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**Alodine® FREKOTE® Hysol® TURCO®**

**Product Selector Guide  
for the Aerospace Industry**



| RTM RESINS                             | SERVICE TEMPERATURE   | POT LIFE (MINUTES)           | PAGE |
|--|-----------------------|------------------------------|------|
| Hysol® EA 9150™ Resin                  | 250°F/121°C           | 480                          | 6    |
| TOUGH HIGH STRAIN PASTES               | SERVICE TEMPERATURE   | BELL PEEL ( 77°F/25°C)       | PAGE |
| Hysol® EA 9309.3NA™                    | 180°F/82°C            | 75 (lb/in)/335 (N/25mm)      | 6    |
| Hysol® EA 9313™                        | 120°F/49°C            | 50 (lb/in)/225 (N/25mm)      | 6    |
| Hysol® EA 9320NA™                      | >180°F/82°C           | 35 (lb/in)/150 (N/25mm)      | 6    |
| Hysol® EA 9330™                        | 180°F/82°C            | 60 (lb/in)/265 (N/25mm)      | 6    |
| Hysol® EA 9330.3™                      | 180°F/82°C            | 60 (lb/in)/265 (N/25mm)      | 6    |
| Hysol® EA 9346.5™                      | 300°F/149°C           | 60 (lb/in)/265 (N/25mm)      | 6    |
| Hysol® EA 9359.3™                      | 200°F/93°C            | 75 (lb/in)/335 (N/25mm)      | 6    |
| Hysol® EA 9360™                        | >225°F/107°C          | 60 (lb/in)/265 (N/25mm)      | 6    |
| Hysol® EA 9361™                        | 140°F/60°C            | 35 (lb/in)/150 (N/25mm)      | 6    |
| Hysol® EA 9371™                        | 180°F/82°C            | 15 (lb/in)/70 (N/25mm)       | 6    |
| HIGH TEMPERATURE FILLED PASTES         | SERVICE TEMPERATURE   | POT LIFE (MINUTES)           | PAGE |
| Hysol® EA 934NA™                       | 300°F/149°C           | 40                           | 6    |
| Hysol® EA 9321™                        | 250°F/121°C           | 40                           | 6    |
| Hysol® EA 9380™                        | 250°F/121°C           | 180                          | 6    |
| Hysol® EA 9392™                        | 350°F/177°C           | 75                           | 6    |
| Hysol® EA 9394™                        | 350°F/177°C           | 100                          | 8    |
| Hysol® EA 9394™/C-2™                   | 450°F/232°C           | 480                          | 8    |
| Hysol® EA 9395™                        | 350°F/177°C           | 100                          | 8    |
| LIQUID SHIMS                           | SERVICE TEMPERATURE   | POT LIFE (MINUTES)           | PAGE |
| Hysol® EA 934NA™                       | 300°F/149°C           | 40                           | 6    |
| Hysol® EA 9360™                        | >225°F/107°C          | 40                           | 6    |
| Hysol® EA 9377™                        | >200°F/93°C           | 60                           | 6    |
| Hysol® EA 9394™                        | 350°F/177°C           | 100                          | 8    |
| Hysol® EA 9394.2™                      | 225°F/107°C           | 15                           | 8    |
| LOW VISCOSITY WET LAY-UP PASTES        | CURE TEMPERATURE      | POT LIFE (MINUTES)           | PAGE |
| Hysol® EA 956™                         | 77°F/25°C             | 30                           | 6    |
| Hysol® EA 9390™                        | 200°F/93°C            | 120                          | 6    |
| Hysol® EA 9396™                        | 77°F/25°C             | 75                           | 8    |
| Hysol® EA 9396™/C-2™                   | 200°F/93°C            | 480                          | 8    |
| SYNTACTICS AND LOW-DENSITY PASTES      | SERVICE TEMPERATURE   | DENSITY                      | PAGE |
| Hysol® EA 960F™                        | 160°F/71°C            | N/A                          | 6    |
| Hysol® EA 9396.6MD™                    | 300°F/149°C           | 37 (pcf)/0.60 (g/cc)         | 8    |
| Hysol® EA 9815™                        | 250°F/121°C           | N/A                          | 8    |
| FREKOTE®                               |                       |                              | PAGE |
| Mold Releases                          | All Frekote® Products |                              | 8-9  |
| PRIMERS                                |                       |                              | PAGE |
| Adhesive Primers                       | All Hysol® Primers    |                              | 10   |
| 250°F SERVICE METAL BONDING FILMS      | SERVICE TEMPERATURE   | HONEYCOMB CLIMBING DRUM PEEL | PAGE |
| Hysol® EA 9602.3™                      | 250°F/121°C           | 20 (inllb/in)/90 (mlN/m)     | 10   |
| Hysol® EA 9628™                        | 250°F/121°C           | 18 (inllb/in)/80 (mlN/m)     | 10   |
| Hysol® EA 9628H™                       | 250°F/121°C           | 20 (inllb/in)/90 (mlN/m)     | 10   |
| Hysol® EA 9686™                        | 300°F/149°C           | 17 (inllb/in)/76 (mlN/m)     | 10   |
| Hysol® EA 9696™                        | 250°F/121°C           | 25 (inllb/in)/110 (mlN/m)    | 10   |
| 300°F SERVICE COMPOSITE BONDING FILMS  | SERVICE TEMPERATURE   | OUTTIME (DAYS @ 77°F/25°C)   | PAGE |
| Hysol® EA 9695™                        | >300°F/149°C          | 90                           | 10   |
| HIGH TEMPERATURE ENGINE NACELLE FILMS  | SERVICE TEMPERATURE   | OUTTIME (DAYS @ 77°F/25°C)   | PAGE |
| Hysol® EA 9657™                        | 400°F/204°C           | 15                           | 10   |
| Hysol® EA 9673™ (BMI)                  | 550°F/288°C           | 30                           | 10   |
| Hysol® EA 9689™                        | 420°F/216°C           | 10                           | 10   |
| CORE SPLICES                           | SERVICE TEMPERATURE   | EXPANSION RATIO              | PAGE |
| Hysol® EA 9833.1™ (BMI)                | 450°F/232°C           | 2-3x                         | 12   |
| SynSpand® 9899CF™                      | 350°F/177°C           | 1-2x                         | 12   |
| SYNTACTIC FILMS                        | SERVICE TEMPERATURE   | DENSITY                      | PAGE |
| SynCore® 9823.1™                       | 250°F/121°C           | 42 (pcf)/0.67 (g/cc)         | 12   |
| SynCore® 9872.1™                       | 350°F/177°C           | 42 (pcf)/0.67 (g/cc)         | 12   |
| EXPANDING SYNTACTIC FILMS - CORE FILLS | SERVICE TEMPERATURE   | DENSITY                      | PAGE |
| SynSpand® 9899™                        | 350°F/177°C           | 8-25 (pcf)/0.12-0.40 (g/cc)  | 12   |
| SynSpand® 9899CF™                      | 350°F/177°C           | 18-35 (pcf)/0.29-0.56 (g/cc) | 12   |
| JET ENGINE ABRADABLE SEALS             | SERVICE TEMPERATURE   | OUTTIME (DAYS @ 77°F/25°C)   | PAGE |
| SynSpand® EA 9890™                     | 180°F/82°C            | 15                           | 12   |
| COMPOSITE SURFACING FILMS              | SERVICE TEMPERATURE   | OUTTIME (DAYS @ 77°F/25°C)   | PAGE |
| SynSkin® HC 9837.1™                    | 350°F/177°C           | 90                           | 12   |

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| Ridoline® 298™                 | TURCO® 6751-L™               |         |
| Ridoline® 4355™                | TURCO® 6849™                 |         |
| TURCO® 4215 NC-LT™             | TURCO® Liquid ARR (T-4181-L) |         |
| TURCO® 5578-L™                 | TURCO® Vitro-Klene           |         |
| TURCO® 5948-DPM™               |                              |         |
| DEOXIDIZERS                    |                              | PAGE 16 |
| Deoxalume® 2310™               | TURCO® Liquid Smut-Go® NC    |         |
| TURCO® Aldox V                 | TURCO® Nitradd (T-4104)      |         |
| Deoxidizer 6/16                |                              |         |
| ETCHANTS                       |                              | PAGE 16 |
| Aluminux® Etch L™              | Mil-Etch®                    |         |
| Alumiprep® 33™                 | Nova EC-202 L                |         |
| TURCO® Metal Glo #6            | TURCO® WO #1                 |         |
| CONVERSION COATINGS            |                              | PAGE 16 |
| Alodine® 600™                  | Alodine® 1600™               |         |
| Alodine® 600 RTU™              | Alodine® 5200™               |         |
| Alodine® 1000 RTU™             | Alodine® 5700™               |         |
| Alodine® 1200S™                | Magnesium Treatment Kit      |         |
| Alodine® 1201™                 | Touch-N-Prep® Alodine® 1132™ |         |
| Alodine® 1500™                 | Brush Alodine® 120™ Kit      |         |
| JET ENGINE CLEANING, COLD LINE |                              | PAGE 18 |
| TURCO® 5668™                   | TURCO® Liquid Sprayze NP-LT™ |         |
| TURCO® 5948-DPM™               | TURCO® Liquid ARR (T-4181-L) |         |
| JET ENGINE CLEANING, HOT LINE  |                              | PAGE 18 |
| TURCO® Rust Bloc               | TURCO® Liquid ARR (T-4181-L) |         |
| TURCO® 4338-L™                 | TURCO® Scale Gon 5™          |         |
| TURCO® 4409 GL™                |                              |         |
| COMPRESSOR WASH                |                              | PAGE 18 |
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| ACCESSORY SHOP PRODUCTS        |                              | PAGE 20 |
| TURCO® Aquasorb                | TURCO® 5948-DPM™ Thick       |         |
| TURCO® Aviation                | TURCO® 6802™                 |         |
| TURCO® 4215 NC-LT™             | TURCO® 9045-6™               |         |
| TURCO® 5805™                   |                              |         |
| LANDING GEAR/THRUST REVERSER   |                              | PAGE 20 |
| TURCO® 5668™                   | TURCO® 5948-DPM™ Thick       |         |
| TURCO® 5805™                   |                              |         |
| EXTERIOR WASH                  |                              | PAGE 20 |
| Aerowash®                      | TURCO® 5948-DPM™             |         |
| TURCO® Air-Tec #23             |                              |         |
| REMOVED COMPONENTS             |                              | PAGE 20 |
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| TURCO® 5668™                   | TURCO® Liquid Sprayze NP-LT  |         |
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| TURCO® 6776™ Thin              | TURCO® EA 6916™ Stripper     |         |
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| Multan® Machine Coolants       |                              |         |

\* The above list represents our most common products. Additional products are featured on our website at [www.henkelaero.com](http://www.henkelaero.com).

The aerospace group of Henkel develops structural adhesives and metal and composite surfacing treatments that serve the aircraft OEM and MRO industries. Henkel invests heavily in R&D and product support and is a leader in these industries. Innovative materials provide our customers with practical, economic, and performance benefits that, once implemented, are apparent to their customers as well.

### OUR ADHESIVE SYSTEMS INCLUDE:

#### Hysol® Paste Adhesives and Specialty Resins

One and two-part epoxy paste adhesive systems for potting, bonding, fairing, and repair; moldable plastic shim; matrix resins; specialty resins for resin transfer molding, wet lay-up, and repair.

Our current developmental products include VARTM, RTM and RFI materials based upon Henkel's new Epsilon chemistry. This new chemistry, based upon benzoxazine chemistry, is room temperature stable and has high Tg, even under wet conditions.

#### Hysol® Film Adhesives and Primers

Film adhesives and corrosion-inhibiting low VOC primers for metal and composite bonding; engine nacelle bonding; honeycomb applications such as control surfaces, wing flaps, engine slats, leading edges, and wing-to-body fairings.

#### Syntactic Products

SynSpand® closed-cell expanding syntactic films for custom density-to-strength ratios in honeycomb core fill and core splice, resulting in lower costs of co-cure applications by eliminating secondary manufacturing processes.

SynCore® syntactic films for lightweight composite designs. Ideal for edge close-out and composite sandwich structure. Available in shaped form for custom designs.

SynSkin® composite surfacing films for flawless off-tool composite surface and reduction of surface preparation steps prior to painting. Available with metallic screens/foils for composite lightning strike protection.

#### Frekote® Mold Release Coatings

Frekote® semi-permanent release coatings, the standard mold release agents for composite and metal tool surfaces. Dependable release, ease of application, high gloss finish, minimal mold build-up, and maximum releases per application. Our newest Frekote® product is water-based and low VOC.

### OUR SURFACE TREATMENT SYSTEMS INCLUDE COMPLETE PROCESS SOLUTIONS:

#### Aircraft Depaint / Repaint Systems

##### Paint Strippers

TURCO® 6776-LO™  
TURCO® 6813-E™  
TURCO® 6840-S™  
TURCO® EA Stripper 6916™  
TURCO® EA Stripper 6930™

##### Cleaners

TURCO® 5948-DPM™  
TURCO® 6849™

##### Corrosion Removers

Alumiprep® 33™  
TURCO® Metal Glo #6  
TURCO® WO #1

##### Conversion Coatings

Alodine® 600™  
Alodine® 600 RTU™  
Alodine® 1000 RTU™  
Alodine® 1200S™  
Alodine® 1201™  
Alodine® 1500™  
Alodine® 1600™  
Alodine® 5200™  
Alodine® 5700™  
Touch-N-Prep® Alodine® 1132™  
Brush Alodine® 120™ Kit  
Magnesium Treatment Kit

#### Jet Engine Overhaul Processes

##### Alkaline Process

TURCO® Rust Bloc  
TURCO® 4338-L™  
TURCO® 5948-DPM™  
TURCO® Liquid ARR (T-4181-L)

##### Alkaline / Acid Process

TURCO® Rust Bloc  
TURCO® 4338-L™  
TURCO® 4409 GL™  
TURCO® 5948-DPM™  
TURCO® Liquid ARR (T-4181-L)  
TURCO® Scale Gon 5

##### Bearing Cleaning Process

TURCO® Aquasorb  
TURCO® Liquid ARR (T-4181-L)

##### Compressor Washes

TURCO® 5884™  
TURCO® 6783™ Series

##### Thrust Reverser Cleaner

TURCO® 5805™  
TURCO® 5948-DPM™ Thick

##### Paint and Carbon Removers

TURCO® 5668™  
TURCO® 6776™ Thin  
TURCO® 9045-6™

##### General Purpose Cleaning

TURCO® Rust Bloc  
TURCO® 5948-DPM™  
TURCO® 5948-DPM™ Thick  
TURCO® Aviation  
TURCO® Liquid Sprayeze NP-LT™

##### Titanium Cleaners

TURCO® Liquid ARR (T-4181-L)  
TURCO® Vitro-Klene

##### Plater's Wax Remover

TURCO® 6802™

##### Cleaners

Ridoline® 298™  
Ridoline® 4355™  
TURCO® 4215 NC LT™  
TURCO® 5578-L™  
TURCO® 6751-L™  
TURCO® 6849™  
TURCO® Liquid ARR (T-4181-L)  
TURCO® Liquid Sprayeze NP-LT™

##### Etchants / Brighteners

Aluminux® Etch L™  
Alumiprep® 33™  
Mil-Etch®  
Nova EC-202 L  
TURCO® Metal Glo #6  
TURCO® WO #1

##### Deoxidizers

TURCO® Aldox V  
Deoxalume® 2310™  
Deoxidizer 6/16  
TURCO® Liquid Smut-Go® NC  
TURCO® Nitradd (T-4104)

##### Cleaner

TURCO® 4215 NC-LT™

##### Deoxidizers

TURCO® Liquid Smut-Go® NC  
Deoxidizer 6/16

##### Maskants

TURCO® Form Maskant 6914G™/6915™

##### Exterior Cleaners

Aerowash®  
TURCO® 5948-DPM™  
TURCO® Air Tec 23

##### Interior Cleaners

TURCO® 5948-DPM™

##### Flap & Wheel Well Cleaner

TURCO® 5948-DPM™ Thick

##### Wheel & Brake Cleaners

TURCO® Liquid Sprayeze NP-LT  
TURCO® Aviation  
TURCO® Rust Bloc  
TURCO® 5668™

##### Landing Gear Cleaners

TURCO® 5668™  
TURCO® 5948-DPM™ Thick

##### Exhaust Track Remover

TURCO® 5805™

# ADHESIVE SYSTEMS

## Hysol® Film Adhesives and Primers

| Product                                     | Applications |                     |         |                   | Characteristics           |                     |                      |                             | Mechanical Properties      |                         |  |                                |   | Bulk Properties                        |  | Handling                                     |                    | Description |                          |   |
|---|--------------|---------------------|---------|-------------------|---------------------------|---------------------|----------------------|-----------------------------|----------------------------|-------------------------|--|--------------------------------|---|--|--|--|--------------------|-------------|--------------------------|---|
|   | Sprayable    | Composite Surfacing | Low VOC | Composite Bonding | Metal & Honeycomb Bonding | ≥180°F/82°C Service | ≥350°F/177°C Service | Service Temperature (°F/°C) | Outtime (Days @ 77°F/25°C) | -67°F (psi)/-55°C (MPa) | 77°F (psi)/25°C (MPa)                                  | Elevated Temperature (psi/MPa) | Honeycomb Climbing Drum Peel @ 77°F (inlb/in)/25°C (mN/m) | Flatwise Tension @ 77°F/25°C (psi/MPa) | Primer Coverage                                | Tg Dry (°F/°C)                               | Tg Wet (°F/°C)     |             | Cure Temperature (°F/°C) | Cure Time (hours)   |
| <b>FILMS</b>                                |              |                     |         |                   |                           |                     |                      |                             |                            |                         |  |                                |   |  |  |  |                    |             |                          |   |
| Hysol® EA 9602.3™ (.060 psf) (300 g/m²)     |              |                     |         | •                 | •                         |                     | 250/121              | 30                          | 5700/39.3                  | 5400/37.2               | 3200 @ 200°F / 22.0 @ 93°C                             | 20/90                          | 1300/9.0  |  | 220/104  | 180/82                                       | 250/121            | 1           | 0/-18                    | Modified epoxy film, tacky, supported or unsupported. Exceeds MMM-A-132, Ty 1, CI 3 and MIL A-25463, Ty 1, CI 1, 2.   |
| Hysol® EA 9628™ (.060 psf) (300 g/m²)       |              |                     |         | •                 | •                         | •                   | 250/121              | 20                          | 5500/38.0                  | 6000/41.3               | 2000 @ 250°F / 13.8 @ 121°C                            | 18/80                          | 1400/9.7  |  | 250/121  | 210/99                                       | 250/121            | 1           | 0/-18                    | Modified epoxy film, good stress, environmental resistance and structural properties up to 250°F/121°C.   |
| Hysol® EA 9628H™ (.060 psf) (300 g/m²)      |              |                     |         | •                 | •                         | •                   | 250/121              | 20                          | 5500/38.0                  | 5800/40.0               | 1500 @ 250°F / 10.3 @ 121°C                            | 20/90                          | 1100/7.6  |  | 240/116  | 200/93                                       | 250/121            | 1           | 0/-18                    | Modified epoxy film, high peel strength, good stress, environmental resistance and structural properties up to 250°F/121°C.   |
| Hysol® EA 9657™ (.080 psf) (400 g/m²)       |              |                     |         | •                 | •                         |                     | 400/204              | 15                          | 4800/33.0                  | 5000/34.5               | 2300 @ 350°F / 15.9 @ 177°C                            | 13/60                          | 1150/8.0  |  | 360/182  | 270/132                                      | 350/177            | 1           | 0/-18                    | High temperature service film adhesive designed for high honeycomb peel in a reticulated sound suppression structure. Qualified to BMS 5-137.                           |
| Hysol® EA 9673™ (BMI) (0.10 psf) (500 g/m²) |              |                     |         | •                 | •                         |                     | 550/288              | 30                          | 2000/13.8                  | 2000/13.8               | 2200 @ 500°F / 15.2 @ 260°C                            | 3/15                           | 600/4.1   |  | 568/298  | 410/210                                      | 350/177            | 1***        | 0/-18                    | Modified BMI film adhesive, superior strength to 550°F/288°C. Moisture resistant, processes like conventional high temperature epoxies. Minimum order required.         |
| Hysol® EA 9686™ (.060 psf) (300 g/m²)       | •            |                     |         | •                 | •                         | •                   | 300/149              | 90                          | 5800/40.0                  | 5800/40.0               | 1000 @ 300°F / 6.9 mpa @ 149°C                         | 17/76                          | 1000/6.9  |  | 271/133  | N/A  | 250/121            | 1           | 0/-18                    | Moisture resistant, toughened 250°F/121°C curing film with service performance to 300°F/149°C. Excellent for composite or metal bonding.                                |
| Hysol® EA 9689™ (0.10 psf) (500 g/m²)       |              |                     |         | •                 | •                         |                     | 420/216              | 10                          | 3700/25.5                  | 3500/24.1               | 3200 @ 350°F / 22.0 @ 177°C                            | 8/35                           | 850/5.9   |  | 435/224  | 345/174                                      | 350/177            | 1           | 0/-18                    | Modified epoxy film adhesive with high temperature strength and long term thermal durability.   |
| Hysol® EA 9695™ (.050 psf) (250 g/m²)       | •            |                     |         | •                 | •                         | •                   | >300/149             | 90                          | 4400*/30.3*                | 5000*/34.5*             | 2800* @ 270°F / 19.3* @ 132°C                          | —                              | 1200/8.3  |  | <sup>1)</sup> 252/122<br><sup>2)</sup> 302/150 | <sup>1)</sup> 187/86<br><sup>2)</sup> 203/95 | 250/121<br>350/177 | 1.5         | 0/-18                    | Low-flow composite bonding film, excellent environmental resistance. Composite structure repair, cure and co-cure with composite laminates. Qualified to Airbus.        |
| Hysol® EA 9696™ (.060 psf) (300 g/m²)       | •            |                     |         | •                 | •                         | •                   | 250/121              | 60                          | 7000/48.3                  | 6000/41.3               | 2000 @ 250°F / 13.8 @ 121°C                            | 25/110                         | 1300/9.0  |  | 250/121  | 220/104                                      | 250/121            | 1           | 0/-18                    | Moisture resistant, toughened 250°F/121°C service, modified epoxy film. Qualified to BMS 5-101 and BMS 5-129.   |
| <b>PRIMERS</b>                              |              |                     |         |                   |                           |                     |                      |                             |                            |                         |  |                                |   |  |  |  |                    |             |                          |   |
| Hysol® EA 9203™                             | •            |                     |         | •                 |                           |                     | 300/149              | 365                         | —                          | 1000**/6.9**            | —  | —                              | —   | —                                      | —  | —  | N/A                | —           | 77/25                    | Primer enhances adhesion on poorly prepared surfaces. Requires only room temperature drying prior to bond. Use with room temperature curing paste adhesives.            |
| Hysol® EA 9205R™                            | •            |                     |         | •                 |                           |                     | 350/177              | 20                          | 4000/27.6                  | 4300/29.7               | 3300 @ 350°F / 22.8 @ 177°C with Hysol® EA 9689™ film  | 8/35                           | 850/5.9   | 160/15                                 | —  | —  | 350/177            | 1           | 0/-18                    | Corrosion inhibiting primer designed for long term service at 350°F/177°C.  |
| Hysol® EA 9210H™ 10%                        | •            |                     |         | •                 |                           |                     | 250/121              | 90                          | 5500/38.6                  | 6300/43.4               | 3000 @ 220°F / 20.7 @ 104°C with Hysol® EA 9628H™ film | 20/90                          | 1100/7.6  | 450/42                                 | —  | —  | 275/135            | 1           | 0/-18                    | Corrosion inhibiting primer, maintains surface bondability after multiple prebonding cure cycles. Distinct color change during cure.                                    |
| Hysol® EA 9257™                             | •            | •                   |         | •                 |                           |                     | 350/177              | 30                          | 4800/33.1                  | 5000/34.5               | 2000 @ 350°F / 13.8 @ 177°C with Hysol® EA 9657™ film  | 13/60                          | 1150/8.0  | 1200/110                               | —  | —  | 270/132            | 1           | 40/5                     | Water-borne corrosion inhibiting primer, maintains surface bondability after multiple prebonding cure cycles. Meets SCAQMD Rule 1124. Replacement for Hysol® EA 9210B™. |

\* Composite double overlap shear.  
 \*\* On unetched metal.  
 \*\*\* Postcure of 2 hours @ 475°F/245°C.

<sup>1)</sup> 250°F/121°C cure.  
<sup>2)</sup> 350°F/175°C cure.



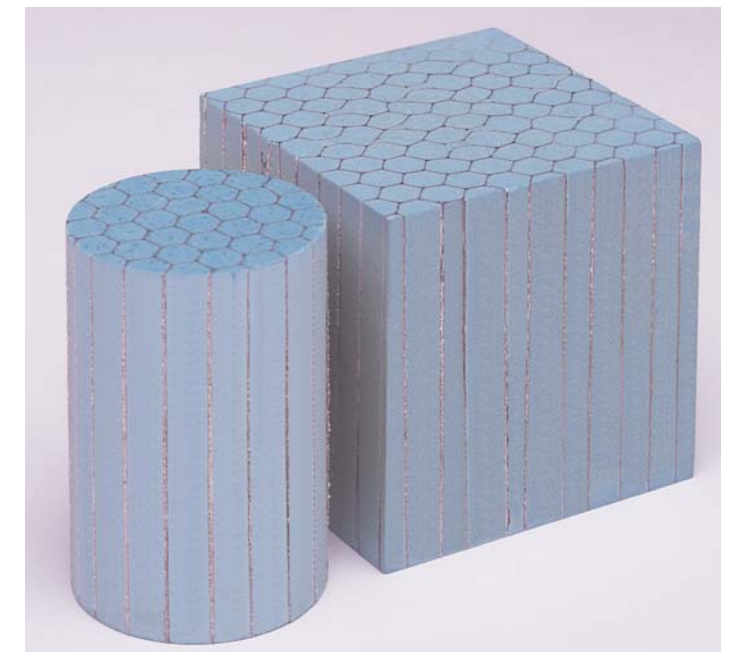
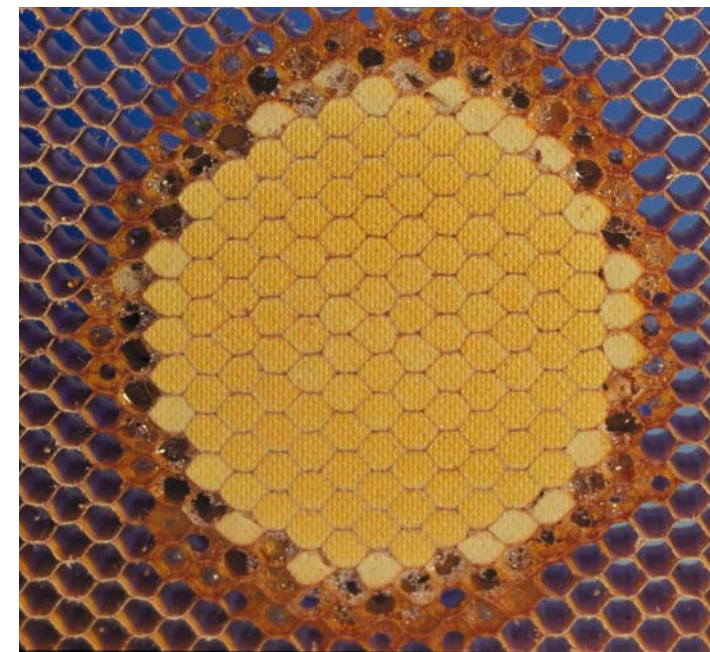
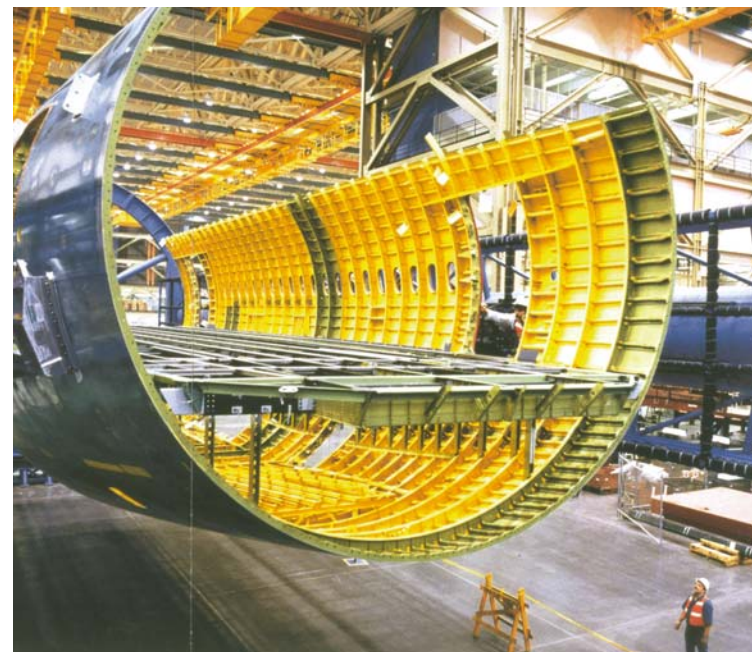
# ADHESIVE SYSTEMS

## Syntactic Products

| Product                                    | Applications        |                               |                           |             | Characteristics    |                     |                             | Bulk Properties            |                            |   | Handling                                 |   |                                  | Description        |                   |  |
|--|---------------------|-------------------------------|---------------------------|-------------|--------------------|---------------------|-----------------------------|----------------------------|----------------------------|---|--|---|----------------------------------|--------------------|-------------------|--|
|  | Composite Surfacing | Syntactic Film, Non-Expanding | Syntactic Film, Expanding | Core Splice | 180°F/82°C Service | 300°F/149°C Service | Service Temperature (°F/°C) | Outtime (days @ 77°F/25°C) | Outtime (days @ 90°F/32°C) | Block Compressive (dry) @ 77°F (psi)/25°C (MPa) | Tensile Strength @ 77°F (psi)/25°C (MPa) | Tensile Modulus @ 77°F (ksi)/25°C (MPa) | Cure Temperature (°F/°C)         |                    | Cure Time (hours) | Storage Temperature (°F/°C)  |
| <b>SYNCORE® SYNTACTIC FILMS</b>            |                     |                               |                           |             |                    |                     |                             |                            |                            |   |  |   |                                  |                    |                   |  |
| SynCore® 9823.1™                           | •                   |                               |                           | •           |                    |                     | 250/121                     | 15                         | 10                         | 9000/62   | 4500/31                                  | 363/2500                                | 250/121                          | 1                  | 0/-18             | Toughened, low density syntactic core, superior moisture resistance, co-curable with variety of 250°F/121°C curing epoxy prepregs.   |
| SynCore® 9872.1™                           | •                   |                               |                           |             | •                  |                     | 350/177                     | 15                         | 10                         | 8800/61   | 4500/31                                  | 400/2750                                | 350/177                          | 1                  | 0/-18             | Toughened, low density syntactic core, superior moisture resistance, co-curable with wide variety of 350°F/177°C curing epoxy prepregs.  |
| <b>SYNSPAND® EXPANDING SYNTACTIC FILMS</b> |                     |                               |                           |             |                    |                     |                             |                            |                            |   |  |   |                                  |                    |                   |  |
| SynSpand® EA 9890™ Abradable Seal          |                     | •                             |                           |             |                    |                     | 180/82                      | 15                         | 10                         | —   | 1100/7.6                                 | 62/430                                  | 250/121                          | 2                  | 0/-18             | Expanding modified epoxy film, cures at 250°F/121°C, used for jet engine abradable fan seals.  |
| SynSpand® 9899™                            |                     | •                             |                           |             |                    |                     | 250/121                     | 15                         | 10                         | 500 @ 12 pcf density/<br>3.45 @ 0.19 g/cc       | —  | —                                       | 250/121                          | 1                  | 0/-18             | Very high expansion, closed cell expanding film designed for use as shop floor aid in closed mold processes.   |
| SynSpand® 9899CF™                          |                     | •                             | •                         |             |                    |                     | 350/177                     | 15                         | 10                         | 2000 @ 26 pcf density/<br>13.8 @ 0.42 g/cc      | —  | —                                       | 250/121<br>or 350/177            | 1                  | 0/-18             | Closed cell expanding syntactic film for use in a designed medium density/strength range of 18-35 pounds per cubic foot (0.29-0.56 g/cc). Ideal for core filling and edge close-out.   |
| <b>SYNSKIN® COMPOSITE SURFACING FILMS</b>  |                     |                               |                           |             |                    |                     |                             |                            |                            |   |  |   |                                  |                    |                   |  |
| SynSkin® HC 9837.1™                        | •                   |                               |                           |             |                    |                     | 350/177                     | 90                         | 21                         | —   | —  | —                                       | 250/121<br>or 350/177            | 1                  | 0/-18             | Epoxy-based composite surfacing film, improves surface quality of honeycomb stiffened composite parts. Cures at 250°F/121°C or 350°F/177°C with a variety of epoxy prepregs. Resistant to microcracking from thermal cycling. Black and Lightning Strike versions available. |
| <b>CORE SPLICE®</b>                        |                     |                               |                           |             |                    |                     |                             |                            |                            |   |  |   |                                  |                    |                   |  |
| Hysol® EA 9833.1™ (BMI)                    |                     | •                             |                           | •           |                    |                     | 450/232                     | 30                         | 10                         | —   | —  | —                                       | 350/177 with<br>450/232 postcure | 2 @<br>450°F/232°C | 0/-18             | Modified BMI foaming core splice, co-curable with wide variety 350°F/177°C curing epoxy prepregs. Elevated service temperature to 450°F/232°C. Tube shear 800 psi @ 77°F/5.5 MPa @ 25°C, 500 psi @ 250°F/3.5 MPa @ 121°C.  |

SYNTACTIC PRODUCTS

SYNTACTIC PRODUCTS

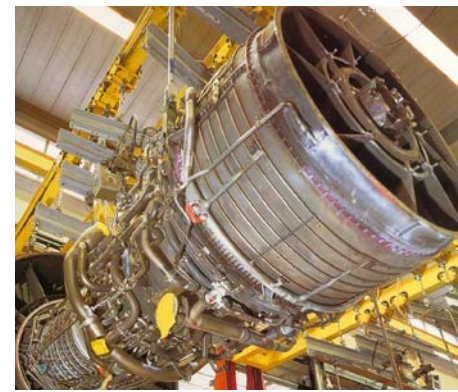


# SURFACE TREATMENTS

| Product   | Applications           |                     |                         |                            |          |   | Characteristics     |              |                                |   | Alloys                    |  |          |           |                 |          | Operation |                     | Description                             |  |  |
|---|------------------------|---------------------|-------------------------|----------------------------|----------|---|---------------------|--------------|--------------------------------|---|---------------------------|--|----------|-----------|-----------------|----------|-----------|---------------------|---|--|--|
|   | Metal Processing Lines | Jet Engine Cleaning | Aircraft Parts Cleaning | Aircraft Depaint & Repaint | Coolants | Aircraft Appearance   | Aircraft Protection | Consistency  | Form                           | How to Apply  | Mix Ratio (product:water) | Chemistry  | Aluminum | Magnesium | Stainless Steel | Titanium | Ferrous   | Non-Ferrous         |   | Temperature  | Time   |
| <b>ALKALINE CLEANERS</b>  |                        |                     |                         |                            |          |   |                     |              |                                |   |                           |  |          |           |                 |          |           |                     |   |  |  |
| Ridoline® 298™  | •                      |                     |                         |                            |          |   | Liquid              | Concentrated | Immersion                      | 4%-10% in water   | Alkaline                  | •  |          |           |                 |          |           |                     | Maximum 130°-180°F 55°-80°C             | 3-15 minutes   | Ridoline® 298™ is a liquid, non-silicated, immersion cleaner for aluminum and aluminum alloys. It is formulated for use in anodizing and conversion coating lines. It is free rinsing and will remove a variety of soils including oils, greases, inks, and wax-based markings.  |
| Ridoline® 4355™   | •                      |                     |                         |                            |          |   | Liquid              | Concentrated | Immersion                      | 5%-15% in water   | Alkaline                  | •  |          |           |                 |          |           |                     | 110°-160°F 40°-70°C                     | 2-15 minutes   | Ridoline® 4355™ is a phosphate-free liquid, immersion-applied, non-etching, cleaning product designed specifically to replace halogenated hydrocarbon vapor degreasers for cleaning aluminum alloys. It is formulated for removal of various soils, such as oils, greases, inks, and wax-based markings. Superior cleaning characteristics compared to vapor degreasing, while providing some amount of interstage corrosion protection.                                 |
| TURCO® 4215 NC-LT™  | •                      | •                   |                         |                            |          |   | Powder              | Concentrated | Immersion, Spray or Ultrasonic | Immersion: 40-60 g/l<br>Spray: 7-15 g/l<br>Ultrasonic: 3-15 g/l | Mildly Alkaline           | •  |          | •         |                 | •        | •         | 113°-131°F 45°-55°C | Immersion: 5-10 mins<br>Spray: 2-4 mins | TURCO® 4215 NC-LT™ is a white granular mix developed for cleaning ferrous and non-ferrous alloys by spray, immersion and ultrasonic methods at low temperatures. Ideal for cleaning fuel and hydraulic components and for cleaning metals prior to metal bonding.  |  |
| TURCO® 5578-L™  | •                      |                     |                         |                            |          |   | Liquid              | Ready to Use | Immersion or Spray             | Use as Received or Diluted to 15%                               | Alkaline                  |  |          |           | •               |          |           | 176°-203°F 80°-95°C | Immersion: 15-60 minutes                | TURCO® 5578-L™ is an amber liquid compound formulated to clean and etch titanium, columbium and tantalum alloys by spray or immersion systems. Readily removes mill soils, marking inks, lube oils, cutting oil and fingerprints at a low concentration and will etch titanium at higher concentrations. It is an effective etch prior to adhesive bonding, diffusion bonding, painting, welding and brazing. Boeing approved. |  |
| TURCO® 5948-DPM™  | •                      | •                   | •                       | •                          |          | •   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20<br>Spray/Mop: 1:9-30                          | Alkaline, Water-Based     | •  |          | •         | •               |          |           | 149°-176°F 65°-80°C | Immersion: 5-15 minutes                 | TURCO® 5948-DPM™ is an alkaline, water-based, blue concentrated compound formulated to effectively clean painted and unpainted aircraft exterior and interior surfaces when diluted with water. Ideally suited for use on all models of jet aircraft. It is also designed to be used in immersion tanks for dip applications.  |  |
| TURCO® 6751-L™  | •                      |                     | •                       |                            |          |   | Liquid              | Concentrated | Spray                          | 1%-4% in water  | Alkaline                  |  |          |           |                 |          | •         | •                   | 86°-140°F 30°-60°C                      | 1-2 minutes  | TURCO® 6751-L™ is a liquid alkaline low temperature cleaner for spray applications. It is a brown colored liquid, developed to remove shop soils, lube oils, light drawing oils and drawing waxes from ferrous and non-ferrous metals. Rinses from metal surfaces with room temperature water and is effective from 86°-140°F/30°-60°C.  |
| TURCO® 6849™  | •                      | •                   |                         | •                          |          |   | Liquid              | Concentrated | Immersion                      | 10%-20% in water  | Alkaline                  | •  | •        | •         | •               | •        | •         | •                   | 131°-158°F 55°-70°C                     | Varies as needed   | TURCO® 6849™ is a clear aqueous alkaline degreaser formulated to remove shop soils, marking inks, cosmoline, grease and lube oils from ferrous and non-ferrous alloys. Offers both exceptional effectiveness and exceptional tank life. Replaces solvent type vapor degreasing fluids with an effective aqueous cleaner. The costs and hazards normally associated with chlorinated solvent cleaning are thereby greatly reduced.  |
| TURCO® Liquid ARR (T-4181-L)  | •                      | •                   |                         |                            |          |   | Liquid              | Concentrated | Immersion                      | 50%-75% in water  | Alkaline                  |  |          | •         | •               | •        |           |                     | 176°-203°F 80°-95°C                     | 15-60 minutes  | TURCO® Liquid Alkaline Rust Remover (T-4181-L) is an amber liquid compound formulated to remove rust, paints, lube oils, drawing pastes, cutting oils and protective oils from ferrous alloys by immersion methods. Will not attack ferrous alloys, magnesium alloys, stainless steels, brass, bronze or Monel alloys when used as directed. Can be used on titanium alloys when diluted to 12% to 15% in water at 158°-167°F/70°-75°C.                                  |
| TURCO® Vitro-Klene  | •                      |                     |                         |                            |          |   | Powder              | Concentrated | Immersion                      | 60-75 g/l   | Caustic                   |  |          |           | •               | •        |           |                     | 158°F/70°C to Boiling Point             | Varies as needed   | TURCO® Vitro-Klene is a brown granular mixture formulated to remove drawing compounds, lube oil, rust preventive compounds, and other tenacious soils from ferrous and titanium alloys prior to vitreous enameling and other processes that require a high degree of cleanliness. Will provide a water-break-free surface when used as recommended. Corrosive to aluminum, cadmium and zinc alloys, and should not be used on these alloys. Approved to Boeing BAC 5749. |
| <b>Metal Preparation Process:</b>   |                        |                     |                         |                            |          | <b>Typical Titanium Pretreatment Process:</b>   |                     |              |                                |   |                           | <b>Typical Aluminum Pretreatment Process:</b>  |          |           |                 |          |           |                     |   |  |  |
| <ol style="list-style-type: none"> <li>Clean.</li> <li>Deoxidize.</li> <li>Etch.</li> <li>Conversion Coat.</li> </ol> |                        |                     |                         |                            |          | <ol style="list-style-type: none"> <li>Aqueous clean with Ridoline® 4355™.</li> <li>Rinse.</li> <li>Alkaline clean (see above).</li> <li>Acid etch with Nitradd.</li> <li>Rinse.</li> <li>Conversion coat with Alodine® 5200™.</li> </ol> |                     |              |                                |   |                           | <ol style="list-style-type: none"> <li>Aqueous degrease with Ridoline® 4355™ or TURCO® 6849™.</li> <li>Rinse.</li> <li>Alkaline clean with Altrex® 24™ or Ridoline® 4355™.</li> <li>Rinse.</li> <li>Alkaline etch with Mil-Etch® or Aluminux® Etch L.</li> <li>Rinse.</li> <li>Deoxidize with Deoxidizer 6/16 or Deoxalume® 2310™.</li> <li>Rinse.</li> <li>Conversion coat with Alodine® 5200™, Alodine® 1200S™, or Anodize.</li> <li>Rinse.</li> </ol> |          |           |                 |          |           |                     |   |  |  |

ALKALINE CLEANERS

ALKALINE CLEANERS



# SURFACE TREATMENTS

|                         | Metal Processing Lines       | Jet Engine Cleaning | Aircraft Parts Cleaning | Aircraft Depaint & Repaint | Coolants | Aircraft Appearance | Aircraft Protection | Consistency  | Form                       | How to Apply              | Mix Ratio (product:water)   | Chemistry                            | Aluminum           | Magnesium | Stainless Steel | Titanium | Ferrous | Non-Ferrous | Temperature                         | Time  | Description   |   |
|-------------------------|------------------------------|---------------------|-------------------------|----------------------------|----------|---------------------|---------------------|--------------|----------------------------|---------------------------|---|--------------------------------------|--------------------|-----------|-----------------|----------|---------|-------------|-------------------------------------|---|---|---|
|                         |                              |                     |                         |                            |          |                     |                     |              |                            |                           |   |                                      |                    |           |                 |          |         |             |                                     |   |   | Product   |
| DEOXIDIZERS             | <b>DEOXIDIZERS</b>           |                     |                         |                            |          |                     |                     |              |                            |                           |   |                                      |                    |           |                 |          |         |             |                                     |   |   |   |
|                         | Deoxalume® 2310™             | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion or Spray        | 10-20% Deoxalume® 2310™ by Volume, 25-30% Nitric Acid                           | Acidic, Non-Chrome                   | •                  |           |                 |          |         |             | 60°-90°F<br>15°-30°C                | 2-10 minutes                                  | Deoxalume® 2310™ is a chromium-free concentrated acidic liquid product specifically formulated for deoxidizing and desmutting wrought aluminum alloys. Extremely effective in removing surface oxides, discolorations due to heat treatment or thermal deburring, and smut that develops during alkaline etching and chemical milling. Meets the deoxidizing requirements of MIL-W-6858C, Paragraph 4.2 and many other aerospace specifications.  |   |
|                         | TURCO® Aldox V               | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion or Spray        | 13-17% TURCO® Aldox V 23-27% Nitric Acid  | Non-Chrome                           | •                  |           |                 |          |         |             | 50°-120°F<br>10°-50°C               | Varies with Alloy                             | TURCO® Aldox V is a brown liquid formulated to deoxidize, desmut, and lightly etch aluminum alloys by spray or immersion methods. Free of chrome and is ideal for processing alloys that require low surface resistance prior to anodizing, conversion coating, bonding, or welding. It is approved by Boeing BAC 5765.   |   |
|                         | Deoxidizer 6/16              | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated, Two Packages | Immersion or Spray        | For 100 gals Solution: 5 gal Deoxidizer 6, 10 gal Nitric or 5 gal Sulfuric Acid | Chromated                            | •                  |           |                 |          |         |             | 60°-90°F<br>15°-30°C                | Immersion: 1-20 mins<br>Spray: 30 secs-3 mins | The Deoxidizer 6/16 process primarily utilizes two liquid products Deoxidizer 6 Makeup and Deoxidizer 16 Replenisher. These are added to either dilute nitric acid or dilute sulfuric acid to produce an efficient production bath for deoxidizing, desmutting or acid etching aluminum and its alloys. Process approved for BAC 5765, Solution 27 (A, B & C).  |   |
|                         | TURCO® Liquid Smut-Go® NC    | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion or Spray        | 18%-20% in water  | Acidic, Non-Chrome                   | •                  |           |                 |          |         |             | 50°-122°F<br>10°-50°C               | 1-10 minutes                                  | TURCO® Liquid Smut-Go® NC is a dark brown liquid formulated to deoxidize and desmut aluminum alloys by spray or immersion methods. Chromate-free. Ideal for processing alloys that require low surface resistance prior to anodizing, conversion coating, bonding, or welding.  |   |
| TURCO® Nitradd (T-4104) | •                            |                     |                         |                            |          |                     | Liquid              | Concentrated | Immersion                  |                           | Varies with Alloy   | Acidic                               |                    |           | •               | •        |         |             | Depends on alloy<br>See data sheet. | See data sheet.                               | TURCO® Nitradd is a clear, colorless liquid acidic compound designed to be added to nitric acid/water solutions to enhance the descaling and pickling of stainless steels and heat resistant alloys, including titanium alloys, by immersion methods.   |   |
| ETCHANTS                | <b>ETCHANTS</b>              |                     |                         |                            |          |                     |                     |              |                            |                           |   |                                      |                    |           |                 |          |         |             |                                     |   |   |   |
|                         | Aluminux® Etch L             | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion                 | 10%-15% in water  | Alkaline                             | •                  |           |                 |          | •       |             | 100°-160°F<br>40°-70°C              | 2-10 minutes                                  | Aluminux® Etch L is a concentrated liquid alkaline product developed to produce a fine satin etch on aluminum and its alloys. It offers an exceptionally uniform etch and extended bath life. Approved for BAC 5786 use.  |   |
|                         | Alumiprep® 33™               | •                   |                         | •                          |          |                     |                     | Liquid       | Concentrated               | Immersion, Brush or Spray | Immersion: 1:3<br>Brush: 1:2 to 5, Spray: 1:3                                   | Phosphoric Acid-Based                | •                  |           |                 |          |         |             | Ambient to 120°F/49°C               |   | Alumiprep® 33™ is a non-flammable phosphoric acid-based cleaner, brightener and prepaint conditioner for aluminum. It should not be used on high copper bearing aluminum alloys or aluminum castings. Cleaning with Alumiprep® 33 produces a chemically clean and corrosion-free aluminum surface.  |   |
|                         | TURCO® Metal Glo #6          |                     |                         | •                          |          |                     |                     | Liquid       | Concentrated               | Brush or Spray            | Full strength or 1:1  | Acid, Solvent                        | •                  |           |                 |          |         |             | Ambient to 120°F/49°C               | Varies with temperature                       | TURCO® Metal Glo #6 is a non-flammable tri-acid detergent-solvent-based cleaner, brightener, deoxidizer and prepaint conditioner for aluminum. It contains viscosity builders that allow for added contact time for vertical surfaces. Produces a chemically clean (water-break-free) and streak-free surface when used according to directions. Meets the requirements of MIL-C-38334A, Amend. 1, Type 1, Class 1. Listed on QPL. Can be used on all aircraft metals, except magnesium and high strength steel. This product is non-crazing to acrylics and can be used over well-bonded paints. |   |
|                         | Mil-Etch®                    | •                   |                         |                            |          |                     |                     | Powder       | Concentrated               | Immersion                 |   | 3%-6% in water                       | Alkaline           | •         |                 |          |         | •           |                                     | 100°-160°F<br>40°-70°C                        | 5-10 minutes  | Mil-Etch® is a granular alkaline product formulated to produce a fine satin or frosted etch on aluminum and its alloys. The working solution develops a low level foam blanket to prevent caustic mist from escaping into the workplace. Approved for use under BAC 5786.   |
|                         | Nova EC-202 L                | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion                 |   | 4%-10% in water                      | Alkaline           | •         |                 |          |         | •           |                                     | 120°-180°F<br>50°-85°C                        | 1-5 minutes   | Nova EC-202 L is a liquid alkaline aluminum etch cleaner for immersion applications that will produce a lightly etched finish on aluminum alloys, while simultaneously removing any oils and other soils present on the work surface. Approved for use under BAC 5786.  |
| TURCO® WO #1            | •                            |                     | •                       |                            |          |                     | Liquid              | Concentrated | Immersion or Spray         |                           | 5%-25% in water   | Acidic                               | •                  |           | •               |          |         |             | Ambient to 140°F/60°C               | 3-10 minutes                                  | TURCO® WO #1 is clear, colorless liquid acid cleaner and deoxidizer designed for use on aluminum and aluminum alloys. It may be used in dip, spray and hand wipe processes.   |   |
| CONVERSION COATINGS     | <b>CONVERSION COATINGS</b>   |                     |                         |                            |          |                     |                     |              |                            |                           |   |                                      |                    |           |                 |          |         |             |                                     |   |   |   |
|                         | Alodine® 600™                | •                   |                         | •                          |          |                     |                     | Powder       | Concentrated               | Immersion or Spray        | 12.5 lbs per 100 gals water or 15 g/l   | Chromate No Cyanide                  | •                  |           |                 |          |         |             | 70°-100°F<br>20°-40°C               | 1-5 minutes                                   | Alodine® 600™ is a powdered chemical used to produce a chromate conversion coating on aluminum and its alloys, which ranges in color from light, iridescent gold to tan. Approved under MIL-C-81706 for use by Application Methods A and C, Classes 1A and 3. Listing on QPL 81706 indicates its acceptance under the MIL-C-5541 document of current issue.   |   |
|                         | Alodine® 600 RTU™            |                     |                         | •                          |          |                     |                     | Liquid       | Ready to Use               | Immersion or Spray        | Use as Received   | Chromate No Cyanide                  | •                  |           |                 |          |         |             | 70°-100°F<br>20°-40°C               | Immersion: 2-5 mins<br>Spray: 15-30 secs      | Alodine® 600 RTU™ is a ready to use liquid product that produces a chromate conversion coating on aluminum and its alloys. The coating produced provides excellent protection for unpainted aluminum and bonds paint well.  |   |
|                         | Alodine® 1000 RTU™           | •                   |                         | •                          |          |                     |                     | Liquid       | Ready to Use               | Brush or Spray            | Use as Received   | Chromate                             | •                  |           |                 |          |         |             | Ambient                             | 1-3 minutes                                   | Alodine® 1000 RTU™ is a ready to use aqueous solution for producing a protective coating on aluminum and its alloys. The coating provides excellent protection for painted and unpainted aluminum and bonds paint well. It is specifically designed for touching-up abraded or damaged areas.   |   |
|                         | Alodine® 1200S™              | •                   |                         | •                          |          |                     |                     | Powder       | Concentrated               | Immersion                 |   | 6.3 lbs per 100 gals water or 8 g/l  | Chromic Acid-Based | •         |                 |          |         |             | 70°-100°F<br>20°-40°C               | 15 seconds to 3 minutes                       | Alodine® 1200S™ is a powdered chemical used to produce a protective coating on aluminum to minimize corrosion and provide an improved bond for paint. Alodine® 1200S™ coating chemical, listed on QPL-81706, is an approved material to produce Class 1A and Class 3 coatings, bare or painted, in accordance with MIL C-5541C.   |   |
|                         | Alodine® 1201™               | •                   |                         | •                          |          |                     |                     | Liquid       | Brush: Ready to Use        | Brush or Immersion        |   | Immersion: 33 gals per 67 gals water | Chromic Acid-Based | •         |                 |          |         |             | Ambient to 100°F/38°C               | 2-5 minutes                                   | Alodine® 1201™ is a non-flammable, chromic acid-based coating chemical that will produce a chrome conversion coating on aluminum and its alloys.  |   |
|                         | Alodine® 1500™               | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion or Spray        |   | 1 gal per 100 gals water or 10 g/l   | Chromic Acid-Based | •         |                 |          |         |             | 70°-160°F<br>20°-70°C               | Immersion: 2-5 mins<br>Spray: 15-30 secs      | Alodine® 1500™ is a liquid chemical used to produce a protective coating on aluminum or aluminum alloys. The coating provides protection for aluminum and is an excellent bond for clear organic coatings. Listed on the register for QPL-MIL-C-81706 and is approved to be used by Methods A and C (spray and immersion processing) to produce Class 3 coatings in accordance with MIL-C-5541 (current issue). May also be used to process aluminum under Specification MIL-S-5002.  |   |
|                         | Alodine® 1600™               | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated, Two Packages | Immersion or Spray        |   | 1.3%-2% in water                     | Chromate           | •         |                 |          |         |             |                                     | 60°-130°F<br>15°-55°C                         | 1-5 minutes   | Alodine® 1600™ is a concentrated liquid two-package chemical used to produce a chromate conversion coating on aluminum and all its alloys. The color ranges from light iridescent gold to tan. It does not contain complex cyanides. Approved for use under MIL-DTL-81706A, formerly MIL-C-81706, Classes 1A and 3, Form, I, Method C and BAC-5719. |
|                         | Alodine® 5200™               | •                   |                         |                            |          |                     |                     | Liquid       | Concentrated               | Immersion or Spray        |   | 1.5%-7.5% in water                   | Organo-Metallic    | •         | •               |          | •       |             |                                     | 70°-120°F<br>20°-50°C                         | 1-5 minutes   | Alodine® 5200™ treatment is a chromium-free product specifically formulated for treating non-ferrous alloys. Spray or immersion applications may be used. This process provides an excellent base for bonding of adhesives and organic finishes.  |
|                         | Alodine® 5700™               |                     |                         | •                          |          |                     |                     | Liquid       | Ready to Use               | Spray                     | Use as Received   | Organo-Metallic                      | •                  | •         |                 | •        |         |             |                                     | Ambient to 100°F/38°C                         | 2-5 minutes   | Alodine® 5700™ is a chromium-free conversion coating specifically formulated for treating aluminum and its alloys. This product is formulated as a ready to use material for spray applications. The process provides an excellent base for organic finishes.   |
|                         | Touch-N-Prep® Alodine® 1132™ | •                   |                         | •                          |          |                     |                     | Liquid       | Ready to Use               | Pen                       | Use as Received   | Chromate                             | •                  |           |                 |          |         |             |                                     | Ambient                                       | Until dry   | A felt-tipped marker that provides a chromate conversion coating on aluminum surfaces prior to painting. Meets MIL-DTL-81706A, Class 1A & 3, Form VI, Method D. Ideal for coating repair work.  |
|                         | Brush Alodine® 120™ Kit      | •                   |                         | •                          |          |                     |                     | Liquid       | Ready to Use Two-Part Kit  | Kit                       | Use as Received   | Chromate                             | •                  |           |                 |          |         |             |                                     | Ambient                                       | Until dry   | Brush Alodine® 120™ Chemical Kit contains products formulated for treating aluminum to conform to MIL-C-5541C, Class 1A. The kit contains sufficient chemicals for cleaning and coating approximately 100 square feet of aluminum surface when used under normal conditions and in accordance with the directions.                                  |
|                         | Magnesium Treatment Kit      |                     |                         | •                          |          |                     |                     | Liquid       | Ready to Use               | Brush                     | Use as Received   | Chromate                             |                    | •         |                 |          |         |             |                                     | Ambient                                       | 1-5 minutes   | Magnesium Treatment Kit contains products formulated for treating magnesium alloys to conform to SAE AMS-M-3171, Type VI. The application method conforms to requirements in NAVAIR 01-1A-509 and is meant primarily for touch-up, corrosion repair processes of magnesium alloys.  |

# SURFACE TREATMENTS

|  | Metal Processing Lines                | Jet Engine Cleaning | Aircraft Parts Cleaning | Aircraft Depaint & Repaint | Coolants | Aircraft Appearance | Aircraft Protection | Consistency  | Form                   | How to Apply                  | Mix Ratio (product:water)                             | Chemistry               | Aluminum | Magnesium | Stainless Steel | Titanium | Ferrous                | Non-Ferrous            | Temperature  | Time   | Description  |         |
|--|---------------------------------------|---------------------|-------------------------|----------------------------|----------|---------------------|---------------------|--------------|------------------------|-------------------------------|---|-------------------------|----------|-----------|-----------------|----------|------------------------|------------------------|--|--|--|---------|
|  |                                       |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  | Product |
| JET ENGINE CLEANERS  | <b>JET ENGINE CLEANING, COLD LINE</b> |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  |         |
|  | TURCO® 5668™                          | •                   | •                       | •                          |          |                     |                     | Liquid       | Ready to Use           | Immersion                     | Add entire contents of container to stripping tank    | Alkaline                | •        | •         | •               | •        | •                      | •                      | 158°-176°F<br>70°-80°C   | 15-60 minutes  | TURCO® 5668™ is a diphase, liquid paint remover developed to remove resistant coatings, such as aluminized silicones, polyurethanes, acrylics, epoxies and chromated primers without using phenols, chromate, chlorinated solvents or acids. Ideal for the removal of PRC-1560M and PRC-1560MC coatings and is not detrimental to aircraft metals such as aluminum, titanium, magnesium, cadmium, conversion coatings, Dow coatings or ferrous alloys. Meets all requirements of MIL-R-83936B for removal of paint from aircraft wheels, landing gear components, and other aircraft and AGE components. |         |
|  | TURCO® 5948-DPM™                      | •                   | •                       | •                          | •        |                     |                     | Liquid       | Concentrated           | Immersion, Spray or Mop       | Immersion: 1:3-20<br>Spray/Mop: 1:9-30                | Alkaline, Water-Based   | •        | •         | •               | •        | •                      | •                      | 149°-176°F<br>65°-80°C   | Immersion: 5-15 minutes  | TURCO® 5948-DPM™ is an alkaline, water-based, blue concentrated compound formulated to effectively clean painted and unpainted aircraft exterior and interior surfaces when diluted with water. Ideally suited for use on all models of jet aircraft. It is also designed to be used in immersion tanks for dip applications.  |         |
|  | TURCO® Liquid Sprayeze NP-LT™         | •                   | •                       | •                          |          |                     |                     | Liquid       | Concentrated           | Immersion or Spray            | Immersion: 15%-25% in water<br>Spray: 3%-10% in water | Alkaline, Water-Based   | •        | •         | •               | •        |                        |                        | 90°-190°F<br>30°-90°C  | Immersion: 5-30 minutes<br>Spray: 1-2 mins   | TURCO® Liquid Sprayeze NP-LT™ is a straw colored liquid, developed to remove shop soil, lube oils, light drawing oils and drawing waxes from ferrous, aluminum, copper and titanium alloys. Suitable for cleaning most magnesium alloys, zinc and cadmium, and is ideal for precleaning metals prior to phosphating and painting. Does not contain free caustic, readily rinses from metal surfaces with room temperature water, and is effective from 90°-190°F/32°-88°C.   |         |
| TURCO® Liquid ARR (T-4181-L)   | •                                     | •                   | •                       |                            |          |                     | Liquid              | Concentrated | Immersion              | 50%-75% in water              | Alkaline  | •                       | •        | •         | •               |          |                        | 176°-203°F<br>80°-95°C | 15-60 minutes  | TURCO® Liquid Alkaline Rust Remover (T-4181-L) is an amber, liquid compound formulated to remove rust, paints, lube oils, drawing pastes, cutting oils and protective oils from ferrous alloys by immersion methods. Will not attack ferrous alloys, magnesium alloys, stainless steels, brass, bronze or Monel alloys when used as directed. Can be used on titanium alloys when diluted to 12% to 15% in water at 158°-167°F/70°-75°C. |  |         |
| <b>Typical Cold Line Process:</b><br>1. Pre-clean with TURCO® Liquid Sprayeze, or<br>2. Dip clean with TURCO® 5948-DPM™.<br>3. Rinse.<br>4. Use TURCO® 4181-L™ to remove dirt and scale.<br>5. Rinse.<br>6. Use TURCO® 5668™ to remove coatings for full inspection.   |                                       |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  |         |
| JET ENGINE CLEANERS  | <b>JET ENGINE CLEANING, HOT LINE</b>  |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  |         |
|  | TURCO® Rust Bloc                      | •                   | •                       | •                          |          |                     |                     | Liquid       | Concentrated           | Immersion or Spray            | Immersion: 10%-20% in water<br>Spray: 2%-5% in water  | Alkaline                | •        | •         | •               | •        | •                      | •                      | Ambient to 203°F/95°C  | Varies   | TURCO® Rust Bloc is an alkaline liquid used as a rust inhibiting rinse additive or cleaner. It provides temporary in-plant rust protection for steel and cast iron.  |         |
|  | TURCO® 4338-L™                        |                     | •                       |                            |          |                     |                     | Liquid       | Two-Part, Concentrated | Immersion                     | 50%-75% in water                                      | Alkaline, Permanganate  |          |           | •               | •        | •                      | 176°-203°F<br>80°-95°C | 30-60 minutes  | TURCO® 4338-L™ is a two-part liquid alkaline permanganate formulation developed specifically for jet engine cleaning. It modifies high temperature heat scale by chemically changing the structure of the oxide deposit to one that is properly conditioned for ease of chemical removal in subsequent processing steps. Approved by Rolls-Royce, GEAE, and Pratt & Whitney.   |  |         |
|  | TURCO® 4409 GL™                       |                     | •                       |                            |          |                     |                     | Liquid       | Concentrated           | Immersion, Spray or Hand Wipe | 5%-50% in water                                       | Acidic                  |          |           | •               | •        | •                      | Ambient to 140°F/60°C  | 3-10 minutes   | TURCO® 4409 GL™ is a clear, colorless liquid acid cleaner and deoxidizer designed for use on ferrous and non-ferrous alloys by immersion, spray and hand wipe methods. It is not intended for use on magnesium alloys and high strength steels.  |  |         |
|  | TURCO® Liquid ARR (T-4181-L)          | •                   | •                       |                            |          |                     |                     | Liquid       | Concentrated           | Immersion                     | 50%-75% in water                                      | Alkaline                |          |           | •               | •        | •                      | 176°-203°F<br>80°-95°C | 15-60 minutes  | TURCO® Liquid Alkaline Rust Remover (T-4181-L) is an amber, liquid compound formulated to remove rust, paints, lube oils, drawing pastes, cutting oils and protective oils from ferrous alloys by immersion methods. Will not attack ferrous alloys, magnesium alloys, stainless steels, brass, bronze or Monel alloys when used as directed. Can use on titanium alloys when diluted to 12% to 15% in water at 158°-167°F/70°-75°C.     |  |         |
| TURCO® Scale Gon 5™  |                                       | •                   |                         |                            |          |                     | Liquid              | Concentrated | Immersion              | 20%-30% in water              | Mildly Acidic   |                         |          | •         | •               | •        | 176°-194°F<br>80°-90°C | 30 minutes             | TURCO® Scale Gon 5™ is an acid activated yellow liquid used in the TURCO® Jet Engine Process to condition and remove high temperature scale from jet engine parts. Approved by Rolls-Royce, GEAE, and Pratt & Whitney. |  |  |         |
| <b>Typical Hot Line Process:</b><br>1. Pre-clean with TURCO® Liquid Sprayeze.<br>2. Rinse.<br>3. Use TURCO® 4181-L™ to remove carbon and light scale.<br>4. Rinse.<br>5. Scale Gon 5™ acid-based scale remover.<br>6. Rinse.<br>7. Use TURCO® 4338-L™ to remove major scale.<br>8. Rinse.<br>9. Use TURCO® 4181-L™ or TURCO® 4409™ to continue scale removal.<br>10. Rinse.<br>11. Apply TURCO® Rust Bloc. |                                       |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  |         |
| COMPRESSOR WASH  | <b>COMPRESSOR WASH</b>                |                     |                         |                            |          |                     |                     |              |                        |                               |   |                         |          |           |                 |          |                        |                        |  |  |  |         |
|  | TURCO® 5884™                          |                     | •                       |                            |          |                     |                     | Liquid       | Concentrated           | Spray                         | 1:1-4   | Alkaline, Solvent-Based | •        |           | •               | •        | •                      | •                      | Ambient  | Approx. 5 minutes  | TURCO® 5884™ is a concentrated liquid cleaner that is effective in the removal of oil, salt and solid deposits from compressor blades, guide vanes and rotors of in-service jet engines. Periodic cleaning of these components is necessary to avoid power loss, abnormal temperature increases and increased fuel consumption. Approved to MIL-C-85704B Type I.   |         |
|  | TURCO® 6783-3™ (Europe Only)          |                     | •                       |                            |          |                     |                     | Liquid       | Concentrated           | Spray                         | 10% in water  | Alkaline, Water-Based   | •        |           | •               | •        | •                      | •                      | Ambient  | Approx. 5 minutes  | TURCO® 6783-3™ is a concentrated aqueous compressor cleaner that effectively removes oil, salt and solid deposits from compressor blades, guide vanes and rotors of in-service turbine engines. Use at 10% by volume in distilled, demineralized or good drinking water. For cold weather (below 32°F/0°C), add 20% by volume isopropanol, ethanol or glycol. Meets MIL-C-85704B Type II and III.  |         |
|  | TURCO® 6783-10™                       |                     | •                       |                            |          |                     |                     | Liquid       | Ready to Use           | Spray                         | Use as Received                                       | Alkaline, Water-Based   | •        |           | •               | •        | •                      | •                      | Ambient  | Approx. 5 minutes  | TURCO® 6783-10™ is an aqueous compressor cleaner that effectively removes oil, salt and solid deposits from compressor blades, guide vanes and rotors of in-service turbine engines. Periodic cleaning of these components is necessary to avoid power loss, abnormal temperature increases, increased fuel consumption and excessive NOx emissions. Ready-to-use liquid form. Meets MIL-C-85704B Type II and III.   |         |
| TURCO® 6783-50™  |                                       | •                   |                         |                            |          |                     | Liquid              | Concentrated | Spray                  | 20% in water                  | Alkaline, Water-Based                                 | •                       |          | •         | •               | •        | •                      | Ambient                | Approx. 5 minutes  | TURCO® 6783-50™ is a concentrated aqueous compressor cleaner that effectively removes oil, salt and solid deposits from compressor blades, guide vanes and rotors of in-service turbine engines. Use at 20% by volume in distilled, demineralized or good drinking water. For cold weather (below 32°F/0°C), add 20% by volume isopropanol, ethanol or glycol. Meets MIL-C-85704B Type II and III.                                       |  |         |



# SURFACE TREATMENTS

| Product                             | Applications           |                     |                         |                            |          |                     | Characteristics     |              |                                |   | Alloys                    |           |          |           |                 |          | Operation |  | Description  |  |
|-------------------------------------|------------------------|---------------------|-------------------------|----------------------------|----------|---------------------|---------------------|--------------|--------------------------------|---|---------------------------|-----------|----------|-----------|-----------------|----------|-----------|--|--|--|
|                                     | Metal Processing Lines | Jet Engine Cleaning | Aircraft Parts Cleaning | Aircraft Depaint & Repaint | Coolants | Aircraft Appearance | Aircraft Protection | Consistency  | Form                           | How to Apply  | Mix Ratio (product:water) | Chemistry | Aluminum | Magnesium | Stainless Steel | Titanium | Ferrous   | Non-Ferrous  |  | Temperature  |
| <b>ACCESSORY SHOP PRODUCTS</b>      |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| TURCO® Aquasorb                     | •                      | •                   |                         |                            |          |                     | Liquid              | Ready to Use | Immersion, Brush or Spray      | Use as Received   | Petroleum Solvent         | •         | •        | •         | •               | •        | •         | Ambient  |  | TURCO® Aquasorb is a clear, amber liquid, formulated to impart short-term rust and corrosion protection to both ferrous and non-ferrous metals during manufacturing and overhaul. It displaces water from metal surfaces, leaving an oil-like protective film, which prevents corrosion and rusting under humid conditions. Ideal for post oil treatments, such as phosphate, and is often used on aircraft engine and wheel bearings and similar components after rework. |
| TURCO® Aviation                     | •                      | •                   | •                       |                            |          |                     | Powder              | Concentrated | Immersion or Spray             | Immersion: 30-60 g/l<br>Spray: 7.5-15 g/l                       | Alkaline                  | •         | •        | •         | •               | •        | •         | Immersion: 167°-185°F<br>75°-85°C<br>Spray: 158°-167°F<br>70°-75°C | Immersion: 2-10 minutes<br><br>Spray: 30 second to 2 minutes | TURCO® Aviation is a white granulated alkaline compound formulated for the removal of mill inks, oils, shop soils and other difficult-to-remove soils from aluminum, steel, copper, magnesium, cadmium and nickel alloys.  |
| TURCO® 4215 NC-LT™                  | •                      | •                   | •                       |                            |          |                     | Powder              | Concentrated | Immersion, Spray or Ultrasonic | Immersion: 45-60 g/l<br>Spray: 7-15 g/l<br>Ultrasonic: 3-15 g/l | Mildly Alkaline           | •         |          | •         | •               | •        | •         | 113°-131°F<br>45°-55°C   | Immersion: 5-10 minutes<br>Spray: 2-4 mins                   | TURCO® 4215 NC-LT™ is a white granular mix developed for cleaning ferrous and non-ferrous alloys by spray, immersion and ultrasonic methods at low temperatures. Ideal for cleaning fuel and hydraulic components and for cleaning metals prior to metal bonding.  |
| TURCO® 5805™                        | •                      | •                   |                         |                            |          |                     | Liquid              | Ready to Use | Spray                          | Use as Received   | Alkaline                  | •         | •        | •         | •               | •        | •         | Ambient  | 15-30 minutes  | TURCO® 5805™ is a clear viscous liquid, developed specifically for cleaning and brightening jet engine thrust reversers, cowling, landing gears, etc., during overhaul.  |
| TURCO® 5948-DPM™ Thick              | •                      | •                   |                         |                            |          | •                   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20   | Alkaline, Water-Based     | •         |          | •         | •               | •        | •         | Immersion: 149°-185°F<br>65°-85°C                                  | 5-15 minutes   | TURCO® 5948-DPM™ Thick is an environmentally advantaged thixotropic, water-based, heavy duty aircraft cleaner. It is a blue, viscous, alkaline, concentrated compound formulated to effectively cling to painted and unpainted aircraft exterior and interior surfaces. Ideally suited for use on all jets, especially in baggage bins, flap and wheel well areas, and on engines before overhaul.   |
| TURCO® 6802™                        | •                      |                     |                         |                            |          |                     | Liquid              | Ready to Use | Immersion                      | Use as Received   |                           | •         | •        | •         | •               | •        | •         | Maximum 257°F/125°C  | Time for wax to melt or dissolve                             | TURCO® 6802™ is a clear, amber liquid developed to remove platter's wax (such as Rigidex) and similar low melting stop-off compounds by immersion in the heated product. It is free of chlorinated hydrocarbons, phenols, and chromate. TURCO® 6802™ can be used on all metals.  |
| TURCO® 9045-6™                      | •                      | •                   |                         |                            |          |                     | Liquid              | Ready to Use | Immersion                      | Use as Received   | Water-Based               |           |          | •         | •               | •        |           | 104°-140°F<br>40°-60°C   | 30 minutes to 2 hours  | TURCO® 9045-6™ is a unique water-based carbon remover used to remove carbon deposits and difficult-to-remove soils found in aircraft engines. It cleans engine blocks, pistons, carburetors, transmissions, and brake assemblies. It is an effective carbon remover for jet engine overhaul. It may also remove some paints.   |
| <b>LANDING GEAR/THRUST REVERSER</b> |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| TURCO® 5668™                        | •                      | •                   | •                       |                            |          |                     | Liquid              | Ready to Use | Immersion                      | Add entire contents of container to stripping tank              |                           | •         | •        | •         | •               | •        | •         | 158°-176°F<br>70°-80°C   | 15-60 minutes  | TURCO® 5668™ is a diphasic, liquid paint remover developed to remove resistant coatings, such as aluminized silicones, polyurethanes, acrylics, epoxies and chromated primers, without using phenols, chromate, chlorinated solvents or acids. Meets all requirements of MIL-R-83936B for removal of paint from aircraft wheels, landing gear components, and other aircraft and AGE components.   |
| TURCO® 5805™                        | •                      | •                   |                         |                            |          |                     | Liquid              | Ready to Use | Spray                          | Use as Received   | Alkaline                  | •         | •        | •         | •               | •        | •         | Ambient  | 15-30 minutes  | TURCO® 5805™ is a clear viscous liquid, developed specifically for cleaning and brightening jet engine thrust reversers, cowling, landing gears, etc., during overhaul.  |
| TURCO® 5948-DPM™ Thick              | •                      | •                   |                         |                            |          | •                   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20   | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Immersion: 149°-176°F<br>65°-80°C                                  | 5-15 minutes   | TURCO® 5948-DPM™ Thick is an environmentally advantaged thixotropic, water-based, heavy duty aircraft cleaner. It is a blue, viscous, alkaline, concentrated compound formulated to effectively cling to painted and unpainted aircraft exterior and interior surfaces. Ideally suited for use on all jets, especially in baggage bins, flap and wheel well areas, and on engines before overhaul.   |
| <b>EXTERIOR WASH</b>                |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| Aerowash®                           | •                      |                     |                         |                            |          | •                   | Liquid              | Concentrated | Spray or Mop                   | 5%-30% in water, depending upon soil                            | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Ambient  | Varies   | Aerowash® is a concentrated liquid all-purpose maintenance cleaner. It contains a unique blend of alkaline materials, solvents and surfactants, which makes this product highly effective against a wide variety of soils. It is safe to use on all metals, glass, painted surfaces, and plastics.   |
| TURCO® Air-Tec #23™                 |                        |                     |                         |                            |          | •                   | Liquid              | Concentrated | Spray or Foam                  | 1 part concentrate to 3-15 parts water                          | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Ambient  | Varies   | TURCO® Air Tec #23™ is a clear, straw colored, alkaline concentrate designed to be diluted with water to clean painted and unpainted exterior aircraft surfaces by spraying or foaming methods. Meets requirements of MIL-C-87936A, Type I.  |
| TURCO® 5948-DPM™                    | •                      | •                   | •                       |                            |          | •                   | Liquid              | Concentrated | Spray or Mop                   | 1 part concentrate to 9-30 parts water                          | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Ambient  | Varies   | TURCO® 5948-DPM™ is an alkaline, water-based, blue concentrated compound formulated to effectively clean painted and unpainted aircraft exterior and interior surfaces when diluted with water. Ideally suited for use on all models of jet aircraft. It is also designed to be used in immersion tanks for dip applications.  |
| <b>REMOVED COMPONENTS</b>           |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| TURCO® 5948-DPM™                    | •                      | •                   | •                       | •                          |          | •                   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20<br>Spray/mop: 1:9-30                          | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | 149°-176°F<br>65°-80°C   | Immersion: 5-15 minutes                                      | TURCO® 5948-DPM™ is an alkaline, water-based, blue concentrated compound formulated to effectively clean painted and unpainted aircraft exterior and interior surfaces when diluted with water. Ideally suited for use on all models of jet aircraft. It is also designed to be used in immersion tanks for dip applications.  |
| TURCO® 9045-6™                      | •                      | •                   | •                       |                            |          |                     | Liquid              | Ready to Use | Immersion                      | Use as Received   | Water-Based               |           |          | •         | •               | •        |           | 104°-140°F<br>40°-60°C   | 30 minutes to 2 hours  | TURCO® 9045-6™ is a unique water-based carbon remover used to remove carbon deposits and difficult-to-remove soils found in aircraft engines. It cleans engine blocks, pistons, carburetors, transmissions, and brake assemblies. It is an effective carbon remover for jet engine overhaul. It may also remove some paints.   |
| <b>DINOL REMOVER</b>                |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| TURCO® 5948-DPM™ Thick              | •                      | •                   |                         |                            |          | •                   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20   | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Immersion: 149°-185°F<br>65°-85°C                                  | 5-15 minutes   | TURCO® 5948-DPM™ Thick is an environmentally advantaged thixotropic, water-based, heavy duty aircraft cleaner. It is a blue, viscous, alkaline, concentrated compound formulated to effectively cling to painted and unpainted aircraft exterior and interior surfaces. Ideally suited for use on all jets, especially in baggage bins, flap and wheel well areas, and on engines before overhaul.   |
| <b>FLAP &amp; WHEEL WELL</b>        |                        |                     |                         |                            |          |                     |                     |              |                                |   |                           |           |          |           |                 |          |           |  |  |  |
| TURCO® 5948-DPM™ Thick              | •                      | •                   |                         |                            |          | •                   | Liquid              | Concentrated | Immersion, Spray or Mop        | Immersion: 1:3-20   | Alkaline, Water-Based     | •         | •        | •         | •               | •        | •         | Immersion: 149°-176°F<br>65°-80°C                                  | 5-15 minutes   | TURCO® 5948-DPM™ Thick is an environmentally advantaged thixotropic, water-based, heavy duty aircraft cleaner. It is a blue, viscous, alkaline, concentrated compound formulated to effectively cling to painted and unpainted aircraft exterior and interior surfaces. Ideally suited for use on all jets, especially in baggage bins, flap and wheel well areas, and on engines before overhaul.   |

# SURFACE TREATMENTS

|                               | Metal Processing Lines                                   | Jet Engine Cleaning | Aircraft Parts Cleaning | Aircraft Depaint & Repaint | Coolants | Aircraft Appearance | Aircraft Protection | Consistency  | Form                 | How to Apply  | Mix Ratio (product:water)                            | Chemistry                | Aluminum | Magnesium | Stainless Steel | Titanium | Ferrous | Non-Ferrous           | Temperature  | Time   | Description   |         |
|-------------------------------|--|---------------------|-------------------------|----------------------------|----------|---------------------|---------------------|--------------|----------------------|---|--|--------------------------|----------|-----------|-----------------|----------|---------|-----------------------|--|--|---|---------|
|                               |  |                     |                         |                            |          |                     |                     |              |                      |   |  |                          |          |           |                 |          |         |                       |  |  |   | Product |
| SURFACE TREATMENTS            | <b>WHEEL &amp; BRAKE</b>                                 |                     |                         |                            |          |                     |                     |              |                      |   |  |                          |          |           |                 |          |         |                       |  |  |   |         |
|                               | TURCO® Rust Bloc   | •                   | •                       | •                          |          |                     |                     | Liquid       | Concentrated         | Immersion or Spray                                    | Immersion: 10%-20% in water<br>Spray: 2%-5% in water | Alkaline                 | •        | •         | •               | •        | •       | •                     | Ambient to 203°F/95°C  | Varies   | TURCO® Rust Bloc is an alkaline liquid used as a rust inhibiting rinse additive or cleaner. It provides temporary in-plant rust protection for steel and cast iron.   |         |
|                               | TURCO® 5668™   | •                   | •                       | •                          |          |                     |                     | Liquid       | Ready to Use         | Immersion   | Add entire contents of container to stripping tank   | Alkaline                 | •        | •         | •               | •        | •       | •                     | 158°-176°F<br>70°-80°C   | 15-60 minutes  | TURCO® 5668™ is a diphase, liquid paint remover developed to remove resistant coatings, such as aluminized silicones, polyurethanes, acrylics, epoxies and chromated primers without using phenols, chromate, chlorinated solvents or acids. Meets all requirements of MIL-R-83936B for removal of paint from aircraft wheels, landing gear components, and other aircraft and AGE components.  |         |
|                               | TURCO® 6751-L™   | •                   |                         | •                          |          |                     |                     | Liquid       | Concentrated         | Spray   | 1%-4% in water                                       | Alkaline                 | •        | •         | •               | •        | •       | •                     | 86°-140°F<br>30°-60°C  | 1-2 minutes  | TURCO® 6751-L™ is a liquid, alkaline, low temperature cleaner for spray applications. It's a brown colored liquid, developed to remove shop soils, lube oils, light drawing oils and drawing waxes from ferrous and non-ferrous metals. Rinses from metal surfaces with room temperature water and is effective from 86°-140°F/30°-60°C.  |         |
|                               | TURCO® Aviation  | •                   | •                       | •                          |          |                     |                     | Powder       | Concentrated         | Immersion or Spray                                    | Immersion: 30-60 g/l<br>Spray: 7.5-15 g/l            | Alkaline                 | •        | •         | •               | •        | •       | •                     | Immersion: 167°-185°F<br>75°-85°C<br>Spray: 158°-167°F<br>70°-75°C | Immersion: 2-10 minutes<br><br>Spray: 30 second to 2 minutes   | TURCO® Aviation is a white granulated alkaline compound formulated for the removal of mill inks, oils, shop soils and other difficult-to-remove soils from aluminum, steel, copper, magnesium, cadmium and nickel alloys.   |         |
| TURCO® Liquid Sprayeze NP-LT™ | •  | •                   | •                       |                            |          |                     | Liquid              | Concentrated | Immersion or Spray   | Immersion: 15%-25% in water<br>Spray: 3%-10% in water | Alkaline, Water-Based                                | •                        | •        | •         | •               |          |         | 90°-190°F<br>30°-90°C | Immersion: 5-30 minutes<br>Spray: 1-2 mins                         | TURCO® Liquid Sprayeze NP-LT™ is a straw colored liquid, developed to remove shop soil, lube oils, light drawing oils and drawing waxes from ferrous, aluminum, copper and titanium alloys. Suitable for cleaning most magnesium alloys, zinc and cadmium, and is ideal for precleaning metals prior to phosphating and painting. Does not contain free caustic, readily rinses from metal surfaces with room temperature water, and is effective from 90°-190°F/30°-90°C. |   |         |
| SURFACE TREATMENTS            | <b>STRIPPERS</b>   |                     |                         |                            |          |                     |                     |              |                      |   |  |                          |          |           |                 |          |         |                       |  |  |   |         |
|                               | TURCO® 6776-LO™  | •                   |                         | •                          | •        |                     |                     | Liquid       | Ready to Use         | Spray   | Use as Received                                      | Acidic                   | •        |           | •               | •        | •       |                       | Ambient  | Varies   | TURCO® 6776-LO™ environmentally advantaged paint remover is low odor, thixotropic, and developed for effective stripping of such resistant finishes as epoxies, epoxy primers, polyurethanes, and similar catalyzed paints. Offers a significant advance in work place safety. Does not contain methylene chloride, chlorinated solvents, phenols, chromates, ammonia or amines. Complies with the aircraft/aerospace NESHAP. Not recommended for use on high strength steel, or magnesium. Meets the "Effect on Metals" requirements of MIL-R-81903A.  |         |
|                               | TURCO® 6776™ Thin  | •                   |                         | •                          |          |                     |                     | Liquid       | Diphase Ready to Use | Immersion   | Use as Received                                      | Acid Activated           | •        |           | •               |          | •       |                       | 68°-100°F<br>20°-40°C  | As Needed  | TURCO® 6776™ Thin is a light amber, diphase liquid developed for removing chemical resistant paints, such as epoxies, polyurethanes and epoxy primers, from aluminum alloys, mild steels and cast iron by immersion. It operates with an oil seal to reduce odors.  |         |
|                               | TURCO® 6813-E™   | •                   | •                       | •                          | •        |                     |                     | Liquid       | Ready to Use         | Spray or Brush  | Use as Received                                      | Alkaline, Water-Based    | •        | •         | •               | •        | •       | •                     | Ambient  | Varies   | TURCO® 6813-E™ water-based environmentally advantaged paint remover is a viscous, pink liquid formulated to remove multiple coats of aircraft paints, such as epoxies and polyurethanes, including such resistant primers as Koroflex. Clings to vertical as well as overhead surfaces and can be used on aluminum, magnesium, cadmium plated steels and other ferrous metals.  |         |
|                               | TURCO® 6840-S™   | •                   |                         | •                          | •        |                     |                     | Liquid       | Ready to Use         | Spray or Brush  | Use as Received                                      | Water-Based              | •        | •         | •               | •        | •       | •                     | 85°-100°F<br>30°-40°C  | Varies   | TURCO® 6840-S™ water-based environmentally advantaged paint remover is a viscous, light purple liquid formulated to remove multiple coats of paints. Clings to vertical as well as overhead surfaces and can be used on aluminum, magnesium, cadmium plated steels and other ferrous metals.  |         |
|                               | TURCO® EA 6916™ Stripper                                 | •                   |                         | •                          | •        |                     |                     | Liquid       | Ready to Use         | Spray   | Use as Received                                      | Acid, Water-Based        | •        |           | •               | •        | •       |                       | Ambient  | Extended   | TURCO® EA 6916™ Stripper water-based, environmentally advantaged, paint remover is low odor, thixotropic, and developed for effective stripping of such resistant finishes and epoxies, epoxy primer, polyurethanes and similar catalyzed paints. It is also effective in removing "sanding primer." Specially designed to be effective on very thick coatings, up to 25 mils or more. Remains wet and active for extended periods of time. Complies fully with the aircraft/aerospace NESHAP. Can be used on aluminum, mild steel, cast iron, and titanium. Meets the "Effect on Metals" requirements of MIL-R-81903A. |         |
| TURCO® EA 6930™ Stripper      | •  |                     | •                       | •                          |          |                     | Liquid              | Ready to Use | Spray                | Use as Received                                       | Peroxide Activated, Water-Based                      | •                        |          | •         | •               | •        | •       | Ambient               | Varies   | TURCO® EA 6930™ Stripper environmentally advantaged paint remover is low odor, thixotropic, and activated by hydrogen peroxide. It was developed for effective stripping of such resistant finishes as epoxies, epoxy primers, polyurethanes, and similar catalyzed aircraft paints. Offers a significant advance in paint stripper technology. Complies fully with the aircraft/aerospace NESHAP. Meets the corrosivity requirements of TT-R-2918A.                       |   |         |
| SURFACE TREATMENTS            | <b>MASKANTS</b>  |                     |                         |                            |          |                     |                     |              |                      |   |  |                          |          |           |                 |          |         |                       |  |  |   |         |
|                               | TURCO® Form Maskant 6914G™ and TURCO® Form Maskant 6915™ | •                   |                         |                            |          |                     |                     | Liquid       | Two-Part             | Spray   | 1:1 by weight  | Polyurethane-Based       | •        |           | •               | •        | •       | •                     | >35°F/5°C  | Cure Time: 30 seconds to 2 minutes   | TURCO® Form Maskant 6914G™ and TURCO® Form Maskant 6915™ are the two components of a 100% solids, polyurethane-based, hand-strippable protective coating, which provides protection to aerospace metals during chemical and mechanical processing. These components are mixed at the point of application in a specially designed gun and cure rapidly on the metal surface. The cured film is referred to as TURCO® Form 2K Maskant.   |         |
| SURFACE TREATMENTS            | <b>COOLANTS, BIOSTABLE</b>                               |                     |                         |                            |          |                     |                     |              |                      |   |  |                          |          |           |                 |          |         |                       |  |  |   |         |
|                               | Multan® Machine Coolants                                 | •                   |                         |                            |          | •                   |                     | Liquid       | Concentrate          | Circulation to Machine                                | Depends on specific product                          | Alkaline, Semi-Synthetic | •        |           | •               | •        | •       |                       | Do not freeze  |  | Multan® Machine Coolants are oil rejecting, semi-synthetic fluids designed for machining and grinding ferrous and aluminum alloys. The unique composition of corrosion inhibitors, Extreme Pressure (EP) additives, lubricity additives, biocides and bio-resistant components provide a durable low foaming product for today's light-to-heavy machining and grinding operations.  |         |

**Typical Paint Stripping Process:**

1. Protect surfaces that will not be stripped.
2. Apply either an acid, alkaline, or peroxide paint stripper to surface. See above list.
3. Agitate paint surface with stiff brush. Squeegee off loosened paint and rinse.
4. Follow with TURCO® 5948-DPM™ to wash prior to etching.
5. Rinse.
6. Use TURCO® Metal Glo #6 to etch metal prior to conversion coating. Follow TURCO® Metal Glo #6 application instructions.
7. Apply conversion coating. Follow instructions related to the specific TURCO® conversion coating.