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Hipo-Carburite Gas Carburizing Fluid by Prime India International

Prime India International, a renowned manufacturer of a wide range of fluids designed for case hardening and carburizing since 1971, we proudly introduce Hipo-Carburite, a proprietary brand of carburizing and hardening fluid.

In various furnace applications such as:

- Pit furnace,

- Rotary retort furnace,

- Muffle furnace,

- Continuous furnace,

- Seal quench furnaces;

A drip feed system is commonly used to maintain a controlled atmosphere. Hipo-Carburite simplifies this process by offering a ready-to-use single fluid solution. It eliminates the need for separately feeding additional chemicals like ammonia gas, making it user-friendly and efficient.

Typical Properties of Hipo-Carburite:

Colour: Blue (facilitates the reading of flow rate)

Specific Gravity at room temperature: 0.78

Moisture Content: 0.2%

Flash Point: 70

Packaging: 200 Litres Barrel

Shelf Life: 5 months

Applications:

- Specifically designed for big size furnaces
- Ideal for achieving case depths above 1.0 mm up to as high as 2.0 mm
- Used in the controlled atmosphere drip feed system for case hardening and carburizing

Unique Features of Hipo-Carburite

- **Reduced Process Timing**: Hypo-Carburite Gas Carburizing Fluid is engineered to significantly reduce the process timing, resulting in a substantial decrease in turnover time. For example, a 20% reduction in a 1-hour process can reduce the timing by 6 days a month for a 24-hour furnace operation, leading to increased production efficiency.
- **Greater Crushing Load Report**: This product enhances the crushing load report of treated components, ensuring they meet high-strength requirements and are suitable for demanding applications.
- **Higher Strength**: Hipo-Carburite Gas Carburizing Fluid facilitates the development of components with higher strength and improved mechanical properties, making it an ideal choice for critical applications.
- **Cost-Effective**: The reduction in process timing achieved by Hypo-Carburite translates into significant cost savings. The additional production realized in the same timeframe essentially makes the product free when considering the cost of electricity, thereby boosting the firm's profitability.
- **Single Feed Fluid**: Hipo-Carburite is a single fluid solution, eliminating the need to add any additional chemicals like LPG or ammonia. It simplifies the process and minimizes operational complexity.
- **Quick Case Pick-Up**: This product accelerates the case pick-up process, resulting in time and energy cost savings.
- **Desired Metallurgical Microstructure**: Hipo-Carburite helps achieve the desired metallurgical microstructure for carburized and hardened components.
- **Scale-Free Carburizing and Hardening**: Components treated with Hypo-Carburite experience scale-free carburizing and hardening, ensuring a clean and high-quality finish.
- **Single Liquid (Ammonia-Free):** Hipo-Carburite is a single liquid product that is ammonia-free, enhancing safety and ease of handling.
- **Reduced Cost of Carburizing:** The product contributes to reduced carburizing costs, further enhancing its cost-effectiveness.

Typical Carburizing Cycle

Prime India International's Hipo-Carburite can be used for carburizing to achieve desired microstructure and case depth in pit/rotary furnace/SQ. Being ammonia free single fluid drip feed it is user friendly and easy to handle. A typical carbonitriding cycle to achieve the ECD (effective case depth) of 0.40 to 0.60 mm with Hypo-Carburite is as given below:

Furnace Type: Pit type furnace, retort size 600mm dia. X 1100mm height. 300Kg. (Gross).
Charge Weight: 300Kg. (Gross).
Type of Component: 4mm tick washer.
Material Specification: Mild steel (M.S.)

Operation	Temperature (Degree Celsius)	Time (Hrs)	Hipo-Carburite Flow Rate (LPH)*
Heating up to Carburizing temp	700-835	1	0.5
Carburizing	870	2 ½	0.8
Cooling to Hardening temperature	840-815	½	0.5
Quenching in Oil	815		0.5

***Ideally flow rate is to be maintained in such a way so that furnace pressure to be maintained 8-10 mm of water gauge. (flow rate is dependent on furnace volume above guide line if for 500 Kg. gross wt. furnace.)**

Result Achieved:

- After 1h Hrs.- Case Depth -0.20mm, Hardness-90,91 N-15 superficial hardness, &70-72 RA Scale.
- After 2% Hrs.- Case Depth -0.35mm, Hardness-90,91 N-15 superficial hardness,882-83 RA Scale
- After 3% Hrs.- Case Depth -0.6mm, Hardness-90,91 N-15 superficial hardness, &83-85 RA Scale

Hipo-Carburite Typical Cycle Time:

ECD(effective case depth)required mm	Booster Cycle Time (Hrs)	Diffusion Cycle Time(Hrs)
0.15	**1.5**	**-**
0.25	**2**	**-**
0.5	**3**	**-**
0.6	**3.5**	**-**

Note:-
1. Effective case depth measured at 450 HV1 cut off point.
2. Temperature for booster and diffusion cycle is 830°C
3. Diffusion is achieved during the cooling (i.e. From process temp.to hardening temperature.