



Arquad[®] 2C-75



High performance car rinse aid

Nouryon

Arquad® 2C-75

High performance car rinse aid for enhanced drying and minimized streaking, delivered in the final vehicle rinse

To enhance the satisfaction of vehicle owners as they drive out of the car wash station, Arquad 2C-75 has been developed as an interfacial tension modifier / drying aid specifically for car care.



The product is sprayed onto the vehicle as an ingredient in the final aqueous rinse. The optimized formulation is developed to provide fast vehicle drying by rapidly beading water from the vehicle surface, which is blown free of the vehicle surface in the dryer. This effect also minimizes streaking and spotting, enhancing vehicle shine. The neat product is a liquid at room temperature and easily dissolves into water when formulating. The surfactant is based on natural vegetable-based ingredients, and is largely bio-based.

Key properties

- Car care additive – rinse aid
- Remains liquid to cool temperatures
- Easy dosing into aqueous rinse water
- Surfactant from renewable bio-based raw materials
- High activity ingredient – 75% active

Functional benefits for car-care consumer

- Rapid vehicle drying time
- Enhanced vehicle shine
- Beading of water, easily removed with blown air
- Low streak and spotting formulation
- Based on natural vegetable-based surfactant sources

Functional benefits to vehicle wash owner

- Low temperature stability and pumpability
- Easy-dilution in water
- Bio-based – high renewable carbon index

Typical physical properties of Arquad 2C-75

| Property | Value |
|-------------------------------|----------------|
| Quat activity | 75% |
| Free amine | < 1.5% |
| Color, Gardner | 1-3 |
| pH (10% in ethanol/water 1:1) | 6-9 |
| Pour point | -23°C / -9°F |
| Flash point | < -10°C / 14°F |

Caution: Care should be taken to avoid contamination with chemicals incompatible with quaternary ammonium compounds that can cause incompatibilization and reduced performance i.e. wash water reuse to make final rinse formulation.



Guideline formulations

The following framework formulations are provided as examples to allow qualified formulators to start their formulation development and optimization. All formulations are expressed in percent of product by weight as supplied. Due to variation in mineral seal oil (MSO) quality, adjustments may be required to the base formulation to ensure formulation homogeneity.

Premium one-step solvent-based car rinse formulation

| Rinse aid | % weight |
|-------------------|----------|
| Mineral seal oil* | 25.0 |
| Arquad 2C-75 | 18.0 |
| Ethomeen® T/15 | 2.3 |
| Ethomeen® T/25 | 0.7 |
| 2-butoxyethanol | 5.0 |
| Water | 49.0 |

* Adjustment in the formulation may be required due to the variation in mineral seal oil

Method of preparation

1. Add Ethomeen T/15 and Ethomeen T/25 to Arquad 2C-75
2. Add mineral seal oil and 2-butoxyethanol
3. Add DI water at a slow rate under constant mixing until a clear solution
4. Stir until homogenous

Two-step rinse formulations

Step one – mineral seal oil base

| MSO base blend | % weight |
|--------------------|----------|
| Mineral seal oil* | 73.0 |
| Ethomeen T/15 | 10.0 |
| 2-butoxyethanol | 16.0 |
| Ammonium hydroxide | 1.0 |

Method of preparation

1. Add Ethomeen T/15 to mineral seal oil
2. Add 2-butoxyethanol
3. Add Ammonium hydroxide
4. Stir until homogenous

Step two – rinse aid

| Rinse aid | % weight |
|----------------|----------|
| MSO base blend | 47.4 |
| Arquad 2C-75 | 17.0 |
| Water | 35.6 |

* Adjustment in the formulation may be required due to the variation in mineral seal oil

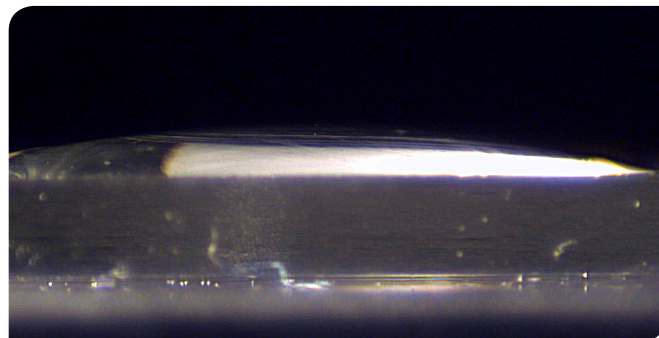
Method of preparation

1. Add Arquad 2C-75 to MSO blend (step 1)
2. Stir until well blended
3. Add water slowly and stir until a homogenous blend

Arquad 2C-75 delivers fast dry time, premium shine and cleaning performance

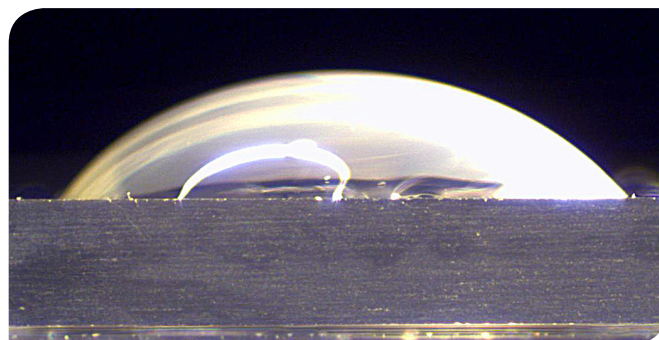
Drop test to show the effect of treating of a surface with premium one-step solvent based car rinse

Water droplet placed onto treated glass surface to illustrate the effect of premium one-step treatment to a proxy for a car surface. Test illustrates enhanced water beading on surfaces treated with the rinse aid diluted 1:5 for treatment of glass.



Untreated glass surface (control)

Water sprayed on the untreated glass surface
Contact angle: untreated glass 19.5°



Treated glass surface with car rinse aid

Water sprayed after glass surface was rinsed with the premium solvent base car rinse
Contact angle: treated glass 43.9°

Summary

- Effective emulsifier to formulate rinse aid additives for vehicle cleaning
- Helps bead water from the vehicle surface (once formulated), allowing droplets to be blown free
- Enhances vehicle drying, leaving a streak-free shine on treated vehicle surfaces
- Easy to handle ingredient – low viscosity liquid, even at low temperatures
- Vegetable-based, naturally derived ingredient

Contact us directly for detailed product information and sample request
website | nouryon.com/markets/cleaning
email | cleaning@nouryon.com

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