

## Key Performance Advantages

- For use in solvent-based reducers and thinners
- Improves solvent release properties
- Optimizes latent solvents



Paints and Coatings

# NIKANE<sup>®</sup> MS 3000

## Multifunctional Solvent

NIKANE<sup>®</sup> MS 3000 is a multifunctional solvent that will offer differentiated performance attributes that are useful in formulating solvent-based reducers or thinners for many types of industrial coating systems. While the NIKANE MS 3000 is a versatile solvent that has been designed for use with a wide variety of solvents, it is of particular value in solvent formulations as a replacement for a portion of active solvents such as methyl isobutyl ketone (MIBK) or acetates (n-butyl acetate, etc.). When NIKANE MS 3000 is utilized in solvent formulations, a number of performance contributions will be provided which include:

- Improves pigment/surface wetting and film integrity
- Improves solvent release properties
- Optimizes latent solvent or diluent levels for economy and performance
- Versatile polar solvent for use in broad range of coatings

## Selected Formulating Properties

The selected properties listed below are for formulating reference. They are not to be considered product specifications.

Evaporation rate, by volume (n-butyl acetate = 100)	115
Flash Point, Tag Closed Cup, °C/F	30/86
Solubility in Water @ 20°C, % by wt	-3.98
Specific Gravity @ 20/20°C	-1.04
Weight per U.S. Gallon @ 20°C, lb	-8.67

## Versatile Polar Solvent

NIKANE MS 3000 is unique in that it is an oxygenated solvent that is weakly hydrogen bonded (~2.5), and has a very high solubility parameter number (~11.1). These properties afford flexibility for the formulator using NIKANE MS 3000, since the addition to it of an alcohol will create a moderately hydrogen-bonded solvent, and the addition of a hydrocarbon will create a weakly hydrogen-bonded solvent with a lower solubility number. Hence, by the addition of alcohols and/or hydrocarbons to the NIKANE MS 3000, virtually any solvency characteristics can be achieved to solubilize the polymer, while affording good solvent release. The end result of this versatility is the performance requirements for resin solubility, viscosity and film formation can be optimized to meet the application conditions.

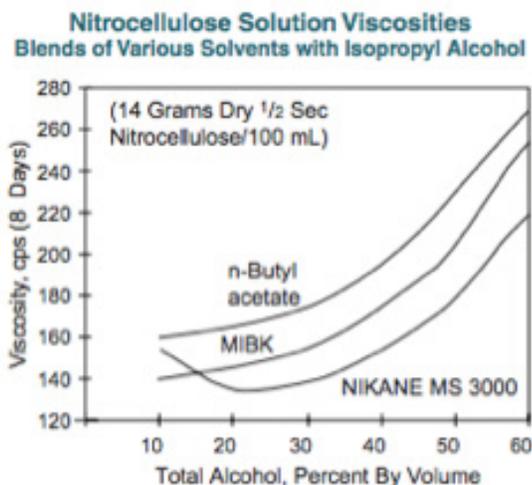
## Improves Solvent Release

The elimination of retained solvent is not totally dependent upon the solubility characteristics of the polymer and the solvents in which it is dissolved. There is another factor that has an effect on the drying rate and the solvent removal from a film – the presence of azeotropes or constant evaporating mixtures. These mixtures can often be used to increase the evaporation rate of a solvent system. Although the concept of constant evaporating mixtures is not new, most formulators tend to overlook this element because such mixtures are usually not very useful, either because of poor solvency or for economic reasons. Many of the constant evaporating mixtures containing NIKANE MS 3000 Multifunctional Solvent occur at useful solvent combinations from both the economic and solvency standpoints. This element of improvement brings additional value since coatings that have improved solvent release also have lower associated application film deficiencies (i.e. blocking, pinholing, etc.). While the NIKANE MS 3000 enhances the film development, the improved solvent release will also translate to faster line speeds and/or lower energy requirements in cure cycles. In this role, NIKANE MS 3000 is truly a multifunctional solvent.

## Optimizes Latent Solvents for Economy and Performance

NIKANE MS 3000 is an excellent solvent for the formulation of nitrocellulose lacquers. It can replace the medium evaporating ester or ketone in the thinner blends. In addition, more alcohol – a good latent nitrocellulose solvent – will be tolerated at higher levels. With such blends, particularly at alcohol levels of 15% or more, the formulator can prepare resin solutions of lower viscosity or higher solids versus conventional blends. This is illustrated in the graph below.

This versatility will be exhibited with any alcohol/NIKANE MS 3000 solvent blend and is an effective method of formulating for performance while lowering costs.



## Formulation Considerations

A general substitution guide would be seven parts of NIKANE MS 3000 plus three parts of alcohol for 10 parts of Methyl isobutyl ketone, and 8.5 parts of NIKANE MS 3000 plus 1.5 parts of alcohol for 10 parts of ester solvent. While the level of NIKANE MS 3000 which is required to maximize its benefits will of course vary depending on the specific resin and solvent combinations contained in the formulation, the suggested usage levels have proven to be effective in establishing initial cost effective dosages for the NIKANE MS 3000.

## Health and Safety Considerations

NIKANE MS 3000 Multifunctional Solvent is not considered toxic by the dermal route of exposure and is not irritating to the skin or eyes by contact.

NIKANE MS 3000 should be considered as moderately toxic by oral ingestion. The chief industrial hazard of NIKANE MS 3000 is vapor inhalation. Vapor concentrations are attainable which could be hazardous with a single excessive exposure. As with any chemical, proper precautions must be taken to ensure its safe and effective use.

Before using this product, refer to the most recent Material Safety Data Sheet from ANGUS Chemical Company, which provides information on properties and handling. NIKANE MS 3000 is a flammable liquid by definition of U.S. Occupational Safety and Health Administration and the U.S. Department of Transportation. It should be handled and stored only in the manner prescribed for Class IC flammable liquids.

## Environmental and Disposal Information

Do not dump into any sewers, on the ground or into any body of water. Disposal methods must be in compliance with all Federal, State, Provincial and local laws and regulations. Waste characterizations and compliance with all applicable laws are the responsibility solely of the waste generator.

For unused and uncontaminated product, the preferred options include sending to a licensed, permitted recycler, reclaimer, incinerator or other thermal destruction device. The same management options are available for used or contaminated materials, although additional evaluation is required (see, for example, U.S. Environmental Protection Agency, 49 CFR Part 261, "Identification and Listing of Hazardous Waste"). Any disposal practice must be in compliance with all Federal, State, Provincial and local laws and regulations. Check with appropriate agencies for your location. We can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums.

# Product Stewardship

ANGUS encourages its customers to review their applications of ANGUS products from the standpoint of human health and environmental quality. To help ensure that ANGUS products are not used in ways for which they are not intended, ANGUS personnel will assist customers in dealing with environmental and product safety considerations. For assistance, Safety Data Sheets, or other information, please contact your ANGUS representative at the numbers provided in this document. When considering the use of any ANGUS product in a particular application, review the latest Safety Data Sheet to ensure that the intended use is within the scope of approved uses and can be accomplished safely. Before handling any of the products, obtain available product safety information including the Safety Data Sheet(s) and take the necessary steps to ensure safety of use.

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