

IONOX HC

ALCOHOL/WATER BASED SEMI-AQUEOUS CLEANER*

FEATURES:

- Non Flammable
- Operates in Simple Equipment
- Contains no CFC or Chlorinated Solvents
- Water Soluble
- Effective Cleaner
- Biodegradable
- Low Surface Tension
- Natural, Renewable Source
- Utilized Low Vapor Pressure Alcohol

BENEFITS:

- Safer to use. No Flash point to boiling
- Can be operated without the need of expensive decanters
- No ozone depletion
- Easier rinsing; no need to create emulsions
- Clean broad range of RA, RMA, OA and water soluble fluxes
- Treatment technology exists to purify wash tank
- Able to clean under low standoffs
- Large available supply
- Low VOC

DESCRIPTION: Kyzen **IONOX HC** is a water-based material formulated with a proprietary alcohol that is derived from renewable biomass sources. This material is formulated with a series of polar and non-polar solvents, surfactants and activators to provide a cleaning solution which is non-combustible while maintaining effective cleaning character. The design of this material provides the proper balance of ingredients able to clean a broad range of RA, RMA, OA and water soluble fluxes on both through-hole and surface-mount assemblies. In addition, **IONOX HC** is strong enough to be used on difficult surface-mount or hybrid assemblies that typically require multiple cleanings with ozone depleting materials.

TYPICAL

PROPERTIES:	Flash Point (CC)	None-to-boiling
	Appearance	Clear to light amber
	Odor	Mild / Low
	Boiling Point	110°C
	Vapor Pressure 20°C	Formulation: < 10 mm Hg (Organic: < 0.6 mm Hg)
	Surface Tension	20 - 22 dynes/cm
	Specific Gravity 60°C	1.070
	pH 100% Solution	9.2 - 9.7

PROCESS:

Kyzen **IONOX HC** is applied undiluted at room temperature or at any temperature up to 140°F using a variety of agitation methods. With no flash point, the product may be used in any type of batch or semi-aqueous compatible equipment. The basic process requires a heated and agitated wash stage, a deionized rinse stage, and then a hot air drying stage. **IONOX HC** is designed to operate similar to "semi-aqueous" solvents in that the product remains in the wash stage for multiple wash cycles with only make up additions required. Unlike "semi-aqueous" solvents, **IONOX HC** products are completely water soluble. This advantage allows for simple and easy rinsing of the cleaned part, and eliminates the necessity of using complicated emulsions and decantation steps. In addition, this high-water solubility allows for lower rinse water temperatures and, in some cases, lower rinsing flow rates.

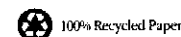


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*Ingredients in this material are protected by Foreign Patents and US and Foreign Patents Pending.

The Better Solution



SAFETY: Kyzen IONOX HC has been designed based on what properties users have been asking for. The product is non-combustible, non-flammable, non-corrosive to components, and has no flash point. Consult the MSDS for further handling and safety information.

PERFORMANCE: In any cleaning process the performance of the process is based on four basic variables. The first is having the required mechanical agitation in the process to impart force on the liquid to sweep away contamination. The second is having the required temperatures to maximize the solubility of the contaminants. The third is the selection of the proper cleaning fluid which has the proper solubility for the contamination. And the fourth is time required to complete the cleaning task.

Having these factors in mind, Kyzen developed IONOX HC for use in both batch and current semi-aqueous compatible systems. IONOX HC has been formulated to work on a broad range of fluxes including RA, RMA, OA and water solubles. In testing IONOX HC has shown capabilities of specifically removing corrosive ionic species such as chlorides, bromides, and weak organic acids which contribute to failures in PWA's.

ENVIRONMENTAL: Greater than 95% of the materials used in IONOX HC are derived from products which are renewable resources. The key organic material used in the product is an alcohol derived from recycled waste biomass such as sugar cane bagasse, wood waste, and rice hulls. The products used in IONOX HC were selected not only for their cleaning ability, but also for their biodegradability, low VOC character and recyclability. The whole Kyzen Cleaning Process has been designed to support a closed-loop system through the use of Kyzen's proprietary water management process.

COMPATIBILITY: Table 1 lists the results of materials tested for compatibility with IONOX HC. The product is quite compatible with most materials used on PWA's and in cleaning equipment today. Unlike solvents, IONOX may be used with machines which are constructed of plastics such as polypropylene and polyethylene.

TABLE 1:

Material	24 Hours 140°F Rating	14 Days 140°F Rating	14 Day % Wt Chg
ABS	Compatible	Compatible	< 1%
Acetal	Compatible	Compatible	2%
Acrylic	Test	Not Recommended	>50%
CPVC	Compatible	Compatible	3%
FR-4 Board	Compatible	Compatible	< 1%
Nylon	Compatible	Compatible	5%
Phenolic Resins	Compatible	Test	8%
Polycarbonate	Compatible	Not Recommended	35%
Polyethylene LD	Compatible	Compatible	< 1%
Polyethylene HD	Compatible	Compatible	< 1%
Polyethylene UHMW	Compatible	Compatible	< 1%
Polypropylene	Compatible	Compatible	< 1%
PTFE	Compatible	Compatible	< 1%
PVC	Compatible	Compatible	4%
Butyl Rubber	Compatible	Compatible	1%
Chlorosulfonated PE	Compatible	Not Recommended	27%
EPDM	Compatible	Compatible	2%
Natural Rubber	Compatible	Not Recommended	7%
Neoprene	Compatible	Compatible	1%
Nitrile Rubber	Compatible	Test	3%
Silicone Rubber	Compatible	Compatible	< 1%
Urethane Rubber	Not Recommended	Not Recommended	>50%
Vinyl	Compatible	Compatible	4%
Viton	Compatible	Test	15%
Aluminum	Compatible	Test	0.2%
Copper	Compatible	Compatible	0.1%
Cold Rolled Steel	Compatible	Compatible	<0.1%
Galvanized Steel	Compatible	Not Recommended	1.2%
Hot Rolled Steel	Compatible	Not Recommended	0.8%
Stainless Steel	Compatible	Compatible	<0.1%
Tin Lead Solder	Compatible	Compatible	<0.1%

AVAILABILITY:

The IONOX HC product is available in 1, 5, 15, 30, and 55 gallon containers.



Ionox[®] HC

Alcohol/Water-based Semi-Aqueous Cleaning Chemical for Electronics

Primary Applications

IONOX HC is used to remove difficult soldering fluxes, such as white gum and synthetic rosins, and assembly residues from through-hole, hybrid, and surface mount electronics in batch, in-line and ultrasonic cleaning systems.

Benefits & Features

- High strength alcohol for fast effective cleaning
- Completely water soluble allowing for easy rinsing without oily residues
- Extensive material compatibility testing and industrial experience
- Low pH formulation results in bright, shiny solder joints and part surfaces
- High flash point minimizes workplace hazards
- Low surface tension allows for cleaning of tight spaces and easy rinsing
- No ozone depleting substances, EPA SNAP approved, and low VOC's

Chemical Description

IONOX HC is formulated for cleaning difficult soldering fluxes and assembly residues. It accomplishes cleaning through the high solvency of the Kyzen alcohol, with or without the use of high impingement air sprays or ultrasonic agitation. Unlike common alcohols like isopropyl alcohol (IPA), the Kyzen alcohol has a greater dissolving capacity without highly volatile flammability. IONOX HC finishes its washing process with easy rinsing created by the complete water solubility of its formulation. Fluxes and residues are held in solution with special activators and surfactants. Artificial emulsions or rinse aid chemicals are not required. NFPA ratings are Health 2, Flammability 1, Reactivity 0.

Typical Properties

Flash Point (Tag CC)	None to Boiling	Specific gravity	1.060 - 1.080
Surface Tension	18-28 dynes/cm	Vapor pressure	< 10 mm Hg at STP
pH (100% solution)	9.2 - 10.2	Odor	Low/Mild
Appearance	clear to light amber	Boiling Point (°C)	108 - 112

Typical Process

IONOX HC is placed into a stainless steel wash chamber at full concentration. Water dilution is not required. It is then heated to an operating temperature between 120°- 160°F. During heated use of IONOX HC, it is important to monitor wash bath concentration. This can be accomplished manually using refractive index or titration methods, or automatically with Kyzen Process Control System (PCS™). Washing is usually accomplished through spray under immersion, ultrasonic agitation, or inerted nitrogen atmosphere direct spray. Following the washing process, an immersion or direct spray heated water rinse is recommended. A heated rinse will speed the rinsing and drying process. Deionized electronic grade rinse water is also recommended to prevent dissolved solids from depositing on the cleaned parts. Following rinsing, a hot air drying process is usually initiated.



Closed Loop Water Treatment

Closed-loop water treatment for the IONOX HC is accomplished with specially designed reverse osmosis (RO) membranes and equipment provided by Kyzen Corporation. On occasion, carbon and resin filtering are used, but they are used only in applications of very small rinse water loading or polishing steps and are limited in their ability to absorb larger quantities of contamination.

Product Material Compatibility

IONOX HC has an extensive track record of compatibility with most micro-electronic, hybrid and circuit board materials and components. Beyond this, Kyzen and the National Center for Manufacturing Sciences (NCMS) also offer material compatibility testing data on the Kyzen cleaning agents.

Industrial Equipment Material Compatibility

IONOX HC is commonly used in stainless steel equipment. Unlike many solvents, this product may be used in equipment constructed of polypropylene and polyethylene. Manufacturers using other metals, plastics, and polymers should conduct long term use studies or contact Kyzen prior to installing equipment using IONOX HC.

Safety

IONOX HC is non-combustible, non-flammable, biodegradable, and non-corrosive. Kyzen's Material Safety Data Sheet further outlines the safe use of this material.

Environmental Compliance

Greater than 95% of the materials used in IONOX HC are from products which are renewable resources. The key materials used in the product were selected not only for their cleaning effectiveness, but also for their low VOC character, biodegradability, and recyclability. Contact Kyzen regarding data that may be pertinent to your specific process.

Availability

IONOX HC is available in 1, 5, and 55-gallon containers.

Ordering Information

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