

Monitoring of external and internal quality control for flour fortification



UZBEKISTAN

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**Technical meeting of the Regional Expert Group on harmonization of
standards for food fortification in Central Asia, Afghanistan and Pakistan**

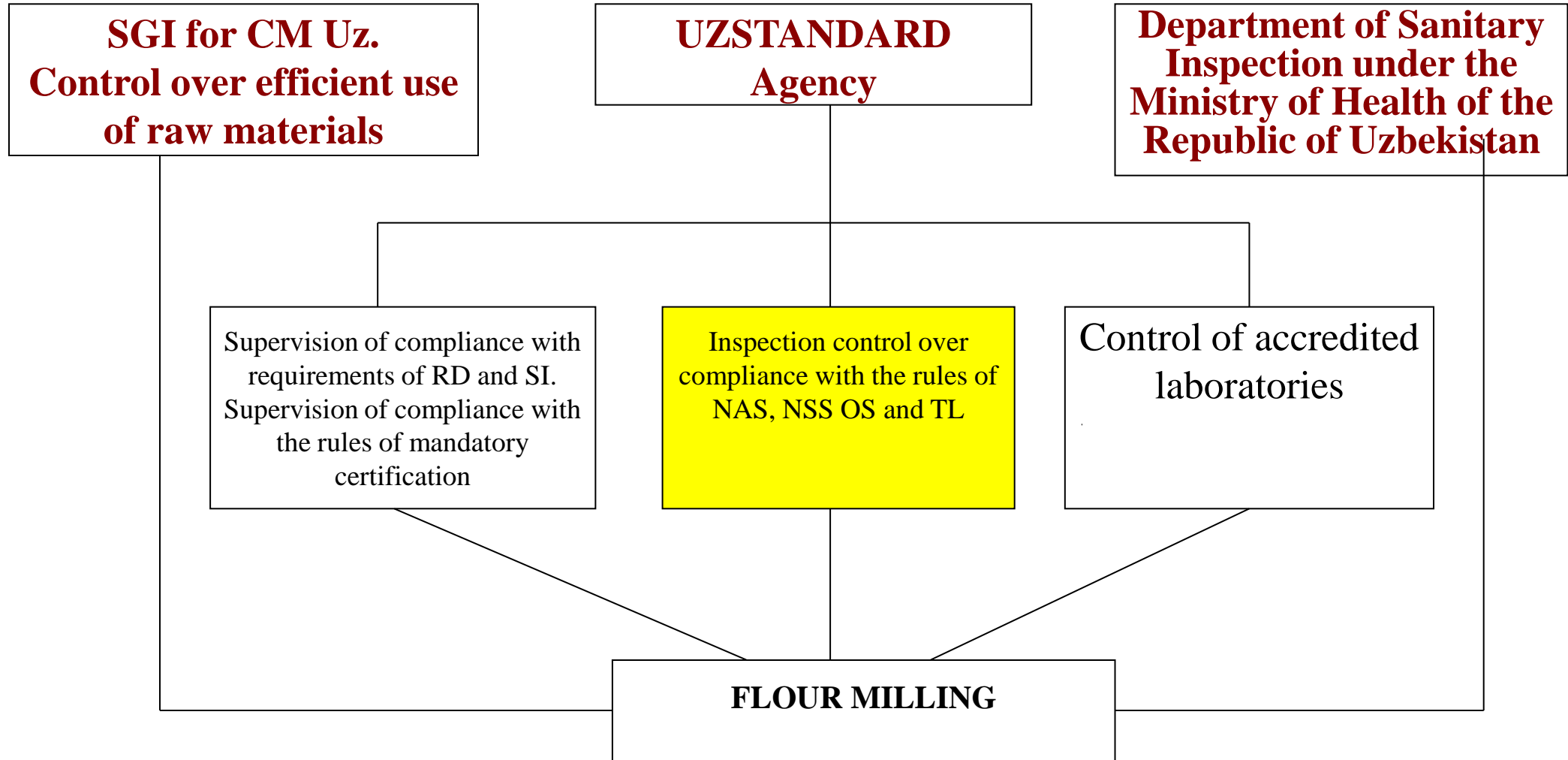
September 6, 2016, Almaty, Hotel Rixos

Quality control forms for flour fortification

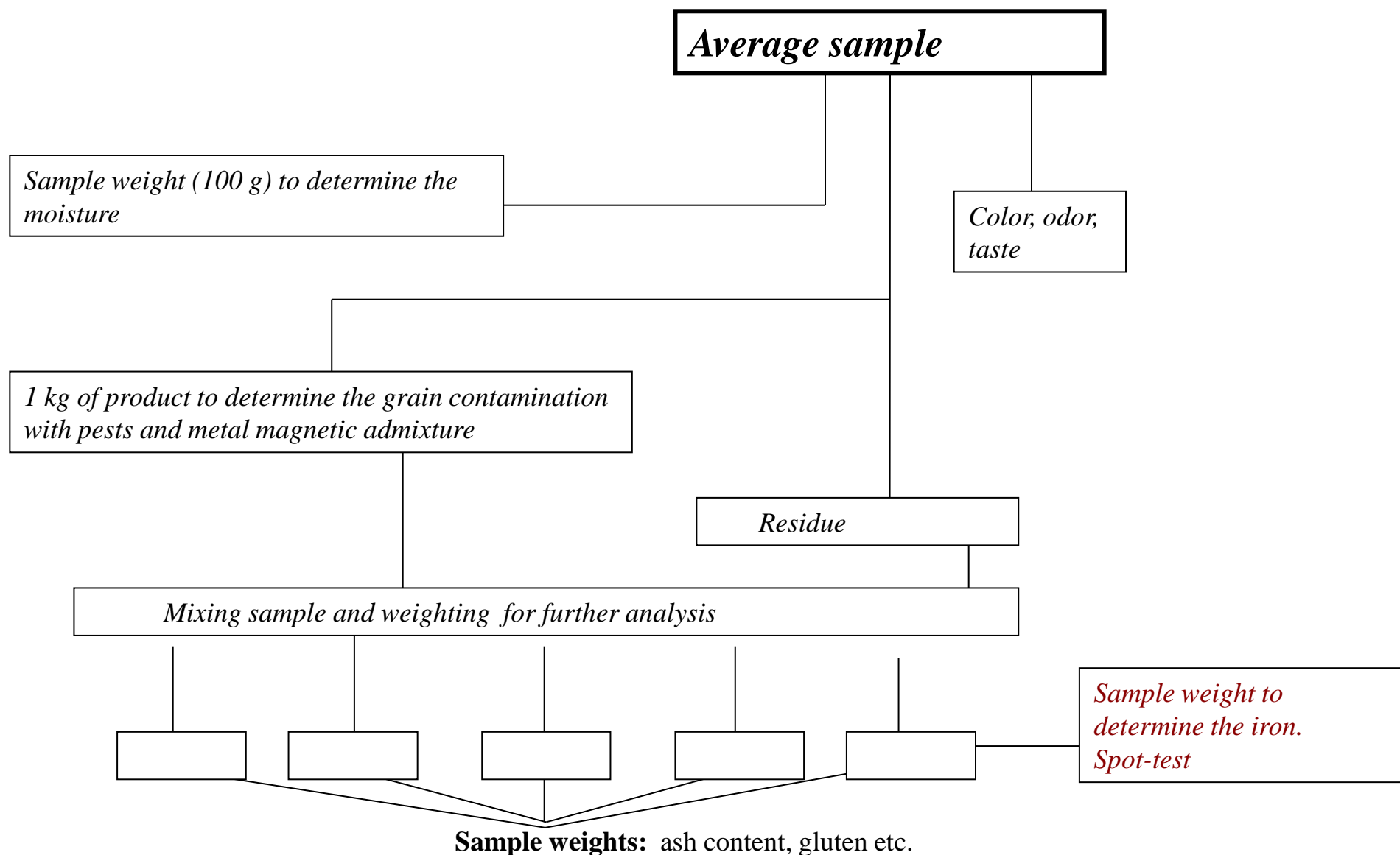
External control: Government monitoring and inspection

Internal control: Laboratory and production

Current external control scheme



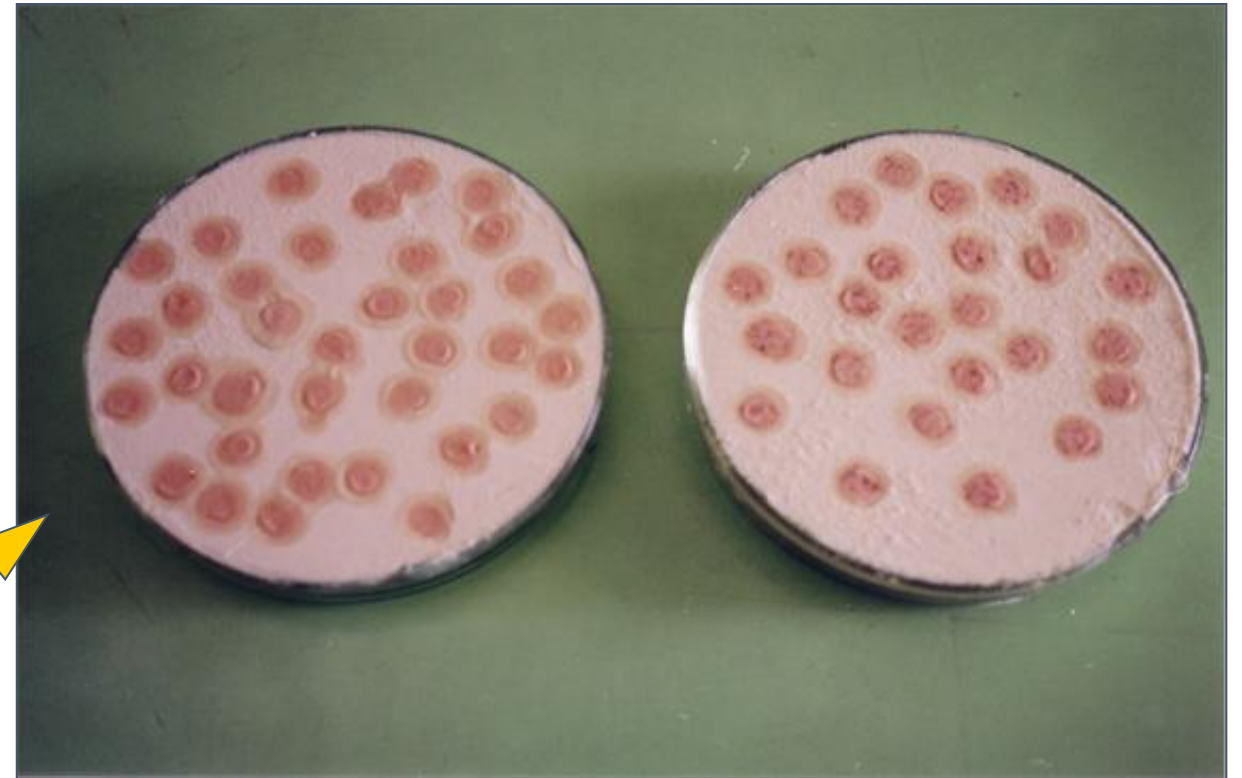
Analysis chart for the first grade flour fortified with vitamin and mineral mixture



Regulatory documentation

- ▶ State standard of the Republic of Uzbekistan - **O'z DSt 1098:2011** «Vitamin-mineral mixture for wheat baking flour fortification»;
- ▶ State standard of the Republic of Uzbekistan - **O'z DSt 1104:2011** «Wheat baking flour fortified with vitamin-mineral mixture»;
- ▶ Formulation **RZ 8-303:2011** «Wheat baking flour fortified with vitamin-mineral mixture»
- ▶ Operating procedure **TI 8-257:2011** for production of wheat baking flour fortified with vitamin-mineral mixture.

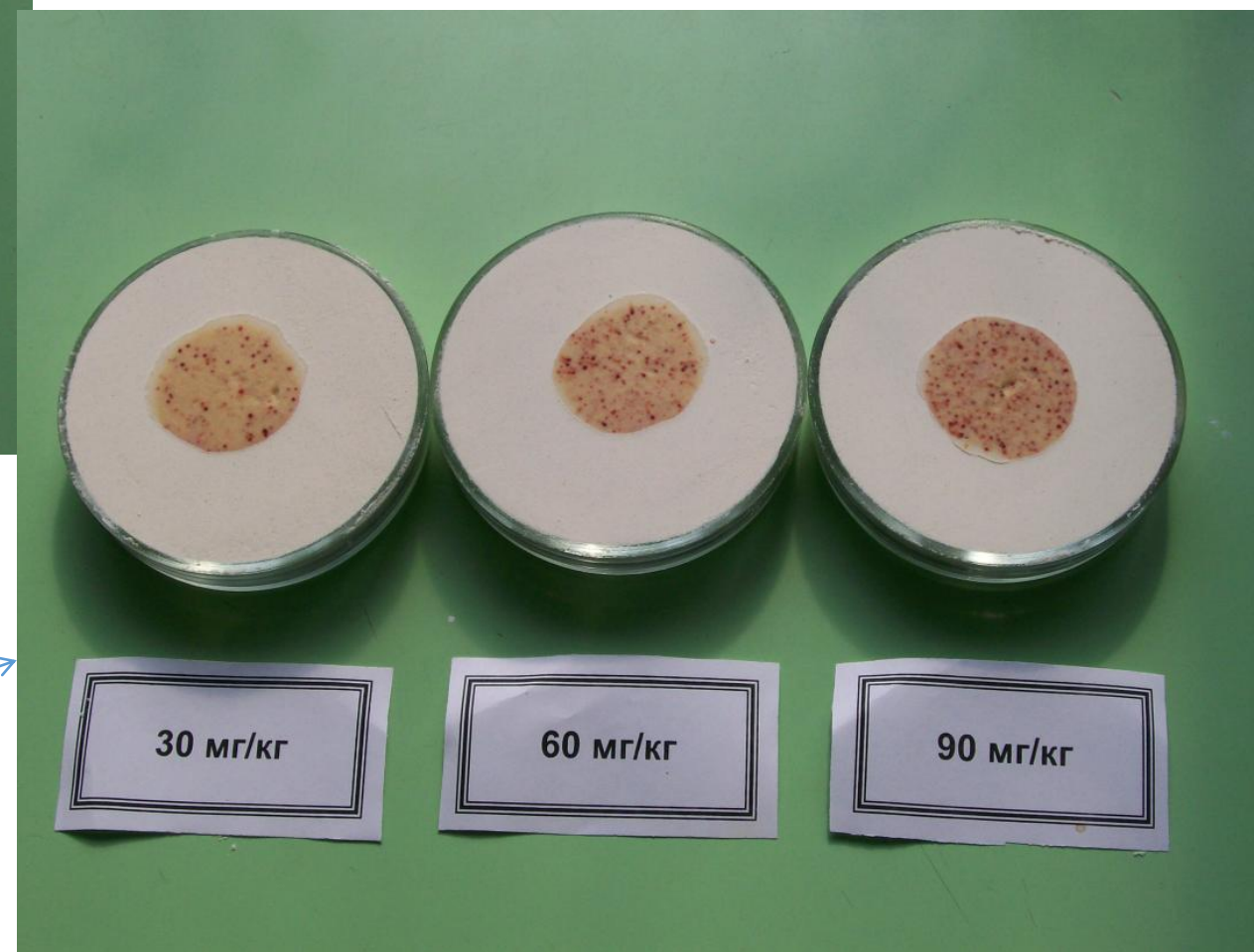
Analysis of flour quality in production laboratory of a mill





Qualitative determination of iron in flour «Spot-test» (AACC method 40-40);

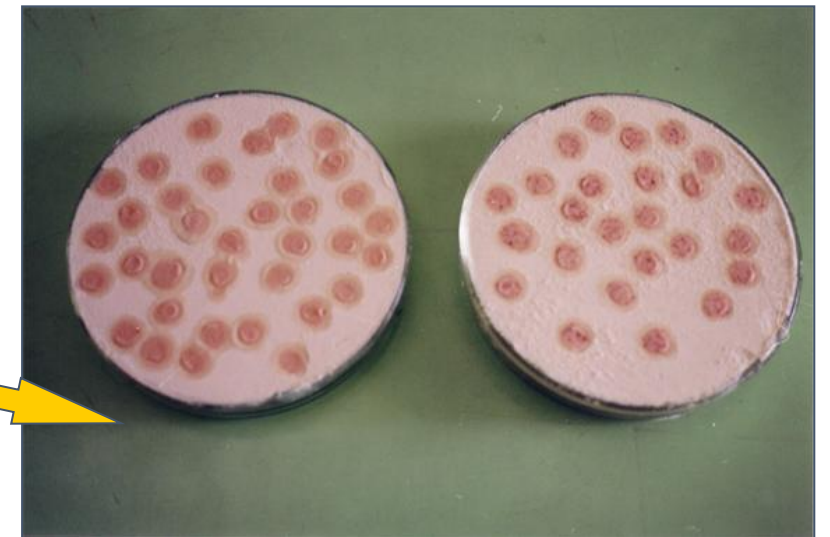
**Semi-quantitative determination of iron in flour.
«Spot-test» (INCAP method IV)**



Test methods of quality control for fortified flour

INTERNAL CONTROL:

Qualitative iron determination in the flour «Spot-test» (AACC method 40-40);
Semi-quantitative iron determination in the flour «Spot-test» (INCAP method IV)



Internal quality control log for fortified flour. Qualitative and semi-quantitative methods «Spot-test»

Shift date and No.	Quality index	First grade flour		Signature of lab tech performed the test
		Number of samples in one shift	Average sample in one shift	
	Fortified			
	Not fortified			
	Iron:			
	30 mg/kg			
	60 mg/kg			
	90 mg/kg			

Summary results of iron control

№	Enterprise	Total number of samples	Iron content		
			30	60	90

Control log for adding VMM to the flour

Date Shift	Q-ty of premix received	Residue from previous shift (g)	Total (g)	Premix used for fortified flour	Total premix used per shift (g)	Residue at the shift end (g)	Signature	
							Passed	Received

Feeder operation control log

Date	Shift	Rate of addition premix per 1000 kg of flour	Performance of fortified flour flow, kg/min	VMM (premix) flow in flour, g/min	Measurements of premix flow rate in flour, g/min			Allowable deviations from estimated VMM addition to the flour ±g/min
					1	2		

Extract from SanPin RUz. №0283-10 «Hygienic requirements for food safety»

Index, product group	PARAMETER	Standard level, within, mg/kg,	Notes
Paragraph 1.4.4.1 First grade wheat flour fortified with vitamin-mineral mixture	Minerals		*Micronutrients to be determined on iron and zinc levels
	Iron	40 – 65	
	Zinc	15 – 30	
	Vitamins*		
	Thiamin vitamin B ₁	1,6 – 10	
	Riboflavin vitamin B ₂	1,4 – 12	
	Nicotinamide vitamin PP	10 – 40	
	Folic acid	1,0 - 4	

Test methods of quality control for fortified flour

EXTERNAL CONTROL:

Quantitative

High-performance liquid chromatography

Atomic absorption method of iron and zinc determination

