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DIAMONDYZE™

DiamonDyze was designed to improve both Type II and Type III anodizing. The goal was to improve the conversion of aluminum to aluminum oxide, add additional ceramic, improve the surface finish, improve wear resistance and improve corrosion resistance. DiamonDyze was designed to do so with minimal changes to the existing process, for both Types of anodizing. The goal was accomplished and requires only one simple step to implement the process into an existing line. *Add DiamonDyze to the Dye tank.*

Using proprietary chemical processing, ingredients and Nano technology, DiamonDyze was born.

DiamonDyze functions by reacting with the aluminum alloy and imparting additional ceramic content *to the pores.* DiamonDyze is designed to have *no direct impact on dimensional growth or color*. The lack of a color change can be seen when a clear DiamonDyze coat is applied (DiamonDyze in a "Dye" tank with no dye). This enhancement at the pore level increases the hardness of the anodic layer, reduces pore size and can even create a "cover" over alloyed materials when the component has been properly treated during the procedures leading up to immersion in the Sulfuric acid tank.

In testing DiamonDyze has allowed 2024, **un-sealed**, to go over **2000 hours** (ASTM B117) sale spray at 6 thousandths thickness and over **336** hour salt spray, sealed, at 1 thousandth thickness and in Type II form. In effect a seal is not needed as DiamonDyze properly applied seals the aluminum pores. It is so effective that 6061 panels, type II colored have been in constant salt spray since **December 2009** with no change at all.

When issues like fatigue strength and similar are important, the ability to have a wear resistant surface with less than typical growth can have a major impact on the parts strength, as less aluminum is converted to the brittle outer layer. Where impact resistance or "structural" strength is important Type III anodizing is recommended and enhanced by the DiamonDyze treatment.

While Chemical resistance does improve, many issues such as UV stability are not impacted by DiamonDyze as such are a Dye issue.

DiamonDyze is safe and non-hazardous though slightly acidic (To work with the normal acid level of a Dye tank). The makeup is such that a very small amount is all that is needed and typically the add rate on initial charging is *10 Ml per gallon of water, in the dye tank.* As the alloy, dye, water purity and other factors play a part in establishing the point at which an addition to the tank is necessary, the actual add point needs to be established for each application. Normal adjustments to the dye tank as to PH or fungus issues have no impact on DiamonDyze.

DiamonDyze may be stripped by the traditional method, but takes more time due to the denser level of the anodic layer created.

Examples:

#1

DiamonDyze
From Bruce Hanson of Central Tech Industries
Aurora, NE

Bruce ran a test in a Dry Fertilizer plant. A sample plate of 6061 aluminum was screwed to a wall using a Stainless Steel screw, in the warehouse. *The only metal in the building is Stainless Steel*. After 1 year of constant exposure the DiamonDyze sample looked like the day it was put in. The Stainless Steel screw and many other Stainless Steel components all showed significant corrosion.

#2

DiamonDyze
From Bruce Hanson of Central Tech Industries
Aurora, NE

Bruce ran a test on an aluminum bearing assembly. The client was seeing his aluminum bearing unit fail 3 or more times per year. This is a bearing that rides on a steel shaft with two steel wheels riding on the bearing. Below is a photo of the assembly *after 1 year of use*. The bearing was DiamonDyzed and the only change was the color being rubbed off (Color goes into the part after the DiamonDyze, so a major portion of it rides right at the surface). There was no wear to the part beyond the color, as can be seen below. The unit fully assembled is also shown as well as the disassembled bearing and hub.

#3

M.A.C.H., Maricopa, A.Z.

The test engine was assembled with all DiamonDyzed Type II pistons and then put through two days of Dyno testing. No special machining was performed. The engine was a 350 Cu In Chevrolet normally making 350 H.P.

The three primary objectives were:-

1: To determine the ability of DiamonDyzed on the skirt to resist galling and provide reduced friction.

2: To reduce ring galling, improve seal and eliminate any sticking of the rings, allowing them to move freely.

3: To act as a thermal barrier, reducing hotspots, shedding carbon, maintaining combustion temperatures longer during the power stroke and reducing piston temperature.

Procedure: The test engine was run with varying the timing, jetting and load. All three goals were met and exceeded.

The results:-

20 more H.P.

30 more ft./lbs. of torque

No ring sticking, and the rings looked like they had not even been run.

Leak down was 0% to 1%.

Minimal carbon retention and the carbon present simply wiped off
No evidence of galling or wear at all. The pistons, other than the slight carbon present and mild color changes at the top, looked like they had not been run.

The cylinder walls and cross hatch actually looked better than when The engine would not detonate. The spark plugs showed no distress using hot plugs.


#4

A piston manufacturer ran a second set of tests to see how DiamonDyze would react to continuous full load at full throttle. The engine was run for a full 6 hours, after warm up, under full load. The results can be seen below. The engine was a 350 Cu In Chevrolet making in excess of 600 H.P.

In very high Horsepower and load applications Type III DiamonDyze is recommended.

#5

Servitech Industries
Nashville, TN

A 6061 DiamonDyzed panel was tested to Ford's APGE test (accelerated corrosion). To pass a component must successfully pass through **80 Cycles**. The DiamonDyze treated panel was pulled after **345 cycles** and still showed no change.

#5

Servitech Industries
Nashville, TN

A 6061 test panel was exposed to salt spray for 8443 hours with no change.