Performance Characteristics and Equipment Requirements for Polymedia Lite


In observing one operator during the training period with Polymedia-Lite we noticed that at times he was working within 3 inches of the substrate. This with a 1/2" nozzle. Another operator, while working about 24" back, kept fanning the work area. He never allowed the blast to remain in a single area for more than a split second. A third, working at about 18", established a pattern and kept blasting at the boundary, continuously enlarging the stripped area. All three were experienced blasters, but their approach was drastically different. The way they blasted reflected the type of media they were used to blasting with, who had taught them, and what was of primary importance to their supervisor.

The best mode of operation for one media on a particular coating and substrate is not a universal best mode of operation. Another media, on the same coating and substrate will have a different best mode. Likewise, even when using the same media on a different substrate, a different mode may have to be used.

The purpose of this presentation is to explain the operating window of Polymedia-Lite 72 and 75. We will also review the effects of blasting within different areas of the operating window on almen arc height and strip rate.

For those interested in using Polymedia-Lite, there is a document available entitled Guidelines to Help Determine Process Specifications for Stripping Paint from Aircraft Fuselage, Parts, & Components. It is important to emphasize that this document is not a process specification. It was designed as a guideline which outlines the general process requirements. In this document, tables 10.2.1 and 10.3.1 list the maximum operating parameters on metals and composites by substrate type. This table is not the recommended blast parameters. It is the limit beyond which it is not recommended to go. Naturally, these limits are different from the operating windows which we will discuss today.

Breakdown Rate (see drawing on page six)

In all of the properties, the distance plays a more significant role than does the pressure. When examining the breakdown rate, the increase from 20 psi to 50 psi is much less at 25 inches than at 3 inches. Simply from an economical aspect, using the media at 3 inches and 50 psi is not efficient.

While the breakdown rate continues to decrease beyond 10 inches, the decrease is not as large. Therefore, operating at 10 inches or farther out is good in terms of breakdown.

The same is true for Polymedia-Lite 75. Operating closer than 10 inches greatly increases the breakdown rate of the media, even at low pressures.

Almen Arc Height (see drawing on page six)

The same type of curve is observed with the almen arc data as was observed with the breakdown rate. It is important to note that these curves are not based on theoretical numbers, but on actual data. The difference between stand-off distance and pressure is even more dramatic with the almen arc height. And again, operating closer than 10 inches greatly increases the arc.

Not shown here is the fact that the almen arc does not go up to extremely large numbers. Nevertheless, the importance of the stand-off distance is demonstrated.

Although there is a difference in the arc height between the two media, the type of curve is the same. The same conclusions hold for both media.

Coating Removal Rate (see drawing on page seven)

The maximum coating removal rate is obtained at about 18 inches for all pressures. Interestingly, a maximum is reached from about 15 inches at 20 psi to about 20 inches at 50 psi. The coating removal rate increases at all pressures as the distance approaches 15 to 20 inches and then the rate decreases.

Continued on page five
Gage Brings New Meaning to Surface Recovery with Stingray™ Paint Removers

Gage Products Company of Ferndale, Michigan has added several paint removers to its product line. With the NESHAP compliance date closer than ever, aircraft paint and strip hangars must eliminate their use of methylene chloride paint removers. Gage is playing a leading role in the development of an effective, safer line of new generation surface recovery products specifically formulated for the aircraft industry.

Stingray Paint Removers are the newest and most exciting formulas to offer effective, safer solutions for virtually all aircraft surface recovery challenges. Depending on the user and the paint system to be removed, Gage offers the following non-methylene chloride paint removers for aircraft:

- Stingray 853 is benzyl alcohol based remover with an acid accelerator
- Stingray 874, another based remover, has a neutral pH
- Stingray 880 is a paint remover containing no VOCs
- Stingray 894 is a benzyl alcohol based remover with an alkaline accelerator

The Stingray line of paint removers has been proven to provide fast action while not harming the substrate. Stingray also makes the job safe and comfortable for the worker by containing non-hazardous and non-odorous materials.

With the NESHAP compliance date affecting today’s paint removal operations, Gage can make your transition to acceptable paint removers an easy one.

Continued from front page

Beyond about 45 psi the gains made in increased rate are smaller than the negative effects due to breakdown rate. It should not be necessary to go beyond 45 or 50 psi. And, most applications will have an optimum in the 30 to 45 psi range.

Polymedia-Lite 75 has a steeper slope. The difference between operating at 10 or 18 inches is even greater. Also, the difference between operating at 20 or 30 psi is also greater. Therefore, whenever possible, the 75 media should be used at about 18 inches.

The coating removal rate was determined on mil-P-23377 primer and mil-C-82386 top coat. While the optimum conditions will shift for different coating systems, the same patterns will apply.

Combination of ARC, Breakdown & Rate (See Drawing on Page Seven)

In this chart the breakdown rate, almen arc height, and coating removal rate were combined. In combining the three sets of data most importance was given to the almen arc and the breakdown and coating removal rate were given a lesser importance.

No numbers are present on the y-axis since they have no meaning. It is the relative values that are important. The valley represents the optimum operating window. The lowest point of the valley, being the optimum is actually around 30 to 40 psi and about 18 inches stand-off.

The same curve was found for both media. The only differences being the absolute values of the y-axis.

The best way to proceed in determining the optimum parameters for a particular application is discussed in Process Guidelines.

While the best results are always obtained while using the media under optimum conditions, the media are very forgiving. As was discussed by other authors at this conference, the media is easy to work with and it removes coatings efficiently.

See drawings on pages six and seven