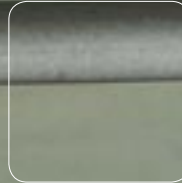
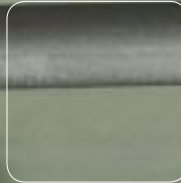
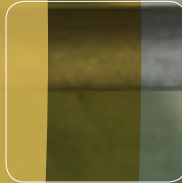




# ORRFIRE ALLGAL ELECTRO-GALVANISED SPRINKLER PIPE TO AS4118

## PRODUCT CATALOGUE



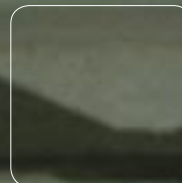
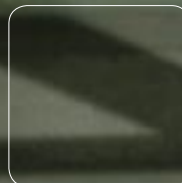
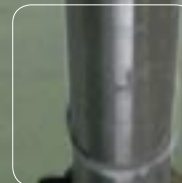
Smooth  
Electro-Galvanised finish

Fire industry  
approved to AS4118

Available in extra light, light  
and medium wall thickness

Cost effective surface  
protection ALLGAL®

Weldable and paintable



Giving Steel A Real Edge.



Orrfire Allgal Sprinkler Pipe is designed to AS4118 as inline electro-galvanised pipe accredited for use in the fire sprinkler industry and other associated industries. Orrfire Allgal is Australian made and manufactured from pre-electro-galvanised steel strip using Orrcon state of the art electro-galvanising technology. Whilst Orrfire Allgal is internally coated, it is designed for use in “closed systems” only, such as fire sprinkler assemblies.

Orrfire Allgal Sprinkler Pipe is easy to weld and can be either “touched up” in weld areas with zinc paint and installed as supplied or readily over painted if necessary. Orrfire Allgal Sprinkler Pipe is the most cost effective form of inline galvanising and is a leading Australian made product in its field. Orrfire Allgal Sprinkler Pipe is approved by SSL for use in fire protection systems and is covered by afp 1528, afp 1508, afp 1509 and afp 1640. Orrfire Allgal Sprinkler Pipe is another quality “industry specialised” product from Orrcon.

### MANUFACTURING

Leak tightness shall be in accordance with AS 1074 using online eddy current testing. Pipes shall be capable of withstanding the maximum test pressures as tabulated in Table 1.

The Allgal family of tube products is made from electro-galvanised steel strip. The process first chemically cleans and de scales the steel strip to a level equivalent to a class 3 sand blast.

A controlled high purity zinc coating is then applied to both surfaces using state of the art Orrcon developed electro-galvanising technology. The zinc coated strip is then roll formed into a tube or pipe and electric resistance seam welded and repaired externally with a zinc/aluminium spray. After the tube is made, it is painted externally with Clear-Tec, a specially formulated eco-friendly clear polymer coating. The combination of the electro-galvanised coating and Clear-Tec polymer form a duplex coating system.

Orrfire Allgal has a minimum of 50g/m<sup>2</sup> of zinc on both sides of the pipe (total coating weight of 100gm/m<sup>2</sup>) and is manufactured to

- a) AS 4750 – 2000 Electro-galvanised (zinc) coatings on ferrous hollows,
- b) AS 1074 – 1989 Steel Tubes and Tubulars for Ordinary Service.

### ORRFIRE ALLGAL ELECTRO-GALVANISED SPRINKLER PIPE TO AS4118

The internal weld bead of the pipe will not be removed, however the external weld bead is scalped flush with the outer surface of the pipe and zinc repaired.

The standard end finish is plain ends. A range of option end treatment is available subject to enquiry, including roll grooved ends and screwed one or both ends (medium wall pipe and heavier only).

The standard stock length available is 6.5 metres. Non standard lengths up to 12 metres are available off rollings subject to enquiry.

### MANUFACTURING TOLERANCES

Tolerances applicable to Orrfire Allgal Sprinkler Pipe are:

- Wall thickness –** Not less than 10% of nominal wall thickness
- Mass –** -3.5% to +10% for any length
- Straightness –** Deviation from straight line = stock length (6.5m) / 250
- Length –** Standard stock length tolerance is +50mm – 0mm on nominal length supplied. Special cut lengths +6mm -0mm tolerance is subject to enquiry and will incur a price surcharge.
- Diameter –** Maximum variation from nominal outside diameter in all wall thicknesses:-

### DIAMETER

Maximum variation from nominal outside diameter in all wall thicknesses

NOMINAL DIAMETER	DN	20	25	32	40	50	65	80	100	125	150
INCHES	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	
OUTSIDE DIAMETER (mm)	26.9	33.7	42.4	48.3	60.3	76.1	88.9	114.3	139.7	165.1	
TOLERANCE ON OD MM	± .27	± 0.33	± 0.42	± 0.48	± 0.60	± 0.76	± 0.79	± 0.79	± 0.79	± 0.79	± 0.79

### MECHANICAL PROPERTIES

Mechanical properties for Orrfire Allgal Sprinkler Pipe

	MINIMUM LONGITUDINAL YIELD STRENGTH MPa	MINIMUM TRANSVERSE YIELD STRENGTH MPa	MINIMUM TENSILE STRENGTH MPa	MINIMUM ELONGATION AS A PROPORTION OF GAUGE LENGTH
LIGHT WALL PIPE 20 TO 150 NB (3/4 TO 6 INCH)	Not Applicable	300 MPa	400 MPa	20%
MEDIUM WALL PIPE 20 TO 150 NB (3/4 TO 6 INCH)	Not Applicable	200 MPa	300 MPa	24%

#### Notes:

300mpa minimum yield strength is available for medium wall pipe subject enquiry ex regular rollings.

**TECHNICAL DATA**

TABLE 1: ORRFIRE ALLGAL ELECTRO-GALVANISED SPRINKLER PIPE RANGE AND WORKING PRESSURES

PIPE DIMENSIONS				NOMINAL MASS PAINTED (kg/m)	METRES PER TONNE (m/tonne)	NOMINAL WALL	MAXIMUM RECOMMENDED TEST PRESSURE		MAXIMUM RECOMMENDED WORKING PRESSURE	
OD (mm)	DN (mm)	IMPERIAL (inches)	THICKNESS (mm)				MPa	PSI	MPa	PSI
26.7	20	3/4	2.0	1.23	814	XLIGHT	36.41	5285	24.27	3525
			2.3	1.40	717	LIGHT	41.87	6080	27.91	4050
			2.6	1.56	642	MEDIUM	31.55	4580	21.03	3050
33.4	25	1	2.0	1.56	639	XLIGHT	29.10	4225	19.40	2815
			2.6	1.99	501	LIGHT	36.41	5285	24.27	3525
			3.2	2.41	415	MEDIUM	31.04	4507	20.69	3005
42.2	32	1 1/4	2.0	1.99	501	XLIGHT	23.04	3345	15.36	2230
			2.6	2.55	392	LIGHT	29.94	4350	19.96	2900
			3.2	3.09	323	MEDIUM	24.57	3565	16.38	2380
48.3	40	1 1/2	2.3	2.61	383	XLIGHT	23.15	3360	15.43	2240
			2.9	3.25	308	LIGHT	29.18	4235	19.45	2825
			3.2	3.56	280	MEDIUM	21.47	3115	14.31	2080
60.3	50	2	2.3	3.29	304	XLIGHT	18.54	2690	12.36	1795
			2.9	4.11	244	LIGHT	23.37	3390	15.58	2260
			3.6	5.03	199	MEDIUM	19.35	2810	12.90	1875
76.1	65	2 1/2	2.3	4.19	239	XLIGHT	14.68	2130	9.79	1420
			3.2	5.75	174	LIGHT	20.43	2965	13.62	1980
			3.6	6.44	155	MEDIUM	15.33	2225	10.22	1485
88.9	80	3	2.6	5.53	181	XLIGHT	14.22	2065	9.48	1375
			3.2	6.76	148	LIGHT	17.49	2540	11.66	1690
			4.0	8.38	119	MEDIUM	14.58	2115	9.72	1410
114.3	100	4	2.5	6.89	145	-	10.63	1540	7.09	1030
			3.2	8.76	114	XLIGHT	13.10	1900	9.07	1315
			3.6	9.83	102	LIGHT	15.30	2220	10.20	1480
			4.5	12.20	82	MEDIUM	12.75	1850	8.50	1235
139.7	125	5	3.0	10.11	99	XLIGHT	10.44	1515	6.96	1010
			3.5	11.80	85	LIGHT	12.18	1765	8.12	1180
			5.0	16.60	60	MEDIUM	11.60	1680	7.73	1120
165.1	150	6	3.0	11.99	83	XLIGHT	8.84	1280	5.89	855
			3.5	13.90	72	LIGHT	10.31	1495	6.87	1000
			5.0	19.70	51	MEDIUM	9.81	1420	6.54	950
			5.4	21.30	47	HEAVY	10.59	1535	7.06	1025

**Notes:**

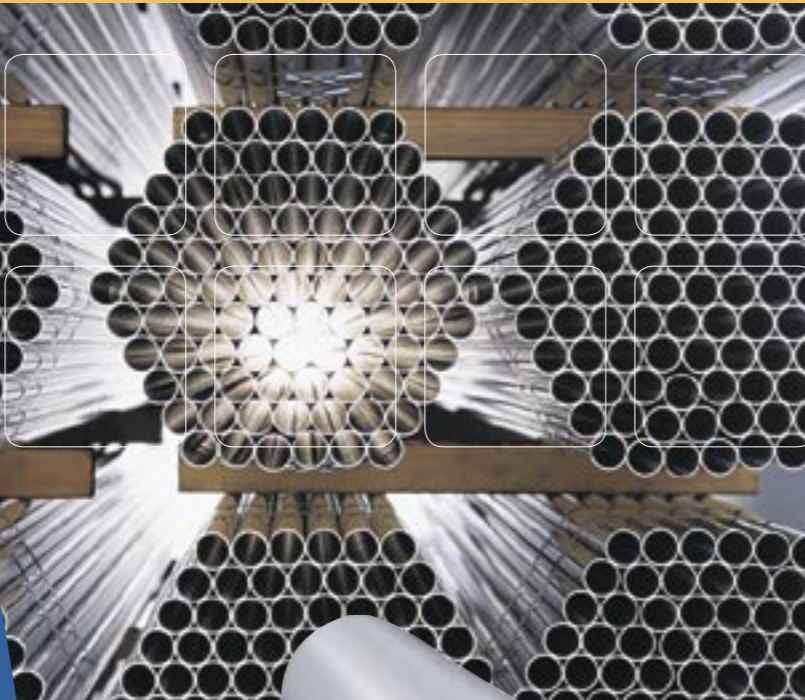
Recommended maximum working and test pressures are applicable only to the steel pipe if the following conditions apply:-

- Maximum allowable working pressures are for internal pipe pressure only – pipe must be supported to avoid all external loads and free to accommodate thermal expansion.
- Maximum safe working pressure based on 60% SYMS (specified minimum yield strength) and assumes wall thickness 90% of nominal wall thickness.
- For light and extra light pipe in all sizes the minimum yield strength is 300 MPa (transverse) and for medium wall, is 200 MPa.
- Working pressures shown are for bare pipe only and pipeline operating pressures must be governed by the rating of the pipe joining method. The lower of these two pressure ratings must be used.
- These tables are applicable for services where pipe contents temperature does not exceed 250°C.
- Maximum working pressures are for pipes carrying liquid contents only. Where pipes carry gases or compressed air, the maximum working pressures must be reduced by 50%.

**TECHNICAL DATA**

TABLE 2: ORRFIRE ALLGAL ELECTRO-GALVANISED SPRINKLER PIPE MASS AND BUNDLING DATA – Standard 6.5 metre lengths

PIPE DIMENSIONS							STANDARD PACK			MINI PACK		
OD (mm)	DN (mm)	IMPERIAL (inches)	THICKNESS (mm)	NOMINAL MASS (kg/m)	METRES PER TONNE (m/tonne)	NOMINAL WALL	LENGTHS PER PACK	MASS PER PACK (kg)	METRES PER PACK (m)	LENGTHS PER MINI PK	MASS PER MINI PK (kg)	METRES PER MINI PK (m)
26.7	20	3/4	2.0	1.23	814	XLIGHT	127	1015	825.5	61	488	396.5
			2.3	1.40	717	LIGHT	127	1156	825.5	61	555	396.5
			2.6	1.56	642	MEDIUM	127	1288	825.5	61	619	396.5
33.4	25	1	2.0	1.56	639	XLIGHT	91	923	591.5	37	619	240.5
			2.6	1.99	501	LIGHT	91	1177	591.5	37	479	240.5
			3.2	2.41	415	MEDIUM	91	1426	591.5	37	580	240.5
42.2	32	1 1/4	2.0	1.99	501	XLIGHT	61	789	396.5	37	479	240.5
			2.6	2.55	392	LIGHT	61	1011	396.5	37	613	240.5
			3.2	3.09	323	MEDIUM	61	1225	396.5	37	743	240.5
48.3	40	1 1/2	2.3	2.61	383	XLIGHT	61	1035	396.5	37	628	240.5
			2.9	3.25	308	LIGHT	61	1289	396.5	37	782	240.5
			3.2	3.56	280	MEDIUM	61	1412	396.5	37	856	240.5
60.3	50	2	2.3	3.29	304	XLIGHT	37	791	240.5	19	406	123.5
			2.9	4.11	244	LIGHT	37	988	240.5	19	508	123.5
			3.6	5.03	199	MEDIUM	37	1210	240.5	19	621	123.5
76.1	65	2 1/2	2.3	4.19	239	XLIGHT	37	1008	240.5	19	518	123.5
			3.2	5.75	174	LIGHT	37	1383	240.5	19	710	123.5
			3.6	6.44	155	MEDIUM	37	1549	240.5	19	795	123.5
88.9	80	3	2.6	5.53	181	XLIGHT	19	683	123.5	10	360	65
			3.2	6.76	148	LIGHT	19	835	123.5	10	439	65
			4.0	8.38	119	MEDIUM	19	1035	123.5	10	545	65
114.3	100	4	2.5	6.89	145	-	19	851	123.5	10	448	65
			3.0	8.76	114	XLIGHT	19	1082	123.5	10	569	65
			3.5	9.83	102	LIGHT	19	1214	123.5	10	639	65
			4.5	12.20	82	MEDIUM	19	1507	123.5	10	793	65
139.7	125	5	3.0	10.11	99	XLIGHT	13	854	84.5	-	-	-
			3.5	11.80	85	LIGHT	13	997	84.5	-	-	-
			5.0	16.60	60	MEDIUM	13	1403	84.5	-	-	-
165.1	150	6	3.0	11.99	83	XLIGHT	10	779	65	-	-	-
			3.5	13.90	72	LIGHT	10	904	65	-	-	-
			5.0	19.70	51	MEDIUM	10	1281	65	-	-	-
			5.4	21.3	47	HEAVY	10	1385	65	-	-	-



## INTRODUCTION TO ALLGAL

ALLGAL is an electro-galvanised steel tube. It is made from hot rolled steel that is coated on both sides with zinc. The external surface of the tube is top coated with a specially formulated polymer coating called Clear-Tec.

Electro-galvanising is a special form of electroplating. It is usually used in high performance applications requiring coatings that are easy to weld; topcoat and that provide good resistance to corrosion. When you hear about new generation cars going to galvanized body panels, they are more than likely electro-galvanised. This method is used because the coating provides a smooth finish that is easy to weld and paint.

ALLGAL has 50g/m<sup>2</sup> of zinc on both sides of the tube (total coating weight of 100g/m<sup>2</sup>) and is manufactured to the following standards:

- AS 4750 - 2000 Electrogalvanized (zinc) coatings on ferrous hollow sections.
- AS1163 -1991 Structural Steel Hollow Sections.

## Corrosion Protection

Research has shown that the corrosion protection offered by zinc is only a function of the coating weight, and doesn't vary with the method of application. This means that two products of a similar coating weight where manufactured with different galvanising process, will have similar corrosion protection. This rule doesn't apply strictly to the ALLGAL products because they have a duplex coating of zinc and Clear-Tec. This means that ALLGAL has the following advantages;

- Zinc depletion is significantly reduced, adding to the life of the coating.
- The Clear-Tec acts as a primer, making it easier to apply further coats of paint.
- The product will stay shiny longer than bare galvanised products, which can quickly become dull in appearance.

Depending on the application, design life and service environment, it may be necessary to apply additional coatings to ALLGAL. It is suggested that the following standard be used as a guide.

AS/NZS 2312:2002 Guide to the protection of structural steel against atmospheric corrosion.

## Painting ALLGAL

The zinc coating is sealed with a Clear-Tec polymer and therefore easy to topcoat. First wipe the material down with a light solvent such as Prepsol. This must be done until the product is visibly clean. Prepsol is an alcohol that doesn't affect the Clear-Tec coating. Clear-Tec is designed to be removed by methylated spirits and caustic cleaners, so don't use these. Clear-Tec is compatible with many painting systems including Enamels, Acrylics, polyurethanes and PVA emulsions. If you are unsure, then you can test the paint on a small area first, or seek advice on the topcoat from your paint supplier.

## Welding ALLGAL

The Welding Institute of Australia found that the controlled layer of electro-galvanized zinc found on ALLGAL products has little effect on welding. ALLGAL can be welded at high speeds, it is easy to strike an arc, and the fumes are minimal. The procedure for welding is to simply make the weld, remove any slag, wipe the area and spray the bare steel with zinc rich paint.

The fumes that are generated are many times below both the TWA and STEL limits. There are two reasons for the fumes being low. First, the Clear-Tec coating is thin and water based. Secondly, the zinc coating is controlled to an even thickness.

Independent tests produced the following observations,

- ALLGAL can be welded at the same speed and with the same settings as standard, primed hollow pipe.
- Good weld quality was achieved on ALLGAL over a wide range of welding speeds from 0.9 to 2.2 m/min travel speed.
- The ease of arc initiation for ALLGAL was similar to that of primed hollow pipe.
- There was very little spatter produced by the ALLGAL tube. Most of the spatter could be easily brushed off. The spatter was prevented from sticking to the surface of the tube by the Clear-Tec coating.
- The Clear-Tec near the weld darkens slightly. This is a result of the weld heat and it is in no way detrimental to the finished product. The Blackening effect is not noticeable once a zinc rich paint is applied to the weld zone.
- Increasing the gas flow rate had no effect on the quality of the weld. This means the industry belief that higher shielding gas flow rates should be used when welding zinc coated steel does not apply to ALLGAL products.

## Storing ALLGAL

Moisture and oxygen are needed for corrosion to proceed. Therefore the easiest way to keep the product from corroding is to keep it dry.

When the product is being stored as a pack it is essential that it be kept dry. If a pack gets wet the centre of the pack will not dry out until it is separated into individual lengths. This means that the tube in the centre of the pack will be in a very humid and corrosive environment.

If the packs are kept in a dry place then corrosion will be very slow.

If the packs must be kept outside then it is essential that the packs be broken open and individual lengths stacked with a wooden divider between each layer. The stack should be on an incline so that any water can run off the tube.

While the product is being stored as individual lengths it can be allowed to get wet as long as it dries out. The corrosion rate will be greater than if the tube was stored inside, but nowhere near as fast as if the product was stored in pack form.

## Repairing The Product

If at any stage the coating becomes damaged, then it can be repaired with a zinc rich primer. This is done by simply cleaning the damaged area and applying the paint.

White rust is white powdery deposit that will form on the surface of the tube when the zinc coating is allowed to corrode. Cleaning the rust off and applying the zinc rich paint to the area will fix this. The rust can be removed with a high-pressure water cleaner, scrubbing brush or methylated spirits.

Red rust is the result of corroding iron. This will form in areas where the zinc coating has completely corroded away. The rust should be removed with a wire brush or sand paper. The area should have a zinc rich paint applied to it.

## Recommendation

It is recommended that the following factors be considered before using any galvanized product as they can have a marked effect on the lifespan of the completed product:

- Protection from rain
- Prolonged dampness
- Galvanic corrosion
- Burial in soils
- Organic and chemical attack
- Use in concrete
- pH effect
- Barrier film removal
- Wind erosion
- Effect of temperature

Note – All the above are discussed in detail in AS4750-2000.

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## ORRFIRE ALLGAL ELECTRO-GALVANISED SPRINKLER PIPE TO AS4118

### APPLICATIONS AND RECOMMENDED USE FOR ORRFIRE ALLGAL ELECTRO-GALVANISED PIPE

- Fire sprinkler applications for all "closed" non-oxygenated systems
- Hydraulic installations and compressed air services
- Heating, ventilation and air conditioning "closed" pipe work systems
- Extra light and light wall Orrfire Allgal Pipe is suitable for use with all reputable roll grooved coupling systems
- Medium wall Orrfire Allgal Pipe can be used with threaded or roll grooved jointing systems

For technical assistance or further information on Orrfire Allgal Electro-Galvanised Sprinkler Pipe, contact your nearest Orrcon Fluids and Engineering Sales Office.

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Giving Steel A Real Edge

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