11-Nov-2009

N.U.Q.Q.
NEW ULM QUARTZITE QUARRIES

2009 PRODUCT TEST SUMMARY

PRODUCT: **MNDOT CA - 7, (1/2" x #4)**

GRADATION

NUMBER OF TESTS PERFORMED: 18 ***DATE OF LAST TEST: 07/27/2009***

SIEVES (millimeters in parentheses)	*MNDOT SPEC LIMITS*	*MNDOT SPEC MEDIAN*	*N.U.Q.Q. RUNNING AVERAGE*	*SAMPLE STANDARD DEVIATION ABOUT RUNNING AVERAGE*	*N.U.Q.Q. PRODUCTION WORKING RANGE*	*% OF FOUR CONSECUTIVE TESTS INSIDE OF WORKING RANGE*
0.625" (16.0)	100%	100%	**100.0%**	0.0%	100%	100.0%
0.5" (12.5)	85% - 100%	92.5%	**99.0%**	0.4%	99% - 99%	100.0%
0.375" (9.5)	50% - 100%	75.0%	**67.1%**	3.6%	64% - 71%	92.9%
#4 (4.75)	0% - 25%	12.5%	**2.6%**	0.5%	2% - 3%	100.0%

NOTE: VALUES INDICATE THE PERCENT BY WEIGHT PASSING SQUARE OPENING SIEVES.

GENERAL QUALITY

QUALITY PARAMETERS	*N.U.Q.Q. RUNNING AVERAGE*	*MNDOT SPEC LIMITS*	*NOTE*
NON CLASS 'A' MATERIAL BY WEIGHT:	**1.5%**	4.0% MAX.	SANDSTONE
L.A.R. ABRASION LOSS, (A.S.T.M. C131-89):	**34.0%**	40% MAX.	TOUGHNESS
MAGNESIUM SULFIDE LOSS, (A.S.T.M. C88-90 - 5 CYCLES):	**1.2%**	15% MAX.	SOUNDNESS
FLAT & ELONGATED PARTICLES, (A.S.T.M. D-4791):	**0.0%**	10.0% MAX.	PARTICLE SHAPE
SPECIFIC GRAVITY, (A.S.T.M. C127-88):	2.62 / 2.66 / 2.64	N/A	BULK / APPARENT / SSD
ABSORPTION IN BULK SAMPLE, (A.S.T.M. C126):	**0.55%**	N/A	POROSITY
UNIT WEIGHT, PCF, (A.S.T.M. C29):	92.0 / 82.8	N/A	DRY RODDED / LOOSE
VOIDS, %, (A.S.T.M. C29):	43.6% / 49.3%	N/A	DRY RODDED / LOOSE
FREEZE THAW DURABILITY, (A.S.T.M. 666 METH. A, 306 CYCLES):	88.5% / 0.006%	N/A	RDME / LENGTH CHANGE
A.S.R. EXPANSION, (A.S.T.M. C-1260 @ 14 DAYS):	**0.220%**		A.S.R. REACTIVITY
200 MESH, (75 MICRON), MATERIAL, (A.S.T.M. C117-90):	**0.2%**	0.8% MAX.	SURFACE DUST

QUARTZITE AGGREGATES CONTAIN NO SHALE, IRON OXIDE, SLATE, UNSOUND CHERT OR CLAY BALLS.

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SAMPLES AVAILABLE UPON REQUEST