

IPAS 714

IP714 – 2 Pack Low VOC Epoxy Chromate Free Primer

Background

IP714 and its sister product IP715, were developed some 7 or 8 years ago, at the request of Pratt and Whitney Canada, to comply with new environmental legislation, which mandated that chrome, xylene, toluene and several other products, that are normally used in paints and coatings were not allowed to be used in new formulation paints.

Some of these materials, including xylene are very effective in making good quality, highly storage stable, easy to use products at an economical price.

This new legislation, rolled out across the United Technologies Group, meant that many of the standard materials used in paint formulation could not now be used and we have had to make these specialised engineering coatings with the Canadian requirements in mind.

Most of the products that we are now using have had to be researched and had to be put before the United Technologies Health & Safety Representatives for their agreement before we could use them. The resulting products IP714 and IP715 are termed low VOC environmentally friendly, chrome-free primer and decorative top coat.

Most of our customers have little or no problem in applying these products, particularly in the UK and Europe, where low VOC paints have been used for many years, however, on occasion, we do have issues with products and we have put this information together to try and guide people through some of the minor pitfalls of using this very advantageous product.

Application and Use

- Mixing Prior to Use

All paints & coatings, but especially primer systems have a tendency to layer with a degree of settlement on storage. The older the batch, the more compacted and apparently under solvent will the product appear. Obviously, stock rotation is important here and the lowest batch number should be used first.

Low VOC primer systems, like IP714 are high rheology, and as such are not Newtonian liquids. Visual differences can to can and batch to batch could be evident. Viscosity of this type of product cannot be checked with typical flow cups and in production the use of a spindle viscometer, with measurements in centipoise is the norm. However, after catalysing, the subsequent mix exhibits a more Newtonian nature, and viscosity can be measured through typical flow cups (ISO / DIN / Ford).

It is very important that a good method of re-dispersing the material is adhered to, to allow gentle agitation and dispersion of the solvent, which may have separated from the more solid mass. It is important that the product is

an homogenous liquid before using. Following is advice on simple methods, which are applicable for IP714 as per any paint or coating.

- **Shaking**

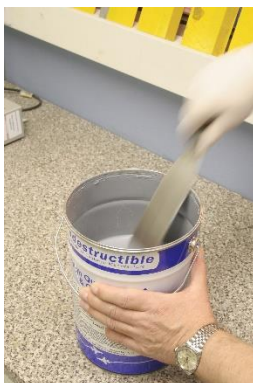
This is the preferred method of mixing for any paint product. Cans can be shaken by hand or preferably utilising a mechanical shaker. Normally a period of 3-4 minutes on a mechanical shaker will thoroughly mix and homogenise the coating. It is recommended that after shaking the contents are still hand stirred using a paint spatula.



Example Paint Shaker.

- **Hand Stirring**

This is the most normal method of re-dispersing paint coatings. We recommend the use of a wide bladed paint spatula. A blade width of minimum 1.0-2.0 inches (3.5-4.0cm) is suggested. Use an action to not only stir the product in the horizontal plane, but use a lifting action to thoroughly mix the top and bottom of the can.



In no circumstances should a screwdriver or similar circular or narrow implement be used to stir the contents of the container. This type of implement will NOT correctly homogenise the coating and will lead to an incorrect product being applied.



- Mechanical Stirring

In some cases the use of a mechanical stirrer can be an option. This will again quickly disperse the contents to a homogenous mix, but care should be taken to use low speed stirring to prevent excessive aeration within the liquid.

Mixing with Catalyst for Application

Once the contents of the can have been correctly mixed to a homogenous condition, the product can be mixed with catalyst ready for spraying. The use of the correct mixing ratio is important to achieve the correct technical performance properties of the applied, cured coating. This is especially so with high solids, low VOC products.

It is recommended that the products are mixed in clear glass or plastic containers, preferably graduated so that an easy visual measure of the correct volume ratios are evident. Mixing sticks can be used, but again should only be used in clear containers that have vertical sides.

The mixing ratios for the IP714 Primers are as follows:

IP714A Light Grey Primer

	Volume	Weight
Base: IP714A	7 parts	95.2 parts
Catalyst: IP714B	1 part	10.0 parts

IP714-2-A Dark Grey Primer

	Volume	Weight
Base: IP714-2-A	7 parts	95.2 parts
Catalyst: IP-714B	1 part	10.0 parts

After accurate mixing and thorough stirring, the catalysed product should be allowed to stand for 15 minutes to allow the chemical reaction to commence. Failure to observe this dwell time could result in incorrectly reacted product and reduced technical performance.

After this 15 minute dwell catalysed product should be re-stirred before use. Pot life for the catalysed primer is 4 hours, although still liquid, should not be used.

Application Viscosity Control

Once the base and catalyst have been mixed, the viscosity should be checked, and as necessary an addition of reducer be made to achieve the recommended application viscosity noted in the table below.

For normal application conditions, use IP715 reducer. Where very complex shapes are involved, with difficult access areas behind brackets etc, or in conditions of higher temperature / humidity the use of slow evaporating reducer IP2372 can be considered.

Normal thinner addition for either reducer will be 5-10%, but up to maximum of 20% can be added if required.

Flow Cup	Bs.B4 Cup	ISO No 4 Cup	ISO no 5 Cup	DIN No 4 Cup	Zahn No 2 Cup
Viscosity, Secs	37-42	60-70	27-32	26-30	31-34

Note that viscosity is temperature related; the lower the temperature, the higher the viscosity. The viscosity ranges noted above are for typical ambient temperatures in a range 15-21°C (60-70°F)

We recommend shop conditions within the following guidelines:

- Temperature Range: 15-25°C (60-75°F)
- Humidity: 30-75% RH

Temperatures below 15°C are not recommended. Temperatures above 25°C may lead to dry spray and any spraying above 30°C ambient temperature is not recommended.

Application

Once mixed and thinned as per the viscosity chart above, the IP714 is ready for spray application. The product can be applied through most types of spray gun, including conventional (Binks-Bulows 230 / 630 or DeVilbiss JGA); HVLP (DeVilbiss GTA) or the latest technology 'compliant' guns.

Our current recommendations are the latest generation of compliant find atomising guns; typically the DeVilbiss Compact Transtech or the DeVilbiss FLG. Other manufacturers will produce similar guns.

It is important not to use insufficient or excessive atomising air, as this will affect not only the fineness of atomisation but the wetness and smoothness of the laydown. We recommend you consult the technical specification for your specific gun, but as a guide we can suggest the following as typical values:

Conventional Guns:	40-45psi (2.9-3.2 bar)	HVLP Guns:	10-15psi (0.7-1x1.1 bar)
Transtech: Guns:	28-30psi (2.0 bar)	FLG Guns:	35psi (2.5 bar)

The coating as applied using these recommended setting should apply wet and flow to give a smooth, orange peel finish. Most parts, including quite complex shapes should not give a problem. However, to coat small areas, or behind difficult brackets etc, it is possible to consider an air brush or detail gun (typically Paasche VL / VL; Sealey AB931 or Badger 400). Use the viscosity mix recommended for larger spray guns and follow the air brush manufacturer's instructions regarding air pressure.

At the end of the spraying session it is important to thoroughly clean the spray equipment. If gun-wash is to be used, ensure this is of sufficient quality to fully dissolve the IP714. It is highly recommended that final flush should be with either IP715 Reducer or IP2372 Reducer.

Curing

The product can be force cured or air dried. If the primer is to be over-coated with IP715 finish, it is recommended that after a 30 minute flash off it is part cured for 30 minutes @ 70°C (160°F), or allowed to air dry for 1 hour at ambient temperature greater than 15°C (60°F).

For primer only application, flash off for 30 minutes, then fully cure for 30 minutes @ 125°C (250°F) full metal temperature or allow 7 days air drying.

Overcoating

It is normal to over-coat primed with IP714-A or IP714-2-A with finish coat IP715-A.

Please refer to the technical data sheet for IP715-A and application instruction sheet IPAS 715