



# TECHNICAL MANUAL

**STRONG DRAIN**<sup>TM</sup>

Compounding Strength

## ABOUT US



HP Group, is proud to be the largest manufacturer of Adhesives in Asia. With an annual turnover of over 25 Million USD in only Adhesives and a group turnover of more than 40 Million USD, the HP Group has come a long way for various business streams since its inception in 1978 by the Motwani family. Its interests range from Adhesives, Composite Products, Plumbing Accessories, Textiles, Logistics, Real Estate.

The Composite business is a major project undertaken by the group in 2012 with an investment of 4 million USD, where we have built a full line of SMC manhole cover's and we are the first company to produce this range of covers. We have developed a gigantic volume of SMC business while the industry is still dependent on the traditional Hand Lay-up Module. All the businesses combined, the group is a well-oiled machine with the right mix of talent, technology, capital, and resources, bringing in international expertise to make its product, process, and offering them at par with global standards.

Growth through diversification has been the cornerstone of the success of the HP Group and all its companies. A steady yearly increase in sales, profits, and satisfied customer base has ensured that we haven't looked back – going from strength to strength through our 35 years journey. In this time, the HP Group has achieved many successful milestones, the most recent being its recognition as "the leader of tomorrow" in the chemical space by ET Now – the leading business channel in India. This is attributed to the company's belief that these successes are only the beginning and many more goals await us. It is this fire that will drive the HP Group to the next level of success, along with a target to achieve the USD 100 Million Revenue mark by 2025.



# Approval & Certificates



MCGM, INDIA



KDMC, INDIA



NMMC, INDIA



NAGPUR METRO, INDIA



Ministry of Micro, Small and Medium Enterprises,  
Government of India



MSME, INDIA



CIDCO, INDIA



SIDCGL, INDIA



GCC, INDIA



MOW, BAHRAIN



DEWA, DUBAI



AASHTO, U.S.A.



الشركة العمانية للنطاق العريض  
Oman Broadband Company

OBC, OMAN

# New Technology

India's only company to have used SMC in manufacturing its manhole covers, HP INTERNATIONAL capitalises on the SHEET MOULDING COMPOUND TECHNOLOGY combined with adequate equipment and a blend of international expertise surpasses the expectations of the global standards, leaving behind the rest of the units still depending on HAND LAY-UP MODULE PROCESSES.

The Sheet moulding compound corresponds to unique dual characteristics of being a process and a reinforced composite material. The resin and relative materials mixed on the site gives the manufacturer greater control over the chemistry and filler of the process. Dispersing the long strands of chopped fibre in a bath of thermoset resin results in better strengthening properties than in HAND LAY-UP MODULE COMPOUND.

**HP INTERNATIONAL STRONGLY BELIEVES THAT INTRODUCING SMC IS A STEP TOWARDS A GIANT LEAP IN THE FUTURE BUSINESS SCENARIOS.**



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# What is FRP ?

## FIBRE-REINFORCED POLYMER (FRP)

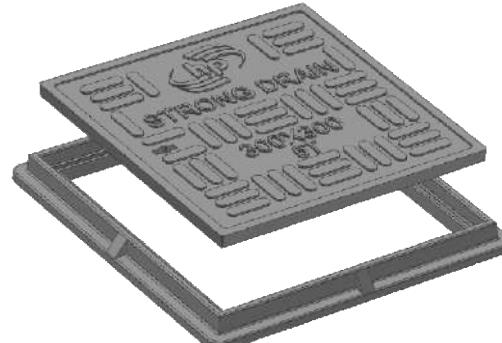
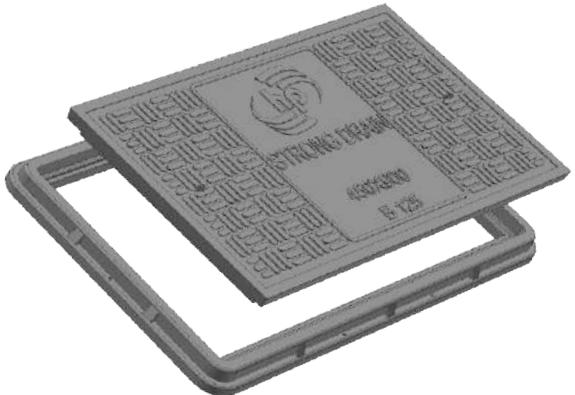
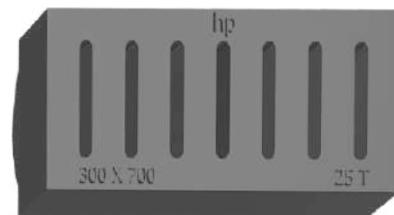
Is a composite material made of a polymer matrix reinforced with fibers? The fibers are usually glass fibers, the polymer is usually an epoxy, vinyester or polyester thermosetting plastic, and phenol formaldehyde resins are still in use. FRP's are commonly used in the aerospace, automotive, marine, construction industries and ballistic armor.

## COMPRESSION MOULDING

When the raw material containing reinforced fibers are compressed & molded at certain pressure &temperature the final outcome would be called an FRP molded product, which qualifies it as a fiber-reinforced polymer. More typically the polymer preform used in compression molding does contain reinforcing fibers. In compression molding, a "preform" or "charge", of SMC, BMC is placed into molding cavity, the mold is closed and the material is formed & cured inside by pressure and heat. Compression molding offers excellent detailing for geometric shapes ranging from pattern and relief detailing to complex curves and creative forms, to precision engineering all within a maximum curing time of 20 minutes.

## ADVANTAGES AND LIMITATIONS

FRP allows the alignment of the glass fibers to suit specific design programs. Specifying the orientation of reinforcing fibers can increase the strength and resistance to deformation of the polymer. Glass reinforced polymers are the strongest and most resistive to deforming forces when the polymers fibers are being exerted with a parallel force.



# Comparison

STRONG DRAIN FRP MANHOLE COVERS	CI / DI MANHOLE COVERS
Free from fear of theft as the material is non - reprocessable and has no resale value	Heavily prone to theft as the material is reprocessable & has high resale value
Easy to handle due to light weight	Difficult to handle due to very heavy weight
No risk of injury due to light weight	High risk of injury due to heavy weight
Does not rust due to chemical - sewage - rain water	Gets rusted with chemical - sewage - rain water
High service life ( min. 30 years ) as it does not corrode and has high impact resistance	Low service life as it corrodes with the service conditions & has low impact resistance
High on aesthetics due to varied colors available	Low on aesthetics
No additional cost to be incurred for the corrosion resistant plate which is required below the cover to protect the cover from corrosion	Additional cost to be incurred for the corrosion resistant plate which is required below the cover to protect the cover from corrosion
The covers are self - pigmented and do not require expensive epoxy painting for protection throughout its life	The covers regularly need expensive epoxy painting to be conducted for protection
The pigments are inbuilt in the material and UV stabilizing. Hence there is no peeling - fading of the colors due to sunlight	The proxy painting peels over a period as it is a secondary process
Locking arrangement if required is available to avoid displacement of covers due to back pressure in low lying areas	
Good resistance to extreme temperature (-100° C to +80° C)	

# Advantages

**HIGH LOAD RATING AND STRENGTH:** Similar hardness in property as cast iron, but major advantages on stretch recovery and bend resistance. Less noise and lower vibration transmissions. Designed to meet and exceed A 50/B125/C250/D400/E600/F900 loading rating, according to En 124: 1994.

**AGAINST THEFT AND SAFETY OPTIONS:** Comparing with cast iron manhole cover, composite cover has zero theft value and therefore not attractive to thieves, which reduce the potential accident and further maintenance cost caused by theft. Surface anti-slip thread guarantees safe road condition even in extreme weather. Locks are available as an option molded into the cover to improve security rate. Non-electricity conduction and non-heat conduction, UV resistance.

**EASE IN INSTALLATION:** Compared with cast iron manhole covers, composed covers are 30% lighter. Lighter weight allows ease of handling, more loading per vehicle and more convenient transportation. This allows for safe working conditions, where a SINGLE worker is enough for a complete installation without risk of injury. Easy handling and movement reduce maintenance cost.

**DURABLE SERVICE LIFE:** More than 30 years theoretical service life at usual road condition. Anti-corrosion, dust and waterproof, well sealed prevent poisonous gases from leaking out. Higher and lower temperature tolerance.

**FREE DESIGN:** Composite material itself allows for innovative design features. Client logo and their own design are available as an option. Much more clear resolution ratio design than cast iron or of other material.

**CARBON FOOTPRINT SAVING AND ENVIRONMENTAL CARE:** Lower embedded energy carbon emission during manufacturing process than cast iron covers. New material, manufacturing technology and lean production help reduce carbon footprint.

























# Testing

## GC TESTING

Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance or separating the different components of a mixture (the relative amounts of such components can also be determined). HP runs all resin and release agents through GC to analyses priority and is the only player in the industry to carry out this practice. This helps us to control the quality of raw material that is used in our final product.

## TENSILE TESTING

Tensile testing, also known as tension testing, is a fundamental materials science and engineering test in which a sample is subjected to a controlled tension until failure. Properties that are directly measured via a tensile test are ultimate tensile strength, breaking strength, maximum elongation and reduction in area. Here as well, we use it to test the strength of all our fiber mat raw material and HP is the only one in this industry to follow this practices.



## LOAD TESTING POST PRODUCTION

STRONG DRAIN FRP/GRP/COMPOSITE Manhole covers are tested for load bearing and permanent set as per BSEN 124:19991 and Is1726. BESEN 124 is a testing code worldwide for Manhole Covers in cast iron, ductile iron, and other materials also. Permanent set is multiple loading tests to determine the permanent deformation in cover after multiple loading within a short time as specified in the code.

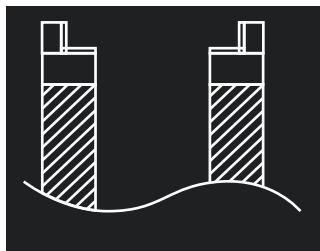


# Installation

## INSTALLATION

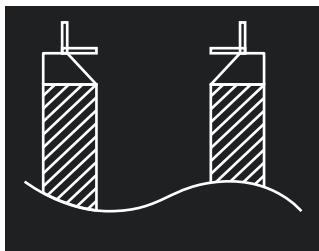
## HANDLING

### Do's



Correct installation of frame with complete civil support

### Don't



Incorrect installation of frame without any civil support below

### Do's



Handle with care

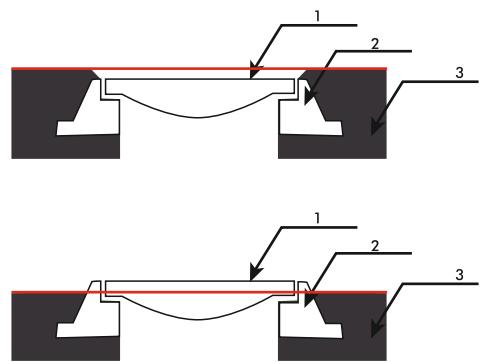
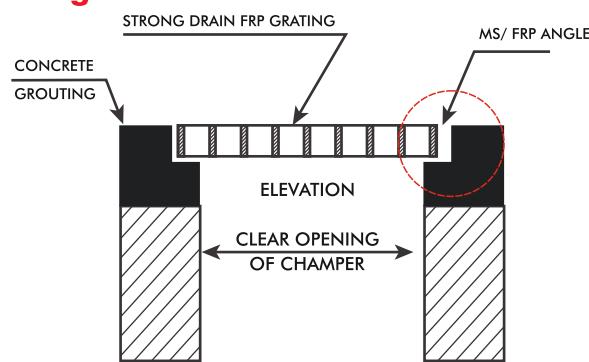
### Don't



Do not throw the material

## WRONG INSTALLATION OF FRP MANHOLE COVERS & GRATINGS

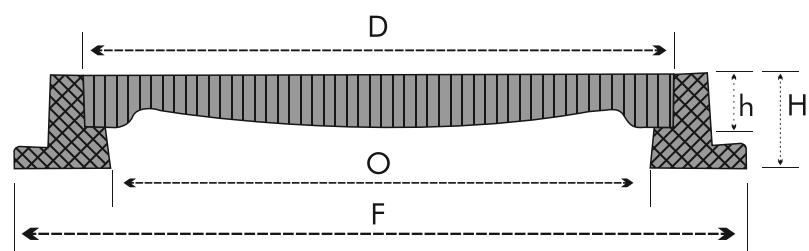
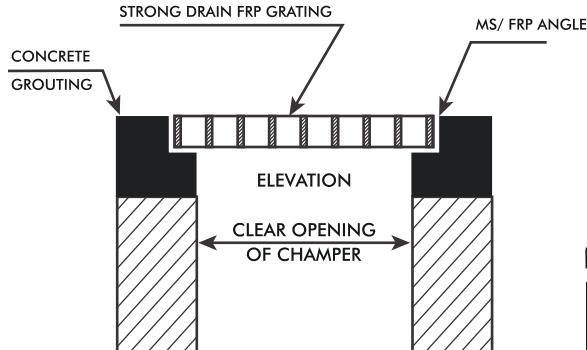
**Wrong**



**1. Manhole Cover / Grating 2. Frame 3. Concrete - Road Level**

## STANDARD & CORRECT METHOD OF INSTALLATION OF FRP MANHOLE COVERS & GRATINGS

**Correct**



**STRONG DRAIN**

TM



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