85)	+0.023 (+0.58)	0.909
1 1/2"	1.900±0.006 (48.26±0.15)	0.200 (5.08)	+0.024 (+0.61)	1.103
2"	2.375±0.006 (60.32±0.15)	0.218 (5.54)	+0.026 (+0.66)	1.526
2 1/2"	2.875±0.007 (73.02±0.18)	0.276 (7.01)	+0.033 (+0.84)	2.327
3"	3.500±0.008 (88.90±0.20)	0.300 (7.62)	+0.036 (+0.91)	3.117
4"	4.500±0.009 (114.30±0.23)	0.337 (8.56)	+0.040 (+1.02)	4.558
5"	5.563±0.010 (141.30±0.25)	0.375 (9.52)	+0.045 (+1.14)	6.322
6"	6.625±0.011 (168.28±0.28)	0.432 (10.97)	+0.052 (+1.32)	8.700
8"	8.625±0.015 (219.08±0.38)	0.500 (12.70)	+0.060 (+1.52)	13.216
10"	10.750±0.015 (273.5±0.38)	0.593 (15.06)	+0.071 (+1.80)	19.628
12"	12.750±0.015 (323.85±0.38)	0.687 (17.45)	+0.082 (+2.08)	26.961
14"	14.000±0.015 (355.60±0.38)	0.750 (19.05)	+0.090 (+2.29)	32.345
16"	16.000±0.019 (406.40±0.48)	0.843 (21.41)	+0.101 (+2.57)	41.584

註/ Note：

1. 外徑係指任意垂直兩方向之外徑算術平均值。
  2. 質量之計算係以最小厚度加厚度許可差之1/2為計算厚度，並以此重為1.52而計算者。
  3. 材質符合ASTM D-1784 23447標準。
  4. 尺度、成品性符合ASTM F-441標準。
1. Outer diameter shall refer to the arithmetic mean value of any 2 given O.D. at the right angle to each other.
  2. Approximate weight shall be estimated by adding the minimum thickness to 1/2 of the allowable thickness tolerance at the specific gravity of 1.52.
  3. Material meet the cell classification 23447 of ASTM D-1784.
  4. The outlines dimensional specifications and physical properties meet the ASTM F-441.

## 6

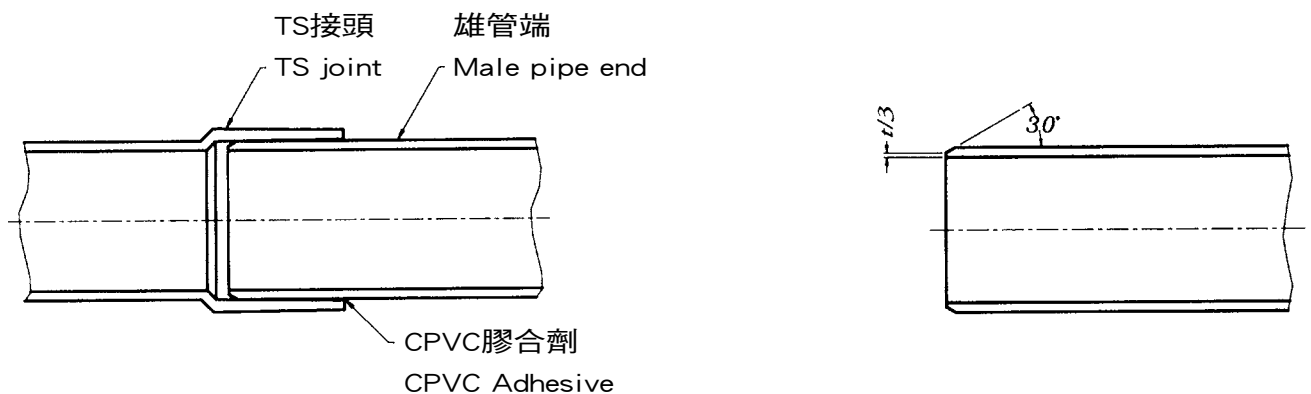
## CPVC管的接合施工法(冷接法)

## Installation of CPVC pipes (Unheating connection)

## TS冷接法 TS unheating connection method :

1. 雄管端削外角：以銼刀(粗目)削角為最常用的方法，但在大口徑之情況，因銼削速度較慢，工作效率低，故大口徑最理想之方法，可先以噴燈將管端作局部之加熱，使之呈半軟化狀態，再以小刀沿圓周逐次切削，至全圓周切削完妥為止，而斜面稍有不平之處，再以銼刀修整。另一方式係採用刀輪削角，但此方式乃廠內專業性之作業，工地較少採用。切削之角度須沿 $30\sim 45^\circ$ 角，其預留之尖端厚度為 $1/3t$ （如下圖所示）。
2. 每支TS單放口管出廠前，雄管端均有畫上一條黑色參考線，供施工時承插之參考，此黑線並非承插長度，承插時應盡量往內插到緊為原則。
3. 管材在工地有裁切過，雄管端之承插長度參考線應事先以油性色筆作記號。
4. 接頭承口內壁及管端外壁插入範圍，先以酒精或乾布擦拭乾淨，然後雌雄管內外側插入範圍各塗上適量的硬質膠合劑，若因氣溫高，膠合劑乾的速度快，應即補充膠合劑，待部份溶劑揮發而膠著性增強時，則一口氣用力插入，插到緊為原則，小管子可旋轉 $90^\circ$ （大口徑管不必旋緊），使膠合劑之分佈更為均勻。中、大口徑管子插入後，管端可墊以厚木板或木角材，用木槌擊入或以鐵棒撬入，使插接更為密著。
5. 管線完成TS冷接法施工後，膠合強固期間不能移動，待膠合劑完全乾涸後即可通水。

1. On outside of pipe use a beveling tool to produce a  $t/3$ ,  $30^\circ$  chamfer.
2. Each CPVC pipes mark line for the depth of the socket onto the pipe with reference.
3. Clean, wipe with a clean and dry rag.
4. Using applicator aggressively apply a full even layer of CPVC adhesive equal to the depth of the socket onto the pipe. Then aggressively apply a medium layer of CPVC adhesive into the fitting socket. Immediately while CPVC adhesive is still wet or tacky, assemble the piper into the fitting. Do not assemble if CPVC adhesive coatings are hardened.
5. Newly assembled joints must not be handled during set time and handled very carefully during cure time.



## 7

## CPVC管施工應注意事項

## Instructions for installation of CPVC pipes

1. CPVC管之耐熱使用範圍：CPVC管一般使用於200°F (93°C)以下之熱溫流體，其使用溫度與使用壓力之關係，請參照P34。
  2. 混凝土之埋設：CPVC管應儘量避免埋設於混凝土之內，如需埋設時須留意伸縮問題，且打混凝土前，管線須試10kgf/cm<sup>2</sup>的靜水壓，並維持1小時，無破裂或漏水時始可打混凝土。
  3. 膠合劑的選用：CPVC管線的接合須採用耐熱性CPVC膠合劑，不可採用一般性之硬質UPVC膠合劑。
  4. 現場熱加工之防止：CPVC管或CPVC接頭，禁止在工地作熱加工或以焊條焊接。
  5. 結凍之防止：CPVC管與一般UPVC管相同，在寒帶地區之露出配管，須做凍結防止措施，其保溫材應採用耐熱性材質。
  6. 紫外線的防止：陽光直接照射，表面會加速褪色，故露出配管時，管線需以保溫材保護或表面加以被覆。
  7. CPVC管之褪色問題：CPVC管長期使用於80~90°C之高溫下，表面雖會變白，但是對品質上不會有異常。
  8. CPVC管的支撐：CPVC管的支撐距離，如下表所示供參考。
1. Range of heat resistance of CPVC pipe: the CPVC pipe is usually used for heated fluids of up to 200°F (93°C). The relationship between temperature and the applicable pressure is given in page 34.
  2. Embedding in RC: Embedding of CPVC pipes in RC shall be avoided. When necessary, be sure to leave a proper expansion margin. Before grouting RC, a 1-hour static hydraulic test of 10 kgf/cm<sup>2</sup> shall be conducted and the test shall show no fracture of leakage.
  3. Selection of adhesives: Adhesion of the CPVC pipe shall be carried out with a heat-resistant type for CPVC and no ordinary vinyl adhesive shall be used.
  4. Prevention of site heating: No CPVC or UPVC fittings shall be heated or welded with a rod in the work site.
  5. Prevention of freezing: Just like an ordinary UPVC pipe, all adapters used in cold areas shall be provided with freezing measures and the insulation material shall be heat-resistant.
  6. Prevention of ultraviolet rays: Direct sunshine on the surface of the pipe would make the pipe decolor. The protruding adapter shall be coated with insulation materials.
  7. Decoloring CPVC: When used in environment of 80~90°C for long periods of time, the surface of the pipe may turn whitish, though the quality remains the same.
  8. Support of CPVC pipes: CPVC pipes shall be properly supported at the following pitch:

單位：m/ Unit : m

標稱管徑 Nominal diameter	縱向支撐距離 Longitudinal pitch	橫向支撐距離 Horizontal pitch
35m/m(11/4")以下/and under	1.0	0.6
40m/m(11/2")-65m/m(21/2")	1.5	1.0
80m/m(3")-150m/m(6")	2.0	1.5
200m/m(8")以上/and up	2.5	2.0

# 7

## CPVC管施工應注意事項

### Instructions for installation of CPVC pipes

9. CPVC管的搬運卸貨：CPVC管於搬運中或施工中應防止掉落，卸貨時亦禁止用拋落之不當方法。

9. Handling and unloading of CPVC pipe: When handling or installing CPVC pipes, keep them from falling. When unloading them, do not drop them.

10. CPVC管管線之伸縮問題：

10. Expansion of CPVC pipes:

1. CPVC管線之解決伸縮問題，請儘量採用圈狀伸縮接頭，或具有耐熱橡膠環的伸縮接頭。

(1) As solution to the issue of expansion of CPVC pipes, use tubular adapters or adapters having a heat-resistance rubber ring.

2. CPVC管橫向直向配管，每9m長需裝配1PC伸縮接頭，如不採用伸縮接頭，則每7m以內採用90°彎頭作平面狀配管，以縮短直線配管長度，並由彎頭來吸收熱脹冷縮所產生之內應力，其考慮伸縮問題的橫向配管施工，請參照下圖。CPVC管線膨脹係數為 $7 \times 10^{-5}/^{\circ}\text{C}$ ，伸縮量範例：

(2) One expansion adapter shall be provided to the CPVC pipe in both horizontal and vertical direction at every 9 meters. If no expansion adapter is used, a flat bend of  $90^{\circ}$  shall be provided at every than 7 meters. The purpose of this adapter is to reduce the stretch of the linear piping and the bend would absorb the internal stress created by the expansion. For transverse piping works, the issue of expansion shall be dealt in the following manner.

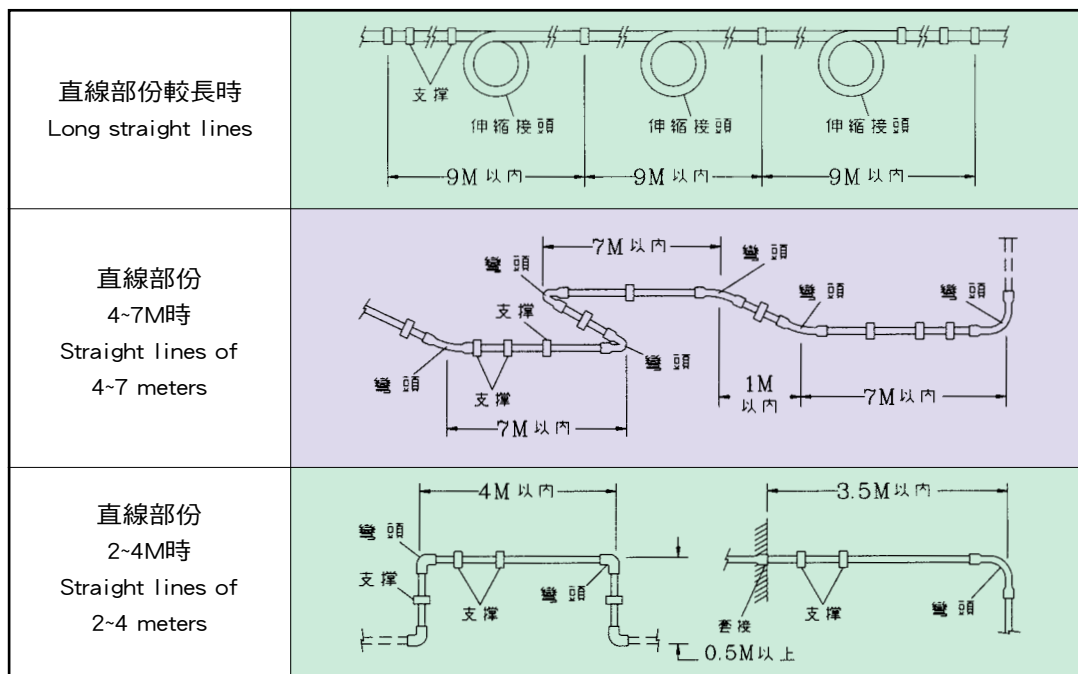
水溫溫差 $^{\circ}\text{C}$	伸縮量/HT-CPVC管直線距離
20 $^{\circ}\text{C}$	1.4cm/10M
40 $^{\circ}\text{C}$	2.8cm/10M

11. The tops of CPVC pipe line, which has to instal automatic discharge valve.

11. CPVC管線最高點，均應加裝自動排氣閥。

12. CPVC adhesive can not touch with water.

12. CPVC膠合劑，不可參混水份。



## 8

## 南亞耐熱性CPVC膠合劑 NAN YA CPVC Adhesive

南亞耐熱性CPVC膠合劑具有耐熱的特性，其接著強度良好，猶如鋼鐵焊接一樣的作用，且塗佈接合施工迅速、簡便，適用於CPVC管或CPVC接頭的接合施工。

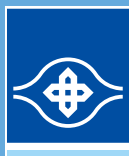
- 禁止食用。
- 包裝類別：1KG、100g

Nan Ya CPVC Adhesive has excellence heat-resistance, and perform strongly strength in connected CPVC pipe and CPVC fitting. Also easy and fast for installation.

- No Eating.
- Packing Category : 1KG、100g







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