



DATA SHEET

NYACOL® L-6
High Performance Silica for Control of ASR in Concrete

NYACOL® L-6

Lithium Stabilized Colloidal Silica

NYACOL L-6 is an amorphous silica powder. The product is based on proprietary production technology that produces ultra high surface area amorphous silica stabilized with Li₂O.

TYPICAL PROPERTIES

Appearance:	White Powder
Bulk Density, g/ml:	0.85
% SiO ₂ :	86
% Li ₂ O:	<1
10% Slurry pH:	10.5
LOD, 105°C	12.6
Mean Size, μm:	10 - 20
Surface Area, m ² /g:	500
Color L:	91
Color a:	0.5
Color b:	0.5

CONTROLLING ASR WITH L-6

ASR, or alkali silica reaction, is a common problem in concrete. It is a chemical reaction between certain aggregates which contain reactive silica and the alkali present in the pores of the concrete. ASR leads to expansion and cracking of concrete structures. Typical mitigation measures include the use of SCM's such as fly ash, silica fume, metakaolin, and lithium nitrate. Suitable fly ash resources are in decline, and in certain areas, the available aggregates have high reactivity.

ASR TESTING

ASR testing was conducted in accordance with ASTM C1260 by Element Materials Technology, St. Paul, MN. Bars are cast and aged in 1 M NaOH at 80°C. Measurements are made periodically to determine the expansion of the mortar bars. The guidelines in the standard are < 0.1% at 14 days of aging.

Materials:

1. Cement - Type I/II Continental Davenport meeting ASTM C150.
2. Aggregate - Empire Sand graded to the ASTM standard.
3. Water.
4. NYACOL® L-6, 0.5% example is shown.

ASTM C1260 Standard Mix Design	Wt., Grams	Wt. %
Cement Type I/II Continental Davenport	440	26.7%
Aggregate (C1260 Table 1 Grading)	990	60.2%
Water-Cement Ratio	207	12.6%
L-6	8.18	0.5%
	1645.18	
Water/Cement Ratio	0.47	



DATA SHEET

NYACOL® L-6

High Performance Silica for Control of ASR in Concrete

Empire Sand - % Length Change Average of 3 Measurements		Day	Day	Day	Day	Day
Specimen	Wt. % SiO2 from L-6	0	2	7	11	14
Control, no L-6	0	0.000%	0.012%	0.060%	0.160%	0.210%
L-6 at 1.64 grams	0.1	0.000%	0.004%	0.008%	0.019%	0.031%
L-6 at 3.27 grams	0.2	0.000%	0.007%	0.014%	0.021%	0.032%
L-6 at 8.18 grams	0.5	0.000%	0.006%	0.014%	0.021%	0.034%

RESULTS

The test results demonstrate low expansion at very low addition levels. The results show that as little as 0.1% is effective in controlling ASR in the Empire Sand aggregate at 14 days. NYACOL L-6 enables the mix design engineer greater flexibility in selecting aggregates and fly ash substitution levels.

PACKAGING

L-6 is available in 5-gallon pails, fiber drums and bulk bags.

SAFETY

A Safety Data Sheet for L-6 will be supplied on request.

FOR ADDITIONAL INFORMATION OR TO PLACE AN ORDER

Nyacol Nano Technologies, Inc.
 P.O. Box 349
 Megunko Road
 Ashland, MA 01721-0349 U.S.A.

Telephone: 800-438-7657 Toll-Free
 508-881-2220 Local Area
 Fax: 508-881-1855
 Internet: www.nyacol.com

Information herein is accurate to the best of our knowledge. Suggestions are made without warranty or guarantee of results. Before using, user should determine the suitability of the product for its intended use and user assumes the risk and liability in connection therewith. We do not suggest violation of any existing patents or give permission to practice any patented invention without a license. 2021/04

NYACOL is a trademark of Nyacol Nano Technologies, Inc.
 P.O. Box 349, Ashland, MA 01721-0349 USA Tel.: 508-881-2220