Reflective Liquid Coatings

General:

This specification covers requirements for a reflective coating supplied in a liquid form for use as a retroflector. The coating compound is comprised of resins, thinners, pigments, glass beads and various additives.

Description:

The coating is available in Silver White, Bright White, Yellow, and Black. Blue, Green & Red are available upon special requests.

The coating should be applied over a white or off-white background for the true color to best show. As the alert is mostly transparent, and is easily masked by a darker or colored background.

The coating compound in a freshly opened, full container shall show no grit, skinning, curdling, or excess pigment flotation and shall show no more settling or caking than may be easily re-dispersed with a paddle to a uniform consistency.

The previously unopened package of product shall meet all of the requirements specified herein for a period of one year, provided that the daily mean temperature of the ambient air at the storage location falls within the range of 35 degrees F to 90 degrees F and the peak ambient temperature does not exceed 115 degrees F.

Mixing & Thinning:

Alert must be mixed vigorously and thoroughly, preferably with a mechanical paint mixer or shaker until uniform throughout. However, hand stirring and shaking will do an adequate job.

Alert will be in a semi-gel state as received; however, thinning is not normally recommended since mixing reduces the viscosity of Alert. If thinning is necessary it may be done very sparingly with VM&P Naphtha, mineral spirits, xylol or heptane as may be indicated under specific applications, up to a maximum of a half pint per gallon of Alert. If allowed to stand Alert will return to the semi-gel state.

Surface Preparation:

Alert is very similar to most paints, and preparation for application should follow standard practices. The surface must be clean and dry. Maximum durability will be obtained on surfaces which you have previously repainted with a high quality exterior alkyd enamel or alkyd primer (white or off-white). If a surface has been primed with paint the final paint coat must be thoroughly dried before the application of Alert.

Application on cement or asphalt should include a white base coat / primer such as AXON number AS-3-W1 Alkyd enamel. The primer must be thoroughly dry before the application of Alert product.

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For continuous coat galvanized steel or for black iron, preparation should include a light crystalline phosphate coating. Aluminum surfaces which have been anodized, crystalline phosphate coated, or prepared with amorphous chromate-type coatings are generally satisfactory. For exterior grade fir plywood, sanding, cleaning and sealing are recommended.

Priming:

Surface should be primed with a white or off-white quality primer for enamels before application of the reflective liquid. High density overlaid plywood, aluminum or continuous coat mill galvanized phosphate coated steel should be primed on the face surface only. Exterior grade for plywood and black iron should be primed and then covered with at least one coat of high quality alkyd enamel on both sides and all edges.

Spray Application - General

When using hand spray guns you should apply alert with a nozzle .087 inches in diameter using a pressure pot as follows:

1) Prepare Alert and the surface to be reflectorized as previously mentioned.

2) The spray gun should be held 6 to 8 inches from the surface to be sprayed and an even single coat should be applied until the area is uniformly covered. A properly adjusted spray gun will finely splatter the reflective material onto the application surface. When you have incomplete atomization this minimizes overspray and gives best coverage and sharp edges.

3) The Alert coating should be heavy enough to be wet but not so heavy as to sag. If sagging occurs the coating is being applied too heavily and the gun should be moved faster when spraying. Maximum reflectivity, true daytime appearance, and opacity are achieved only when the coating is completely dry.

4) You will find that occasional agitation of the reflective liquid will provide a more uniform application.

5) Reflectivity of Alert may be checked by sighting down a flashlight held at eye level while standing at least 50 feet from the reflective surface in a darkened area. However, do not check the reflectivity until the Alert has dried completely.

6) Following the use of Alert all spray equipment, stencils etc. should be cleaned thoroughly with mineral spirits or xylol.

Spray applications on abutments, bridges, curbing, small panels, etc...: Alert may be applied to properly prepared surfaces of this type by spraying. If application is made at temperatures below 50 degrees F initial reflectivity of the coating will be lower. Best results will be obtained on applications made at room temperatures above 50 degrees F.

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Applying Alert To Large Panels By Spraying:

1) Maximum reflection may be obtained from Alert by force drying the coating at 250 degrees F. Please see the instructions under "Drying".

2) Spray the panels in a vertical position for best coverage. To keep overspray minimized when you have more than one panel to do put the edges of the panels almost together and trigger the gun at the end of each pass.

3) Sometimes for best results it may be necessary to thin Alert before use. However, never use other thinners or thin in excess of what has been previously mentioned.

Silk Screen Processing:

Alert can be used for the complete or partial reflectorization of panels by the silk screen process with excellent results, particularly where lack of space, design or lack of equipment precludes spray applications. Alert may be applied to either the primer or the finish coat for complete reflectorization or reverse printing of large areas. For direct printing of legend or design Alert should be applied to the finish coat or enamel.

Alert should stand for 15 to 20 minutes after mixing and straining before silk screening in order to thicken.

1) Setup

Use clean 6XX or 8XX or larger, silk or nylon screen. The frame size should be large enough to leave sufficient "well" around the pointing area to allow for screen "Snap".

2) Table Setup

Screen frame should be set up for off-contact printing. Screen should be adjusted with foam rubber pads to provide at least 1/2 to 3/4 inch snap at the center of the screen. Uneven printing will result if there is insufficient snap in the silk.

3) Stencils

Water or lacquer soluble film stencils may be used.
Use a sharp medium or hard rubber squeegee.

Procedure:

1) For best results it is best not to keep a large amount of Alert in the screen well. It is best to use smaller amounts more often since excess material can become overly thin through constant agitation by squeegee.
2) A flood pass must be used prior to each impression pass.
3) Use a firm impression pass.
4) Dry according to Alert standard drying schedule.

NOTE: Because Alert contains minute glass spheres you may experience greater stencil and screen wear than would be expected with standard screening. Therefore, you should provide for replacing these items after

extended runs. Careful, tight-stencil applications will assure best wear resistance.

Hand Brushing:

Hand brushing of Alert should be done generally in non-critical applications on smooth surfaces or on rough textured or porous surfaces. The reflective coating should be applied in full even strokes with a good quality paint brush. Brushing is not recommended over large areas.

Smooth Surfaces:

Best results can be obtained with a soft, fine bristle brush such as a muslin brush. Close range appearance may be somewhat uneven but reflection and appearance will be adequate at uniform and normal viewing distances.

Hand Roller Coating:

Hand roller coating of Alert is recommended only for uses where close range appearance and durability are not of prime importance such as construction signs, temporary markings, etc... The coating will appear mottled at close range but will provide a very adequate uniformity of reflection and appearance at distances beyond 100 feet.

1) The surface to which Alert will be applied should be prepared as previously mentioned "Surface preparation".
2) Apply Alert in the standard conventional manner with good quality dense fiber fleeced roller. To minimize mottled appearance roll back and forth until liquid is quite
evenly deposited and then roll carefully in one direction only perpendicular to first application.
3) Clean roller carefully with mineral spirits to recover Alert absorbed during application.

Dipping:

1) Alert must be agitated in the tank to maintain a constant viscosity. Viscosity depends on temperatures of Alert and the article being dipped and should be adjusted to provide a light even coat. Too high a viscosity results in too heavy a coating. Viscosity too low results in excessively light, streaked coatings.
2) Viscosity measurement should be taken on moving liquid in dip tank. If thinning is necessary to adjust viscosity mineral spirits should be used.
3) Dipped articles must be allowed adequate dipping time, generally 2 to 5 minutes before entering curing overran. For best results coatings should be forced cured at 200 degrees F according to the schedule under "Drying".

Drying:

Alert reflective liquid will dry to a tack-free surface in 1 to 2 hours under normal drying conditions. Coating may be forced dried according to the following schedule:

After 10 minutes air drying, use 24 hours air dry, or 2 hours at 150 degrees F, or 1 hour at 200 degrees F or 30 minutes at 250 degrees F. Under normal drying conditions these drying times will harden the

coating sufficiently for handling, although additional air dry continues to harden the coating. After drying, opaque legends or pictorials may be applied to the reflective coating by silk-screening process or roller coating embossed areas with standard enamel type colors. Heavy color lay is necessary to cover exposed lens surface. A clear finishing or varnish coat should **NEVER** be used over Alert. Loss of reflection will occur in any overcoated area of the reflective surface.

Coverage:

As with any paint material the coverage obtained will vary depending upon the application, the applied, the method and the surface. Screen processed on a smooth non-porous surface, coverage will be approximately 100 square feet per gallon. Spraying, brushing and dipping will generally result in a reduced coverage per gallon as will applications on rough textured or porous surfaces. Best results are obtained with a single 15 wet uniform mil coating. Coatings lighter than recommended will result in reduced brilliance and durability. However, heavier coatings than recommended will not provide a corresponding increase in brilliance, and may actually result in reduced brilliance. Maximum opacity and true daytime appearance are achieved only when the coating is completely dry.

Storage:

Alert should be stored in a cool, dry place below 90 degrees F and should be used within one year of date of manufacture.

The date of manufacture will be clearly marked on all labels so that you will be able to maintain proper rotation of your stock.

Reflective Intensity:

When measured according to Federal Test Method Standard 370, the specific intensity per unit area shall be a minimum of:

	Divergence	Incidence		Angle
Color	Angle (in degrees)	4○	5○	30○
Silver-White	0.2	20.0	18.0	15.0
Silver-White	0.5	12.0	10.0	8.0
Yellow	0.2	6.5	5.3	3.2
Yellow	0.5	3.9	3.4	1.9
Bright White	0.2	16.4	13.8	8.1
Bright White	0.5	7.3	7.2	4.4

The reflective coating shall air dry, tack free, in no more than two (2) hours and have a maximum hard dry time of twenty-four (24) hours.

The material shall be nontoxic under normal conditions of usage.

Color to be checked on Gardner Color Meter or equivalent should be +/- 5% of the values listed below.

Color is to be noted in L a b values

	L	a	b
Silver-White	+47.4	-1.6	+0.0
Yellow	+59.7	+15.6	+35.2
Bright White	+77.8	-1.4	+60.0