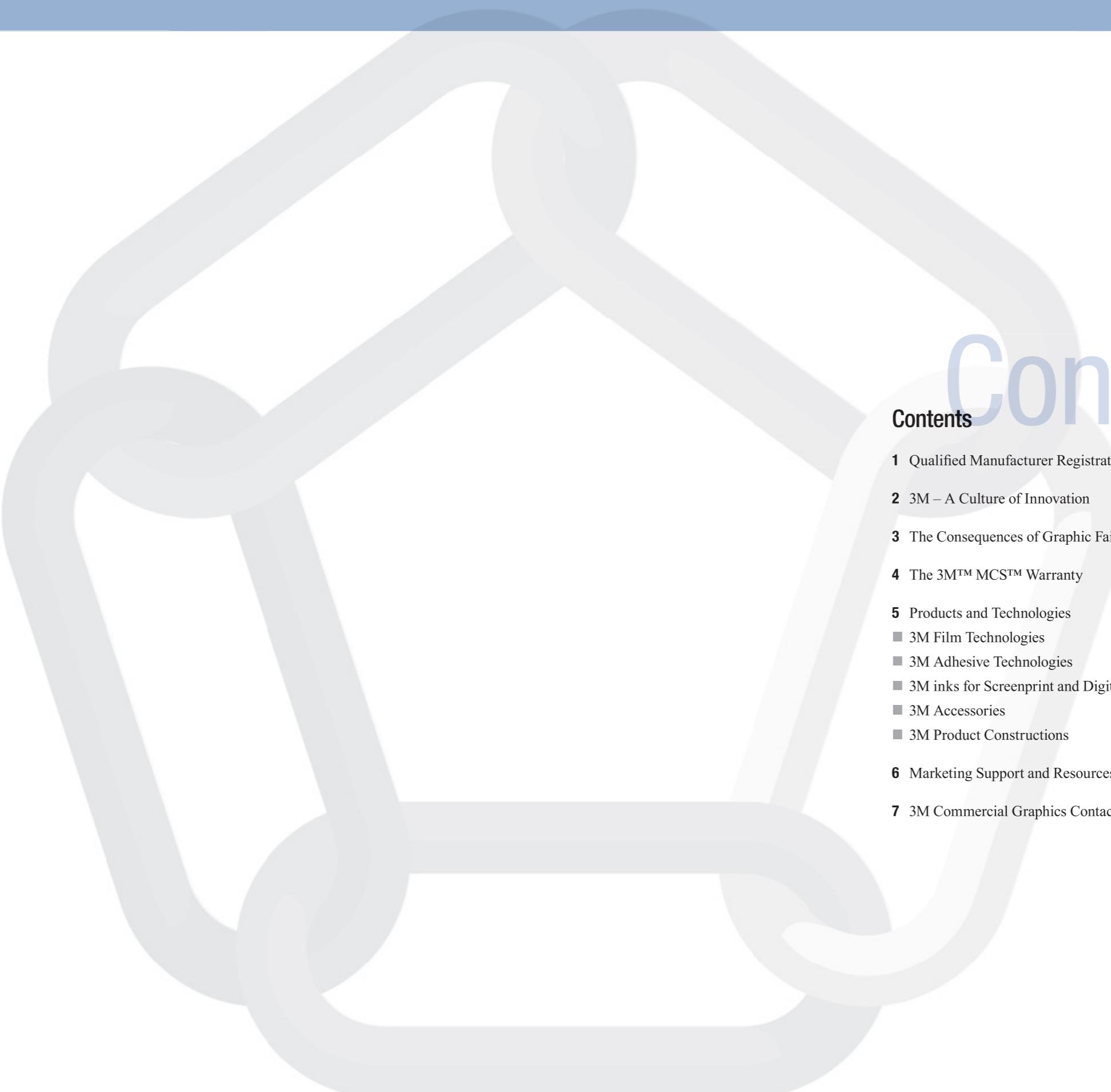


Application Manual

3M™ MCS™ Warranty





Contents

Contents

- 1** Qualified Manufacturer Registration
- 2** 3M – A Culture of Innovation
- 3** The Consequences of Graphic Failure
- 4** The 3M™ MCST™ Warranty
- 5** Products and Technologies
 - 3M Film Technologies
 - 3M Adhesive Technologies
 - 3M inks for Screenprint and Digital Printing
 - 3M Accessories
 - 3M Product Constructions
- 6** Marketing Support and Resources
- 7** 3M Commercial Graphics Contacts

3M™ MCS™ Registration

3M™ MCS™ Warranty Qualified Manufacturer Registration

Qualification Requirements

The symbol for MCS warranty is designed to show your customers that you care about the quality of graphics that you provide them. To ensure that your customers can trust the symbol, 3M must ensure that not only the materials that you use are of the highest quality but your graphic manufacturing and business processes are equally appropriate.

The Qualified Manufacturer programme is based around specific graphic manufacturing technologies, each with their own technical and commercial qualification criteria.

Please complete the following registration form to apply as a Qualified Manufacturer according to 3M™ MCS™ Warranty. The agreement states that you will abide by the business conditions laid out in the Qualified Manufacturer documentation.

Please return the documentation to the Qualified Manufacturers Programme Administration via your 3M representative or return to your local 3M Commercial Graphics Sales Office. 3M address and contact details can be found in Section 7 of this documentation.

3M™ MCS™ Warranty Qualified Manufacturer Registration

Qualified Technologies

- Screen Print
- Electro-cutting
- Illuminated Sign Making
- Ink Jet Printing
- Electrostatic Printing

Printer Model _____

Serial No. _____

Printer Model _____

Serial No. _____

Printer Model _____

Serial No. _____

The Qualified Manufacturer programme is designed to give peace of mind to both the manufacturer and purchaser of the graphic. By agreeing to join this programme your company is able to offer the 3M™ MCS™ Warranty to your customers. You must agree that graphics carrying the MCS Warranty will be manufactured using solely 3M materials and in accordance with the correct processes outlined in the relevant technical documentation.

The agreement term begins on the date it is signed by both Graphic Manufacturer and 3M and shall continue until December 31 of the respective year the Agreement is signed. Thereafter, it shall renew automatically for two successive 12-month periods unless terminated as provided below. Any further prolongation is subject to an express written agreement. 3M may terminate this Agreement immediately for Graphic Manufacturer's failure to make payments as agreed, or if it persistently fails to comply with any other terms of this agreement. If either party wishes to discontinue this Agreement, such party may terminate this relationship by giving the other party ninety (90) days' advance written notice at the end of the quarter. Either party may exercise its right of termination without having to prove or possess "good cause."

3M wish to communicate technical, product and marketing information via email or other electronic means. If you, or your company, do not wish to receive information via this method please tick the following box.

Company Name:

Principal Contact:

Position within Company:

Address 1:

Address 2:

City:

Postcode:

Country:

Telephone:

Fax:

Email:

WWW:

Signed on behalf of 3M MCS Qualified Manufacturer:

Date:

Signed on behalf of 3M:

Date:

3M™ MCS™ Warranty Confidentiality Statement

Guarantee of commercial confidentiality
of Qualified Manufacturers information

Completed Qualified Manufacturer applications will
be held on a database by 3M Commercial Graphics,
or its approved agent, for the purposes of:

- Maintaining a record of all Qualified Manufacturers
- Compiling data on technology usage for the further development of new products and services

This information will not be disclosed to any third party for any reason without the express written permission of the Qualified Manufacturer named on the application document.



3M A Culture of Innovation

At 3M, a story is often told about how a struggling sandpaper manufacturing business grew to become one of the world's largest innovation focused companies.

3M is now a highly diversified corporation with operations in more than 60 countries

Since 3M was founded in 1902, the company's objective has been consistent: an unwavering culture of innovation to develop new products that make the lives of its customers easier and better...

Innovation

3M A Culture of Innovation

Since foundation, 3M's success has come from producing imaginative and powerful solutions to customers' problems.

The company's strength in innovation stems from the cross-fertilisation of, at the last count, over 110 technologies – from films, membranes, biotechnology, coatings, micro-replication, opto-electronics, adhesives and non-woven fibres to drug delivery systems and microelectronics. These technologies enable 3M to support its drive for new and better products for you and your customers in markets as diverse as aerospace, office products and healthcare.

With over 30% of what the company sells derived from products less than four years old, and annual sales worth something like \$24.5 bn, it could really be claimed that Innovation is the life blood of 3M.

Environment

3M was one of the first companies to issue a Corporate Environment Policy – which still stands today and is applicable to all its operations world-wide. 3M continues to recognise and exercise its responsibility to:

- solve its own environmental problems
- prevent pollution at the source whenever and wherever possible
- develop products that will have a minimum effect on the environment
- conserve natural resources
- assure that its facilities meet and sustain the regulations of local environmental agencies
- assist, wherever possible, governmental agencies and other official organisations engaged in environmental activities



3M Commercial Graphics

For more than 40 years 3M Commercial Graphics products have consistently set the industry standard for quality, performance and value. The division is recognised as a market leader in supplying graphics systems that will not only withstand the harshest conditions but maintain excellent image quality. 3M Commercial Graphics does, and will continue to work with many of the largest global companies in protecting their investment in their identity and brands.

The materials philosophy according to 3M™ MCS™ Warranty ensures that all elements of a graphic from the film, ink, adhesive and protective coating will perform well together over an extended period and in the harshest environments.

The MCS Warranty covers the whole graphic not the constituent parts and is considered as the 'strongest warranty in the industry'.

3M Commercial Graphics



Consequences of Graphic Failure

It is tempting to think that, when a graphic is manufactured and applied, it will stay in pristine condition for years.

Unfortunately, graphics do deteriorate and can fail, and the consequences of that failure can go much further than just the cost of the materials and labour. It can damage your customer's brand image, as well as causing down-time and lost productivity.

That is why at 3M we believe that being aware of the possible problems minimises the risk of them occurring at all.

The Price of Graphic Failure

Graphics may fail in many different ways – the following examples show some of the typical modes of failure ...

Here the graphic has shrunk and torn due to improper selection of film and natural weathering. The material has become brittle after becoming detached from the substrate.



The film in this image is unable to conform to the corrugations and has lifted from the body panel of the vehicle, resulting in the graphic tearing.



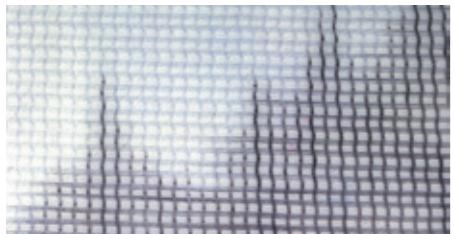
The key reason for a graphic failure is a misunderstanding of the properties of the materials and underestimating the harshness of the environment in which they are expected to perform. Many people do not appreciate the extreme stress placed on a graphic during its working life: UV radiation, abrasion, environmental pollution, cleaning solvents, internal chemical and structural change and physical damage. It is important to realise that the failure may not become apparent for many months or years and it is often the case that a combination of elements will cause the graphic to deteriorate. A precise reason for the cause of the failure maybe very hard to establish, especially if a combination of manufacturers materials are used in the construction.

The components of the 3M™ MCSTM Warranty System allow you to easily choose the right material components for the task knowing that each element is designed for optimal performance with the other parts of the system. All components from 3M are extensively tested in both the laboratory and in many climatic zones and environments for compatibility and durability.

This application shows a film failing to adhere to a deeply recessed vehicle body panel. The film chosen in this instance was not suitable for application over corrugations, the graphic has 'popped-off' and torn shortly after application.



Re-inforced flexible signfaces are subject to a range of problems. ‘Wicking’ of water and scrim inside the polyester can cause dirt ingress.



Plasticiser migration from a flexible signface caused the wrinkling and bubbling of the graphic applied to its face. By using correctly matched materials this problem can be avoided.



A common graphic problem is film lifting around rivets and bridging of corrugations. The cause is generally considered to be due to the limited conformability of the film and poor adhesive performance.



After extended exposure to the environment, poor quality flexible signfaces can deteriorate significantly. Capillary action encourages mould growth inside the re-inforcing fibres of the material.



Graphics applied to vehicle curtains are subject to a wide range of stresses. The failure illustrated here is one of bubbling and delamination caused by both plasticiser migration and constant flexing of the curtain.



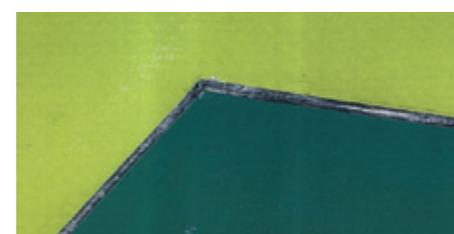
When inks and films from different manufacturers are used, the potential for graphic elements to react with unpredictable results is increased. Here ink colours have begun to ‘bleed’ into each other.



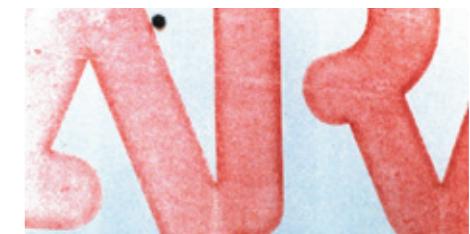
Most ink types have a limited resistance to UV degradation. A common mode of failure is fading due to excessive solar radiation.



All PVC film has ‘plastic memory’. Due to the ingredient components attempting to return to their original form over time, this graphic has shrunk and left the adhesive in place which, in turn, has attracted dirt causing the black line.



Aggressive washing of graphics, especially when highly acidic or alkaline cleaning agents are used, can accelerate premature fading. The risk is greatly reduced when graphics are properly protected using the correct laminates or clear coats.



The wrong choice of ink, screen printing or digital, is a cause of many graphic failures. Here the ink has become brittle, inflexible and has cracked. To avoid such problems, specially-developed flexible ink systems should be used when printing onto films.



Differential shrinkage is a common effect of the ‘plastic memory’ of low-quality calendered films. It is particularly evident here in the distortion of the graphic and the dirt pickup on the adhesive residue.



The Price of Graphic Failure

Original graphics?
Removal of graphics?
New graphics?
Disruption?
Loss of business?
Loss of image?
Damage to reputation?

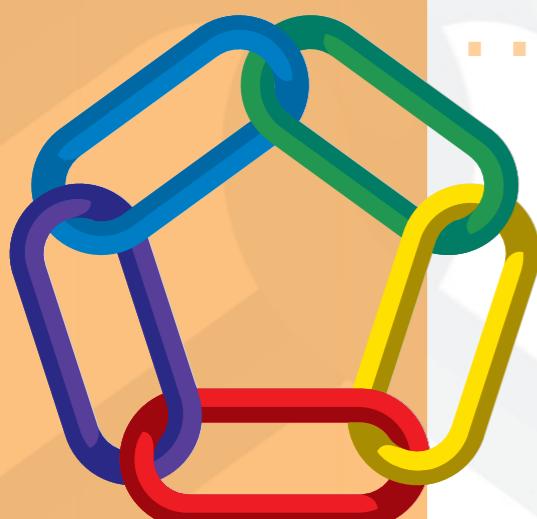
Or ...

... Peace of mind

The system of matched components by 3M will help you to eliminate the risks of graphic components failing to perform together. It provides you with a guarantee of quality and your customers with real peace of mind.

A Quality Promise from 3M

3M Commercial Graphics is committed to providing the best materials solutions to graphic manufacturers and their customers world-wide. Used in applications as demanding and diverse as vehicle fleet markings, corporate identity signing, promotional graphics and interior architectural decoration – 3M has innovative answers to the most complex problems.



3M™ MCS™ Warranty

The MCS Warranty

Whatever the size of the customer – local business or multi-national corporation – 3M Commercial Graphics is dedicated to supporting the investment they make in building and promoting their identity and brands.

3M aims to provide high quality, reliable graphic products that perform consistently in the harshest environments that both man and nature can create.

The philosophy is the foundation of the quality system that extends from the raw materials to the finished graphic. Through all stages of manufacturing 3M aims to ensure the optimum balance of reliability, performance and cost – which leads ultimately to you and your customers' peace of mind.

The 3M quality promise is simple: to supply reliable, durable and warranted total graphic solutions to companies around the world.



The Strongest Graphics Warranty in the Industry

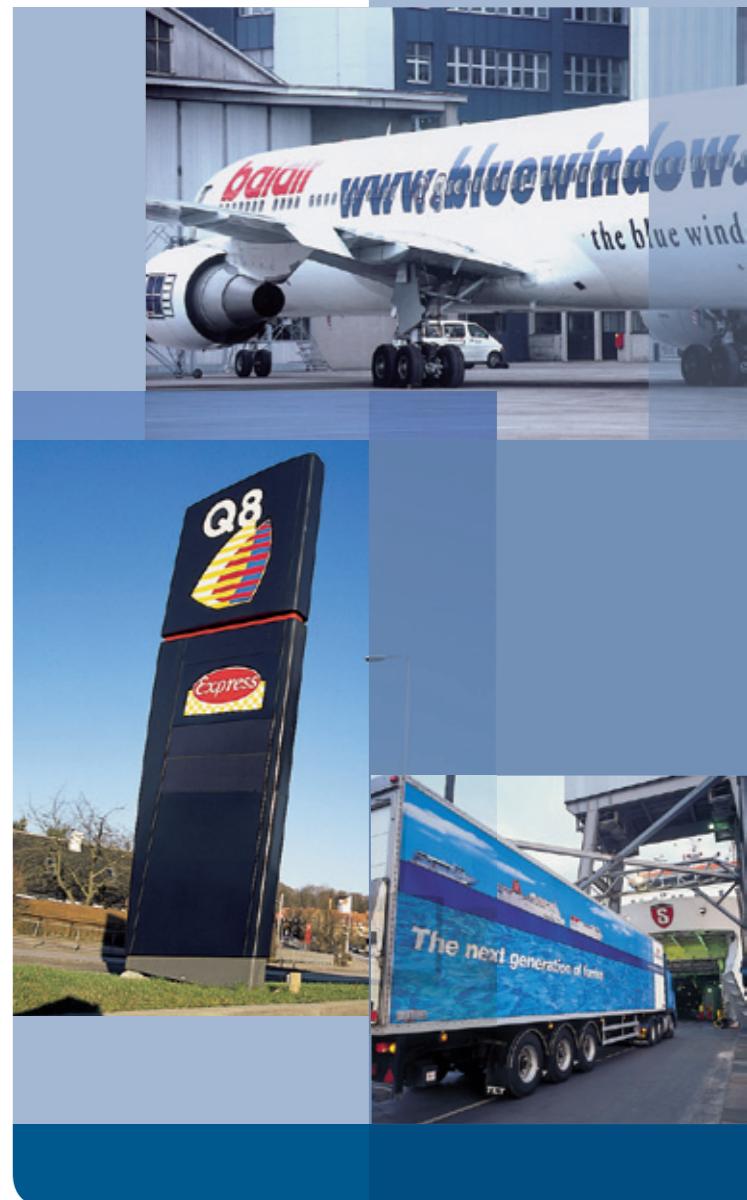
3M™ MCS™ Warranty

When you choose 3M products according to 3M™ MCS™ Warranty you will know that every component has been designed, developed, tested and manufactured for superior performance and total compatibility.

When a new product is released it has met or exceeded our stringent quality standards – that means testing, modifying and re-testing in every imaginable climatic and operating condition. The result is a range of perfectly balanced products that print, cut and apply consistently across a wide range of manufacturing technologies.

It should come as no surprise that, after such an exhaustive programme of product development and evaluation, 3M is sufficiently confident to offer the unique MCS Warranty on the majority of films and specialist materials it manufactures.

The MCS Warranty promises you and your customer the consistent image quality and durability needed to build a consistent image – backed with the strength of the most comprehensive graphics warranty in the industry.



3M™ MCS™ Warranty

The MCS Warranty Performance Standards

3M warrants that finished graphics made entirely from materials according to 3M™ MCST™ Warranty will perform in accordance with each individual product's specification and for the defined durability periods and applications stated in the relevant 3M Product and Instruction Bulletins and the Warranted Graphics Warranty Tables.

The following would constitute a failure of materials according to 3M™ MCST™ Warranty to meet the Performance Standards:

- 3M material manufacturing defects such as visual or hidden defects that interfere with printing, clear coating, laminating, drying, cutting, pre-masking or application of finished graphics when produced in accordance to 3M standards.
- Excessive fading, discolouration, crazing, peeling, gloss changes or blistering of the applied graphic.
- Excessive dimensional change or loss of adhesion that makes the graphic visually unacceptable (as determined by customary industry standards) when viewed from the intended viewing distance.

As graphics age, natural weathering occurs causing a gradual reduction in gloss, slight colour changes, some lifting of the graphic at the edges or around rivets, and ultimately a minor amount of cracking. These changes are not evidence of product failure and are not covered by the MCS Warranty.

Limited Remedy and Adjustments according to 3M™ MCS™ Warranty

In the unlikely event that materials fail to meet the above Performance Standards, 3M's sole responsibility shall be to refund the documented sales price of 3M materials. In addition to the sales price of materials, 3M can at its sole discretion reimburse up to twice the sales price of 3M materials to cover additional costs associated with the graphic failure.

All claims must be made in writing and within 14 days of the first notice of the failure occurring. Claims must also be supported by evidence of the use of entirely materials according to 3M™ MCST™ Warranty.

This warranty will apply for the full period of the warranty as indicated in the Warranted Graphic Durabilities tables.

3M warrants that graphics sold as removable or changeable will, within the time period and condition stated in the applicable Product Bulletin, be able to be removed with no or little of the adhesive remaining. Coverage for this feature of the MCS Warranty is expressly conditioned upon use of 3M's recommended removal methods and notification to 3M no later than five business days after the attempted removal so that 3M may assist in or verify the removal method.

In the event that any graphics cannot be removed within the terms of this Warranty, the Graphic Manufacturer's or end-customer's exclusive remedy will be that 3M will reimburse the documented costs actually incurred that are over and above the anticipated, normal removal costs. The amount of removal cost reimbursement must be approved in advance by 3M.

Use of Non-3M Products

Because 3M does not control the specifications, manufacture or quality of other manufacturers' products, unless expressly stated otherwise in the applicable 3M Product Bulletin, 3M does not warrant the graphic quality or durability of finished graphics or the compatibility with 3M materials when made with other manufacturers' products.

If non-3M products are used, the graphics manufacturer is responsible for and assumes all liability or risk of loss in connection with the testing and performance of the products or combination of products to be used.

Warranty Terms and Limitations

Intended Applications: 3M materials are intended only for use by professional users for the specific applications and in the combinations described in 3M's Product and Instruction Bulletins. For any other use or application, the user is responsible for determining the suitability of the product and is responsible for any and all risk or liability associated with that use or application.

Product Misuse: 3M shall have no obligation with respect to any product that is used contrary to 3M's instructions or limitations stated in applicable written Product or Instruction Bulletins, or that is modified or damaged through misuse, abuse, accident, neglect or mishandling by the purchaser or any other person. Failure to follow the instructions contained in 3M's Product and Instruction Bulletins will void all warranties and limited remedies.

Modifications to Warranties and Limited Remedies: The warranties and limited remedies stated herein may not be modified except in writing and must be signed by the authorised 3M business manager for the country in which the products are sold.

Limitation of Warranty: The warranties stated in this document are exclusive and are made in place of any and all express or implied warranties or conditions, including any implied warranty of merchantability or fitness for a particular purpose, or any industry practice or custom or trade usage.

Limitation of Remedies and 3M Liability: Except as specifically stated in this warranty document, 3M shall not be liable for any other cost, loss or liability in any way related to the performance, use or inability to use any of the products. 3M also shall not be liable for any direct, indirect, special, or consequential damages of any kind, including loss of profits, revenue or business resulting from or in any way related to the 3M Commercial Graphics products. This limitation applies regardless of the legal theory upon which damages are sought.

The remedies offered by 3M are intended to compensate only for any non-conforming products (except as otherwise specifically set out in this document). As a condition of sale, it is agreed that the remedies set out in this document are exclusive and may not fail of their essential purpose.

In the unlikely event of a failure of a finished graphic manufactured entirely from 3M materials and covered by the 3M™ MCS™ Warranty, the following claim procedure must be used:

The MCS Warranty

1. All claims from the end-customer must be made to the respective Graphic Manufacturer in writing and within 14 days of the failure occurring. Claims must be supported by photographic and/or documentary evidence of the failure; this information should consist of the nature of the failure, the date of the failure and the date of manufacture of the graphics.
2. The claim should be forwarded by the Graphic Manufacturer to the distributor purchased the materials from the nearest local 3M Commercial Graphics Technical Service department together with respective documentation within a further 10 days of receipt of notification from the end-customer. For your local 3M office please refer Section 7 of this document.

3. 3M Commercial Graphics Technical Service reserves the right to inspect the defective graphics to ascertain the nature and probable cause of the failure.
4. 3M Commercial Graphics Technical Service will be the final arbiters of whether the graphic failure constitutes a legitimate MCS Warranty claim.
5. 3M reserves the right to reject any warranty claims that it feels do not confirm to the above requirements.

Information required for processing Claims according to 3M™ MCS™ Warranty

When contacting the material distributor or 3M Technical Service the following information will be required to ensure that your claim is processed efficiently.

Your Business Details

- Contact Name, Telephone, Address, email address etc

Your Customer's Details

- Contact name, Telephone, Address, email address etc

Graphic Construction Information

- Marking Film Type?
- Ink or Toner Type?
- Laminate or Screen Printed Clearcoat?
- Substrate – what has the graphic been applied to?

Please describe the problem in as much detail as possible

- Please remember to retain samples, pictures and information referring to material manufacturing lot numbers if at all possible.

Which technologies or processes did you use to manufacture the graphic?

- Screen Print, Ink Jet, Thermal Ink Jet, Electro-Cutting, Thermo-forming, Electrostatic, etc.

Application Information

- Who applied the graphic? Contact Name, Telephone, Address, email address etc
- What was the approximate ambient temperature at the time of application?
- If the graphic has been applied to a vehicle, what type of vehicle is it and where on the vehicle was the graphic applied?

Preferred Remedies

- What, in your opinion, would be the best remedy for your customer?
- What, in your opinion, would be the best remedy for you?



3M Products and Technologies

Film Technologies according to 3M™ MCS™ Warranty

3M has developed and refined many film, adhesive and coating technologies: cast and calendered PVC films, non-PVC polymer films, retroreflective sheetings, highly-durable and flexible polyurethane films, polyester and polycarbonate protective products, slip-resistant floor marking and flexible sign substrates.

The product range is designed for use with ink jet, screen print, electrocutting and electrostatic processes. Each imaging technology is specifically addressed with a range of materials for a wide range of graphic applications.

3M Cast Films

The manufacturing process for cast film explains some of its remarkable characteristics. A liquid mixture of coloured pigments, solvents and stabilisers is poured on to a liner – this is technically known as ‘solution casting’. The solvents are evaporated and the resultant PVC layer is fused into film by passing through an oven.

This creates a film that is very dimensionally-stable, thinner, more conformable and durable than calendered film (see below). Although cast film is considered to be generally more expensive than calendered film, it out-performs it by a considerable margin in most long-term applications and applications where conformability around irregular surfaces is most important. Cast films such as the 3M™ Scotchcal™ and 3M™ Controltac™ Plus Positionable films are available in opaque, translucent and transparent versions.



3M Calendered Films

The range of calendered films in the market is extensive. In the 3M portfolio products such as 3M™ Controltac™ Plus and 3M™ Scotchcal™ films cover a wide range of applications. In the manufacturing process for calendered film, solid PVC granules are melted, the liquid PVC is then extruded into a process that stretches and flattens it by using a series of heated rollers. This is known as ‘calendering’.

Calendered film consequently retains its ‘plastic memory’ and will always attempt to return to its former shape. The film’s ‘plastic memory’ results in its tendency to shrink over a period of time. Calendered film is generally thicker, less conformable and durable than cast film, but is suitable for many applications and is available in opaque, translucent, transparent and metallic versions.

3M Polymer Film Technology

Polymer films are a new type of self-adhesive film technology. While they are not PVC-based, they share many of the advantages of both cast and calendered PVC films (including good dimensional stability, durability and conformability). Polymer films have further benefits of exceptional performance in applications requiring regulatory flammability testing and graffiti resistance such as public transport.

3M Reflective Films

Reflective products such as 3M™ Scotchlite™ Reflective Sheeting and 3M™ Scotchlite™ Diamond Grade™ Reflective Sheeting are manufactured from a wide range of materials using specialist technologies including microreplication and glass microspheres. 3M reflective products are used in safety, signage and advertising.

Products and Technologies

3M™ Panaflex™ Flexible Substrates

Manufacturing large-format illuminated signing substrates that resist damage from man and nature is a highly specialised challenge. By using a woven treated polyester scrim material combined with superior quality face layers, 3M is able to offer a product with extended performance warranties. For less demanding applications a lighter weight, scrimless version of the Panaflex substrate is available.

3M Graphics for floors

Both interior and exterior floor graphics systems from 3M are designed for the harshest commercial environments. By using a combination of technologies from a range of 3M divisions a durable, removable and, above all, safe solution for placing images on the floor is possible.

3M Window Marking Systems

By using something as simple as a series of tiny perforations punched into a piece of film it is possible to create a graphic solution that allows building and vehicle windows to display an image on the outside and allow the occupants a clear view out from the inside. This powerful but simple use of many thousands of holes to create a product like 3M™ Perforated Window Marking Film, has changed many peoples view of the cities and towns in which they live and work. This type of graphics is ideal for public transport advertisement and eye-catching monumental campaigns on buildings.

Products and Technologies

3M Translucent Films

3M™ Scotchcal™ translucent films are available in over 50 standard colours, hundreds of simulated *PANTONE® colours, and special corporate colour matches. The film is designed to diffuse light evenly and be resistant to fading even in the harshest environments.

3M Simulated Etched and Frosted Glass Effect Films

3M™ Scotchcal™ Dusted and Frosted Films are designed to imitate the effects of acid-etched and sandblasted glass. Since these films do not permanently affect the substrate, they offer a highly versatile and cost-effective method of marking glass and acrylic surfaces. Dusted and Frosted films can be used in all manner of safety, privacy, decorative and promotional display applications.

3M Aircraft Marking Films

Low temperature flexibility, resistance to heat, moisture, solvents, abrasion, a dimensional stability that can accommodate aircraft skin expansion and contraction, and one of the most technically regulated safety environments in the world – these factors make 3M™ Aircraft Marking Films one of the most technically advanced film products in our portfolio.

3M Graphic Marking System for Curtain-sided Vehicles

Inks, toners and a unique film/adhesive configuration that is flexible and tough enough to withstand the constant rigour of life on a commercial vehicle curtain is a very special combination of technologies. By using a polyurethane film that blocks the migrating plasticiser from the curtain substrate and an adhesive that combines with the plasticiser to reinforce the bond between the film and the curtain, 3M has successfully developed a solution that guarantees performance in what is regarded within the graphics industry as one of the most challenging areas of graphic application.

*PANTONE® is a recognised trademark of Pantone, Inc, 1933, 1991.

3M Adhesives Technologies

Adhesive Technologies

construction, yet their importance is often overlooked. Each graphic application and substrate requires a range of features and properties of its components to ensure that it performs as expected and is trouble-free during its working life.

3M offers three key types of adhesive: permanent, removable and changeable. Using these options as a base we can also incorporate characteristics such as optical clarity, opacity and colour, moisture resistance, heat activation, degree of pressure sensitivity, tackiness, re-positionability, chemical and solvent resistance. Pressure-sensitive adhesive systems (PSA's) are generally used on 3M™ Scotchcal™ films. These quickly adhere to the substrate once pressure is applied.

Permanent Adhesives

Graphic films with permanent adhesives can be difficult to remove and will often require heat and/or chemicals for effective removal. They do, however, perform exceptionally well for applications requiring long-term performance and involving surfaces that are curved or corrugated.

Removable Adhesives

Films with removable adhesives can be lifted easily from most suitable substrates and may require the application of heat to aid the process. This type of adhesive is designed for easy removal of graphics for both short-, medium- and long-term applications on relatively simple surfaces. It is considered that a graphic with a removable adhesive should leave no or little adhesive residue when correctly removed within the warranty period.

Unique Adhesive Technologies from 3M

The Controltac *Plus* positionable adhesive system and Comply Performance feature are both examples of unique technologies applied to increase the performance and effectiveness of adhesives in a graphics environment. Both features help experienced and inexperienced personnel to apply larger graphics faster and with less chance of error – and therefore more cost-effectively.

3M Controltac Plus Adhesive

A film with the 3M Controltac *Plus* positionable adhesive system has millions of precision-placed microscopic glass spheres embedded within its adhesive layer. These spheres help to prevent the adhesive from fully contacting the application surface until pressure is applied. This enables the graphic to be positioned, then re-positioned as many times as necessary, until it is in exactly the right place before final application.

3M Comply Performance Technology

With its remarkable ‘bubble- and wrinkle-free’ application feature, 3M Comply Performance is the next step to speeding and easing graphic application. The adhesive layer has been developed to contain uniquely-configured channels which allow air to escape during application. When integrated with 3M Controltac *Plus* positionable adhesive technology, graphics can be applied with even greater speed and minimal risk of graphic damage – a particular benefit to professional applicators of fleet graphics who are looking to increase productivity and reduce vehicle down-time.

3M™ Controltac™ Plus Adhesive

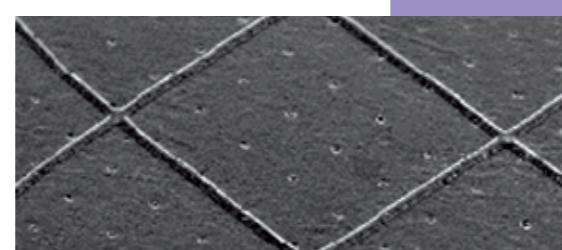
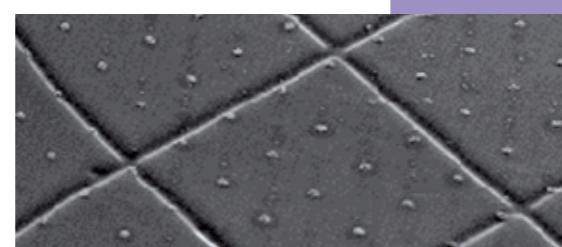
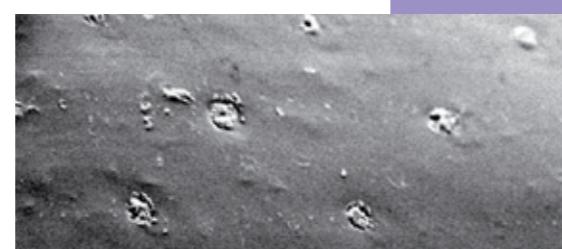
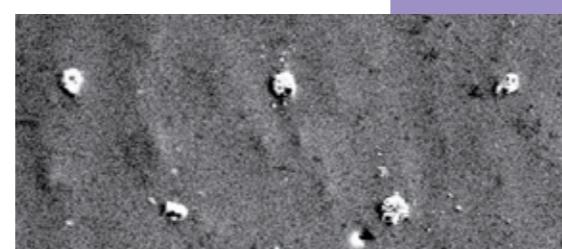
This micrograph shows the Controltac *Plus* adhesive prior to application. The glass microspheres are strategically placed on the surface – their role is to stop the adhesive fully contacting the substrate which allows repositioning of the graphic.

This micrograph shows the Controltac *Plus* adhesive after application. The glass microspheres have been forced into the adhesive layer during application allowing the adhesive to fully bond with the substrate.

3M™ Comply™ Performance

This micrograph shows the Controltac *Plus* adhesive used with the Comply Performance feature prior to application (*note unique 'X' configuration of the air release channels). The glass microspheres are strategically placed on the surface in conjunction with the micro-replicated air channels.

This micrograph shows the Controltac *Plus* adhesive used with the Comply feature after application. The glass microspheres have been forced into the adhesive layer during application allowing the adhesive to fully bond with the substrate.



3M Ink and Toner Technologies

Inks for Screenprinting and Digital Printing

3M™ Piezo Ink Jet Inks

With excellent handling and drying or curing capabilities, and a choice of either four-colour or six-colour or eight-colour process (cyan, magenta, yellow, black + light cyan and light magenta) Piezo Ink Jet Inks ensure the best performance and widest possible colour gamut when printing onto durable substrates. Piezo Ink Jet products support a wide range of printing technologies from several manufacturers including solvent, mild solvent and UV PIJ based printers. All of which are eligible to manufacture graphics protected by the 3M MCS Warranty.

3M™ Scotchcal™ Screen Printing Ink

This range of solvent-based opaque line and transparent four-colour inks offer extended outdoor durability performance across a wide range of demanding applications. They are all fully supported by the MCS Warranty.

3M™ Scotchcal™ UV Screen Printing Ink

Scotchcal UV inks offer extended outdoor durability performance and are fully supported by the MCS Warranty. Their unique chemistry allows for increased registration accuracy, consistent viscosity, higher resolution printing and reduced environmental impact.

Scotchcal UV inks offer superior resistance to scratching, impact damage and improved flexibility when used on self-adhesive films.

3M™ Toners for Electrostatic Digital Printers

The Electrostatic Toner System is designed to operate in the Scotchprint® Printer. The unique two-part premix ensures that toner aging is all but eliminated and the high-density concentrates allow for extended life performance. The toners have been created with exterior durability as their primary function – a typical graphic manufactured with components according to 3M™ MCST™ Warranty would be warranted against excessive fading and colour change for a period in excess of five years.

Accessories

Accessories for the 3M™ MCS™ Warranty

The graphic accessories are developed to be fully-compatible across the entire spectrum of 3M electro-cut, screen- and digitally printed graphics. Wherever possible they provide a safe, eco-friendly solution to all manner of surface preparation, graphic application, cleaning and removal tasks.

Graphic Application and Removal System

These products have been developed to aid application, cleaning and removal of 3M graphic films with a range of compatible products that support the 3M™ MCS™ Warranty programme. The range comprises four products:

- Surface Preparation System
- Film Cleaner
- Graffiti Remover System
- Graphic Remover System

The products are biodegradable and are either pH-neutral or have a low pH. Also, being free from aromatic and chlorinated hydro-carbons, accessories (unlike many other proprietary cleaners and solvents) are virtually odourless and safe to use.

3M™ Application Tapes

Each of 3M's pre-spacing and pre-masking tapes has been manufactured to ensure the fast, safe application of both printed and non-printed 3M MCS warranted graphics to all kinds of substrates.

3M™ Edge Sealers

For certain more demanding applications, 3M has developed a number of film-specific Clear Coats to seal the edges of vulnerable graphics.

3M Application tools

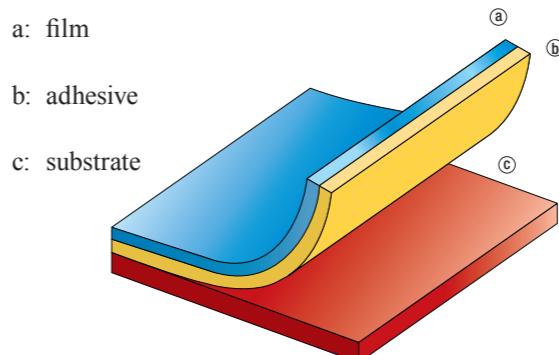
3M's range of specialist accessories are designed to ease graphic application onto most substrates and flat/curved/riveted surfaces. Tools include squeegees, application rollers and rivet brushes.



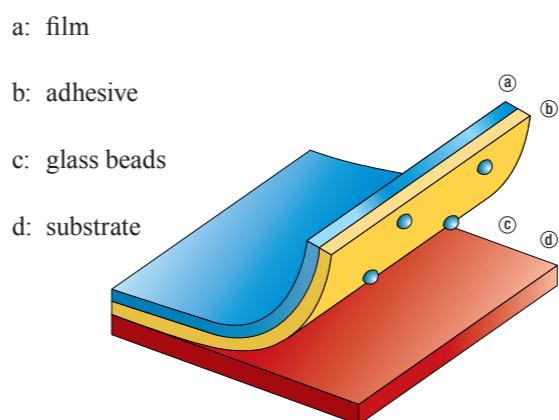
Product Constructions

Product Constructions according to 3M™ MCS™ Warranty

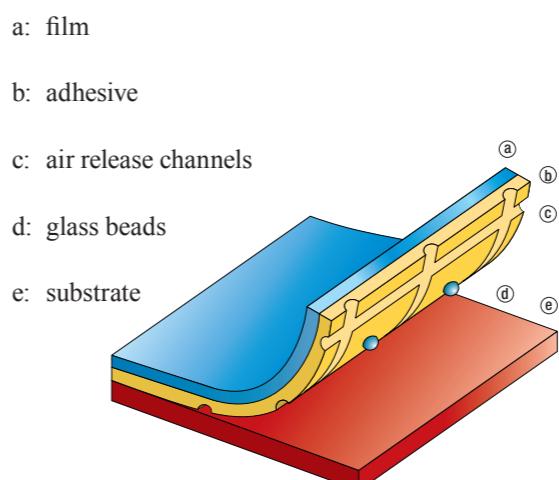
3M™ Pressure Sensitive Adhesive Graphic



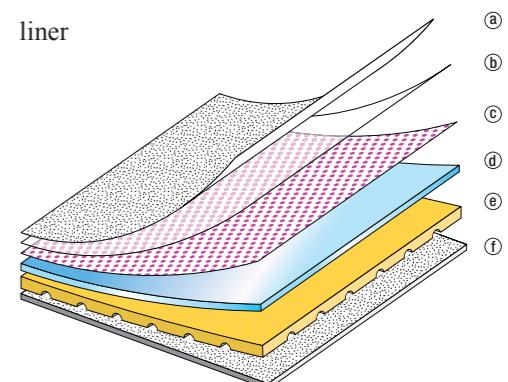
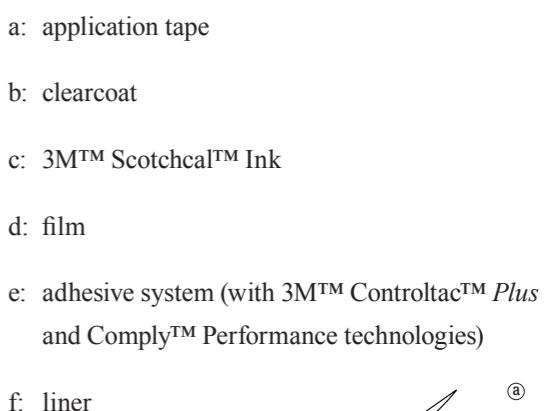
3M™ Controltac™ Plus Graphic



3M™ Controltac™ Plus Adhesive with Comply™ Performance Graphic



Screen Printed Graphic according to 3M™ MCS™ Warranty



3M™ Piezo Ink Jet Graphic

a: application tape

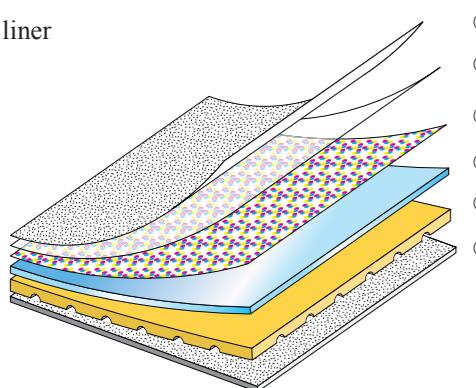
b: laminate/clearcoat

c: Piezo Ink Jet Ink

d: film

e: adhesive system (with 3M™ Controltac™ Plus
and Comply™ Performance technologies)

f: liner

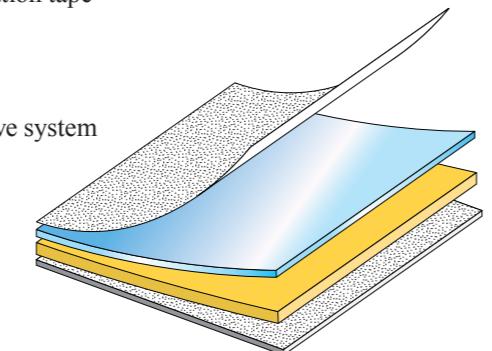
**3M™ Electrocut Graphic**

a: application tape

b: film

c: adhesive system

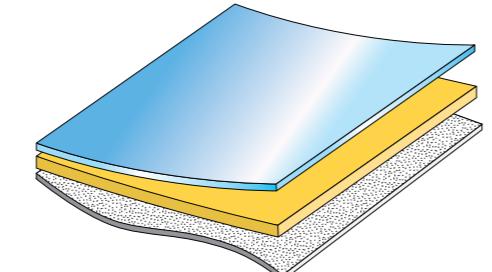
d: liner

**3M™ Panaflex™ Sign Graphic**

a: film

b: adhesive system

c: Panaflex flexible substrate

**3M Electrostatic Graphic**

a: application tape

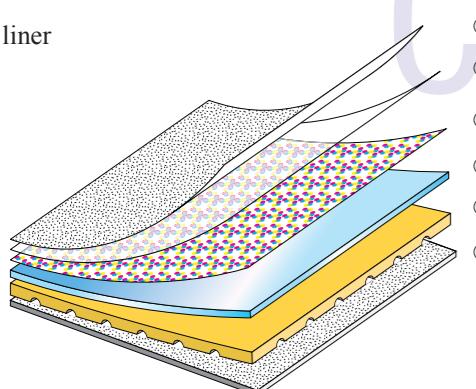
b: laminate/clearcoat

c: Scotchprint® Toner

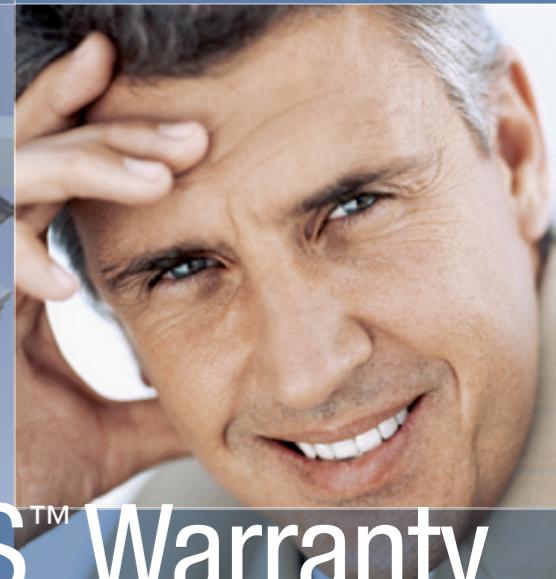
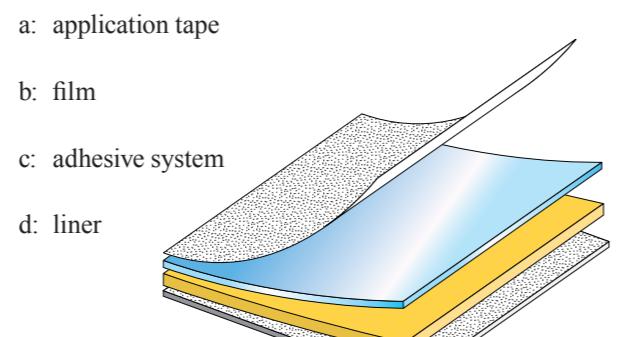
d: film with receptor coating

e: adhesive system (with Controltac Plus
and Comply Performance technologies)

f: liner



3M™ MCS™ Material Constructions



Using the 3M™ MCS™ Warranty Qualified Manufacturer Identity

**A guide to using the chainlink logo
and MCS™ trademarks**

Introduction

The identity standards have been developed to help you properly and consistently promote your status as a 3M MCS Qualified Manufacturer.

Because 3M offers many different products in many different markets, it is important that we all communicate a consistent identity – one that ensures individuals will immediately recognise your company as a Qualified Manufacturer according to 3M™ MCS™ Warranty.

These standards will help you enhance the equities we all share in the Qualified Manufacturer identity and, as such, we encourage Qualified Manufacturers to include the relevant approved logo style wherever possible on all material related to the MCS Warranty you may produce.

You will be provided with all relevant identity elements during the qualification process.

Approved Logo Styles

Approved Logo Styles

To aid consistency there are only two approved logo styles that, as a Qualified Manufacturer, you may use in your corporate and promotional communications:

1. Qualified Manufacturer Logo:



2. MCS Chain Link Logo with Strapline:

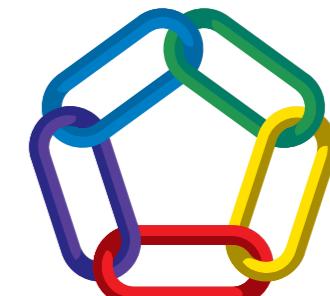


Graphic Elements

Graphic Elements

1. The Chain Link Device is available in two formats:

- a. Digital Illustrator EPS for 4-colour process printing



- b. Single-colour logo for use in black and white (mono) press work and other single-colour print and display requirements



Please note:

When incorporating the Chain Link Device within your own communications, it must never be used on its own (ie: without the approved strapline) as a decorative element/super-graphic.

Graphic Elements

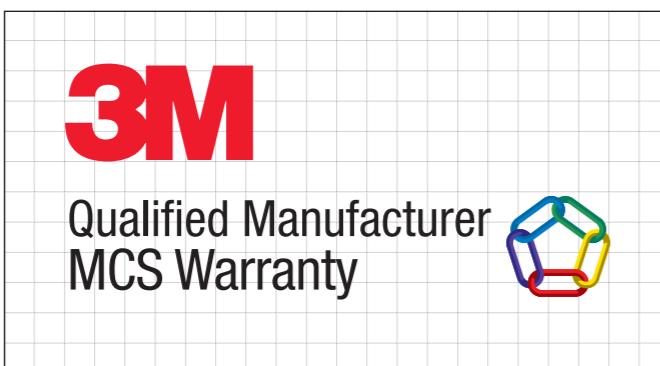
2. The Qualified Manufacturer Logo

May appear on White backgrounds:



Sizing ratio

It is important that the relative size and position of the Chain Link Device to the Text and 3M Logo Link remain the same.



Only the original 3M logos have to be used. They are available as CMYK Illustrator EPS. For your different applications they may be scaled proportional (just the complete graphic).

3. Chain Link Logo with Strapline

May appear on White backgrounds:



Sizing ratio

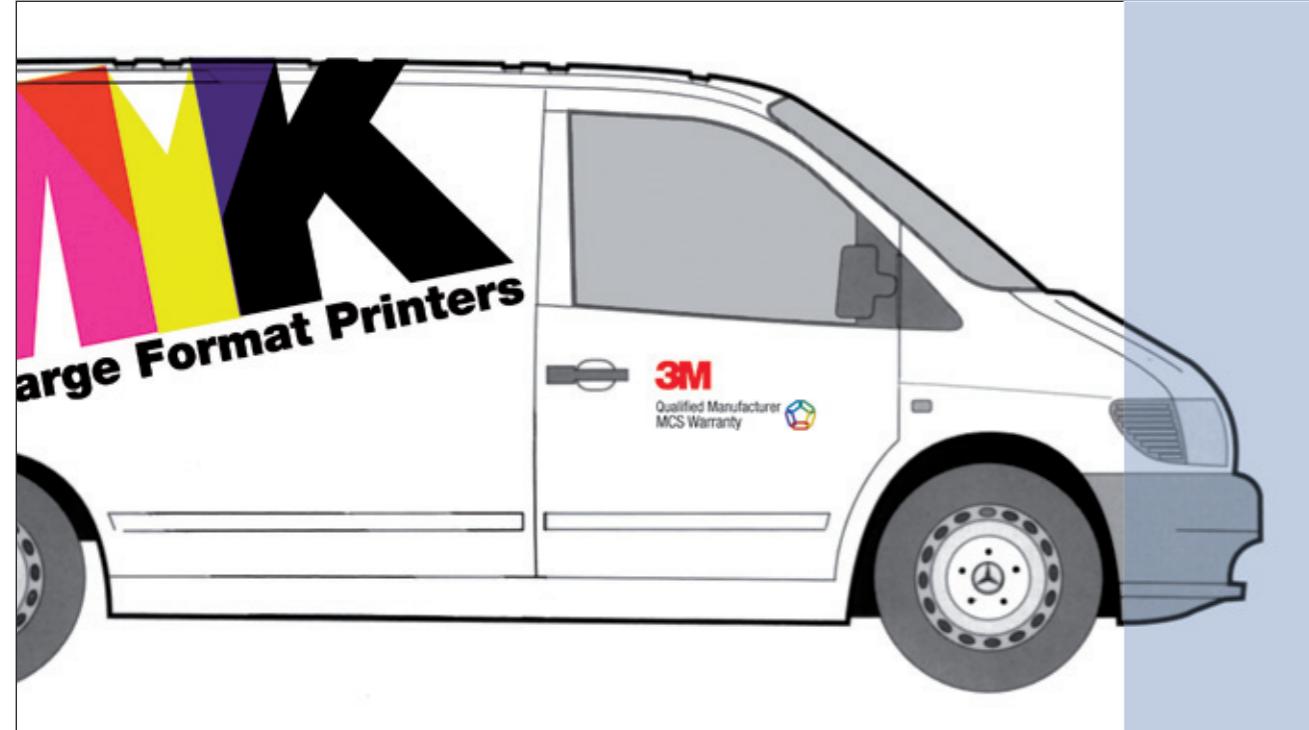
Whatever size the logo is reproduced, the relative size and position of the Chain Link Device to the strapline should remain the same.

Incorporating the 3M™ MCS™ Identity into your corporate and promotional communications

Should you wish to incorporate the identity within your own vehicle graphics, signage, promotional displays, stationery or press advertising, there are three key graphic considerations you should always take into account – particularly when your own company name or identity shares a common visual surface with an approved style of MCS logo:

1. Ensure the MCS logo remains secondary in terms of size and emphasis to your own identity
2. Keep the MCS logo as far as possible away from your own identity (for example, if your logo appears at the top of your letterhead, we suggest you position the MCS logo at the foot of the page)
3. Whichever logo style you choose, ensure it is surrounded

on all sides by free space of at least half the logo height



3M™ MCS™ Warranty

Guidelines for using the Qualified Manufacturer Identity

Only graphic manufacturers who have been audited and approved by 3M as a 3M MCS Qualified Manufacturer are eligible to use:

- The Qualified Manufacturer Logo
- The Chain Link Logo
- The title 'Qualified Manufacturer' according to 3M™ MCST™ Warranty

Definition of a 3M MCS Qualified Manufacturer

Graphics manufacturers must have a signed agreement in place with 3M. The terms and conditions of this agreement are explained at the beginning of this handbook.

This agreement is reviewed on an annual basis before being extended for a further additional year. It sets out the specific terms and conditions that apply for the year ahead.

Until further notice, the terms and conditions which qualified manufacturers must meet include:

- Compliance with 3M business requirements
- Use of all 3M materials
- Use of 3M-approved equipment

In addition to meeting the above terms, Qualified Manufacturers also must:

- Be able to produce graphics that meet the Quality Promise according to 3M™ MCST™ Warranty
- Agree to use their best efforts to publicly support the MCS Warranty
- Allow for training of their personnel by 3M

Every time 3M qualifies a manufacturer, 3M are warranting the finished graphic the manufacturer produces under the MCS Warranty programme.

Definition of graphic

A graphic covered by the 3M MCS Warranty must meet all the following criteria:

A printed (or cut) graphic produced using all 3M materials (inks or toners, films, overlaminates, application tapes etc) on 3M-approved digital printing equipment, standard screen printing processes or electro-cutting equipment by a Qualified Manufacturer.

Approved technologies and equipment

A Qualified Manufacturer can produce a graphic covered by the 3M MCS Warranty using the following technologies:

- Mutoh Blizzard Printer
- Mutoh Spitfire Extreme Printer
- Mimaki UJV-160 Printer
- Durst Rho 160
- Spühl
- 3M electrostatic system
- Scotchprint® Printer 2000
- Standard screen printing presses
- Scitex Pressjet®-W Digital
- Raster Graphics Arizona™ Digital Screen Press
- VUTEk® Printers 3300/3000 and 5300/5000, 3360, 2360 and 150
- VUTEk® QS2000 and QS3200 Printers

Standard flatbed, friction and sprocket-fed electro-cutting equipment.

3M continuously works to extend the list of approved technologies and equipment.

Using the Qualified Manufacturer Identity

Correct use of 3M™ MCS™ trademark in headlines and continuous text

1. The 3M MCS trademark must be used in an approved and consistent manner in all communications. When used in visual communications it may not be altered.

Correct:

- 3MTM MCS™ Warranty

Incorrect:

- M.C.S.
- 3M-MCS

2. The 3MTM MCS™ Warranty trademark name should be used in full every time it is used in any sentence or heading.

This rule also applies to captions of photos and illustrations.

Correct use of the Chain Link Device

- a. Never attempt to recreate the Chain Link device other than from an official 3M source
- b. Never separate the Chain Link device from the 'Qualified Manufacturer' or 'MCS' text link/strapline.
- c. Never distort or modify the Chain Link device in any way
- d. Always position the Chain Link device on a straight line
- e. Always leave a margin equal to at least 1/2 the height of the Chain Link device all round

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